

# RIVER VOICES

WATER SECURITY AND  
SUSTAINABILITY

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*Restoring Flows to Our Rivers*  
April 2016 Issue

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## MISSION, VISION, AND FOCUS

River Network empowers and unites people and communities to protect and restore rivers and other waters that sustain all life. We envision a future of clean and ample water for people and nature, where local caretakers are well-equipped, effective and courageous champions for our rivers. Our three strategies for focused investment are strong champions, clean water, and ample water.

## IN THIS ISSUE

When I was a young teen, California had its last big drought. We lived in the Bay Area and had a water meter that told us exactly how much water we used. If we went over our allocation, our water would be shut off.

As a single parent, my mom was masterful at making every penny count. During the drought, we became intensely focused on making every drop count too. We curtailed all outside watering, stopped letting the water run when we did dishes or brushed our teeth, followed the mantra of “if it’s yellow, let it mellow; if it’s brown, flush it down”, and always had a bucket to catch leftover shower water to flush out our toilets.

When I was in college at UCSC, field trips to farms, canals, dams and pump houses during a class on California’s water infrastructure provided an interesting counterpoint to my experience as a 13-year old. The plumbing infrastructure that moves water from the north to the south and fuels farm fields and swimming pools is impressive. We also saw an incredible amount of water loss and inefficiency. It was clear in my mind even then that there was something amiss.

This issue of *River Voices* explores the topic of water security through a series of articles designed to expand your understanding of where and why our rivers are in trouble and what you can do to make a difference. To do more, we must know how much water our rivers need (e.g., what range of flows over what duration and at what frequency and timing are necessary for ecological function) and what we can do to return this water or reduce withdrawals. And of course, who we can collaborate with for lasting change. **Thank you to all of our contributors!**

If the topic of water security interests you, please consider joining us in May for River Rally. We have an entire theme dedicated to ample water – you don’t want to miss it. You can also explore more by visiting the ‘Ample Water’ section of our website for best practices, impact stories, and other resources.

## A FEW OTHER ANNOUNCEMENTS FROM YOUR FRIENDS AT RIVER NETWORK:

- Register for [River Rally 2016](#) and join us in Mobile, Alabama on May 20-23, 2016 (see page 14 for details)
- [Become a member](#) and get your local event [listed on our website](#)
- Support our work through your [donations](#)

Enjoy, and I look forward to seeing many of you in Mobile!

Nicole Silk, President  
River Network



# CLEAN WATER ACT TOOLS FOR SUSTAINABLE WATERS

by Lisa Perras Gordon, U.S. EPA, Region 4

Over the past 40 years, federal, state, local and stakeholder efforts to protect rivers, streams, lakes, estuaries and wetlands have experienced tremendous success. The Clean Water Act (CWA) has proven to be a flexible and effective tool to address a wide variety of impacts. However, the stewardship of these water resources is facing new challenges from increased demands on freshwater supplies in some areas of the country. It can be a fundamental challenge to balance the competing needs to utilize groundwater and surface water for industrial, municipal, and agricultural uses; power generation; new reservoirs, inter-basin transfers and water diversions while maintaining water quality for aquatic life, recreation, ecosystem services and economic development. This balance is critical considering the economic importance of protecting healthy and sustainable watersheds for states and local communities, as described more fully in EPA's [Economic Benefits of Protecting Healthy Watersheds Fact Sheet](#).

How can state, tribal leaders and stakeholders utilize the CWA when making decisions regarding water use? How does the CWA address these types of impacts on our rivers, streams, lakes and estuaries?

The Environmental Protection Agency (EPA) has been working with states and tribes over the past several years to help answer those types of questions. Specifically, EPA is working with our states and tribes to help them understand both their responsibilities and the opportunities to use the CWA to protect, sustain and where possible restore, the hydrologic condition and ecological integrity of our waters, while ensuring that the necessary and important work of water supply planning is carried out efficiently. There are a few recent EPA publications specifically addressing these issues of which engaged citizens, river advocates and other stakeholders may want to be aware.

## TECHNICAL REPORT ON AQUATIC LIFE AND HYDROLOGIC ALTERATION

On March 2, 2016, EPA and USGS published a draft technical report, [Protecting Aquatic Life from Effects of Hydrologic Alteration](#) for a 60-day public comment period. The report describes the relationship between hydrologic condition and water quality, and gives examples of what states have done to address flow concerns using current CWA authorities, as well as other CWA programs that could be used to support the natural flow regime and maintain aquatic life. Hydrologic alteration is a change to an aquatic system and can include an increase or decrease in water volume, seasonal pulse flow disruption or other factors. It can have an impact on aquatic species' ability to spawn, gather nutrients from a stream system, access high-quality habitat, and more. The report provides information for states, tribes, territories, and others who are responsible for or interested in the maintenance of a hydrologic flow regime to quantify flow targets for the preservation of aquatic life and habitat. EPA is accepting [public comments](#) through June 17, 2016.

## MONITORING AND REPORTING OF HYDROLOGIC IMPAIRMENT

Last year, the Agency also provided clarifying guidance to encourage states and tribes to monitor, assess and report the impacts of different types of pollution, including surface and ground water withdrawals, dams and impoundments, diversions or extreme low or high flows. The [2016 Integrated Reporting Guidance](#) (pages 13-16) notes that assessing these types of impacts may be different from measuring for other pollutants. Only after these types of impairments are identified can state and tribal leaders and engaged stakeholders fully understand the impacts of these types

of alteration and develop plans to restore and protect our nation's waters to ensure they are sustainable for future generations. EPA encourages you to read this guidance and consider if these types of impairments could be occurring in rivers and streams in your community.

## **WATER EFFICIENCY GUIDELINES**

Finally, here in the southeast, EPA has been providing water efficiency and conservation guidelines to use in reviewing reservoirs and related projects proposed for CWA Section 404 dredge and fill permitting. The guidelines are an essential tool in assessing the potential for future water conservation and efficiency savings to minimize or eliminate the need for new water supply development, avoiding impacts to aquatic resources when possible. The EPA Region 4 Guidelines on Water Efficiency Measures for Water Supply Projects in the Southeast ("[Water Efficiency Guidelines](#)") published in 2010, have proved to be a valuable tool for applicants prior to submitting an application for a new project. EPA is now in the process of updating those guidelines to transition to a more quantitative approach. Auditing tools and guidance published by the American Water Works Association and others have become widely accepted standards for water utilities. With such tools and reference values available for what constitute well-managed systems

with minimal water losses and efficient households, EPA is recommending more performance-based, quantitative evaluations of proposed water supply projects. Look for an updated version of the guidelines sometime in the near future.

EPA looks forward to using all of our available tools and the most updated scientific information and working with our stakeholders and state, tribal and local leaders to provide sustainable water for all users of our nation's waters for future generations to come.

## **LEARN MORE**

- [The Economic Benefits for Protecting Healthy Watersheds](#)  
EPA 841-N-12-004 by EPA
- [Draft EPA-USGS Technical Report: Protecting Aquatic Life From the Effects of Hydrologic Alteration](#) by EPA
- [EPA Information Concerning 2016 Clean Water Act Section 303\(d\), 305\(b\), and 314 Integrated Reporting and Listing Decisions \("2016 IR Guidance," see pages 13-16\)](#) by EPA
- [EPA Region 4 Guidelines on Water Efficiency Measures for Water Supply Projects in the Southeast 6-21-2010](#) by EPA Region 4
- [Linking Clean and Ample Water](#) by River Network

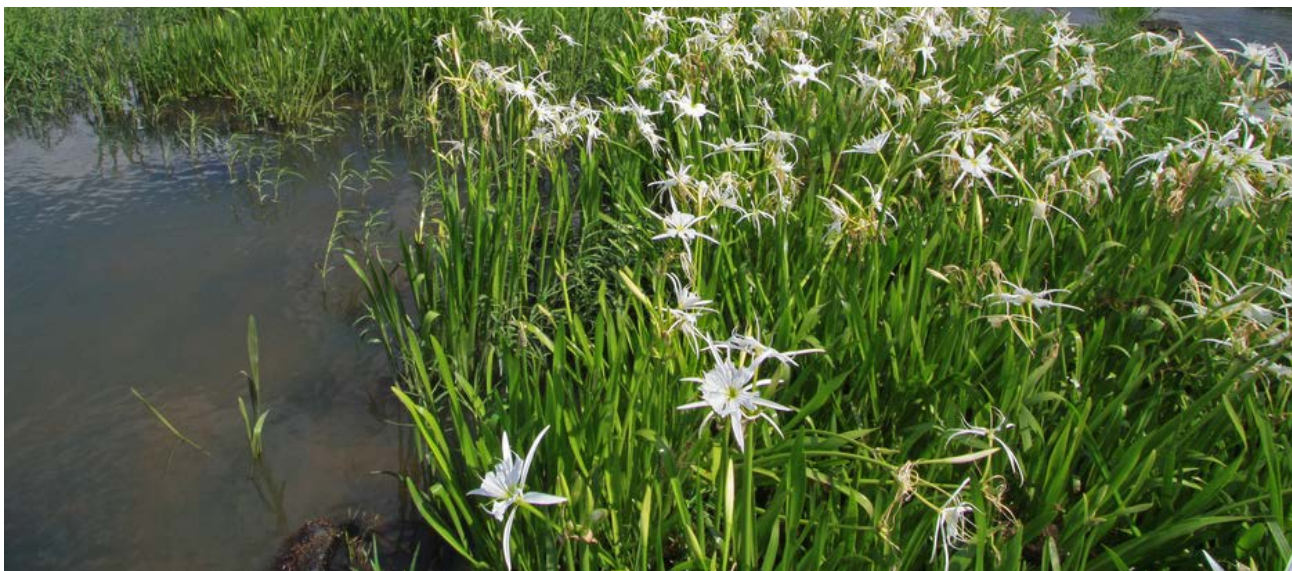


Photo source: Alan Cressler



# NO MORE MONEY DOWN THE DRAIN

New State Policies Help Stop Leaks in Drinking Water Systems  
by Larry Levine, NRDC

Every day, billions of gallons of expensive, treated water is simply lost from public drinking water systems due to leaking, aging pipes. Much of it gushes from more than 237,000 water main breaks across the country every year. Even more of it seeps (or gushes) from chronic leaks, typically underground, out-of-sight and out-of-mind.

All water distribution systems lose water. In the Great Lakes Basin, for example, it has been [estimated](#) that 63,000 miles of pipe in just 55 communities lose approximately 66.5 billion gallons of water per year through leaks—the equivalent of a year's supply of water for 2.2 million Americans. Addressing these leaks and other capital water infrastructure needs will cost over [\\$101 billion](#) over the next 20 years according to the EPA.

These “water losses” act like a tax on the cost of drinking water, siphoning money to pump and treat water that never gets used. Moreover, every gallon lost was taken from a river, stream, lake, or aquifer. And we live in an era of growing water scarcity - or increasingly erratic water supply - in much of the country.

So there's an urgent need to improve drinking water systems to ensure we have safe and sufficient water - for people and ecosystems - now and into the future.

As the old adage goes, you can't manage what you don't measure. This is why states across the country are taking new interest in the loss of drinking water from public water systems, and adopting sensible policies for communities to report and reduce these losses.

Where does your state stand in reporting and reducing urban water losses and how does it compare to others? Check out [Cutting Our](#)

[Losses](#), Natural Resources Defense Council's new interactive website to find answers as well as a model state bill, incorporating a suite of best practices, to help you advocate for improved policies in your state.

The map shows a growing number of states, including Georgia, Tennessee, and California that require all utilities to perform and submit annual water loss audits, using the industry standard methodology developed by [the American Water Works Association \(AWWA\)](#), the principal trade group for drinking water utilities.

The best among the states – so far, only Georgia – goes even further to require third-party validation of water loss audit data. A further best practice – system-specific, volume-based performance benchmarking for reducing water loss – is used by some utilities but is not yet required by any state. California's new law requires the state to develop such performance standards in the next several years.

AWWA has developed standard methods and terminology to perform water audits and to assist water utilities in tracking their distribution system losses. AWWA even offers [free audit software](#) that any utility can download. These tools help utilities identify and quantify both real losses (leaks) and apparent losses (water that is used but not billed).

Armed with the results of an audit based on accurate, validated data a water system can begin to strategically implement controls to reduce losses. For example, water loss audits can help utilities identify losses that are the most cost-effective to identify and eliminate.

In California, for example, a first order statewide estimate is that about 350,000 acre-feet of treated drinking water (114 billion gallons) is



currently going to waste each year that could be cost-effectively saved—a volume that is nearly twice the entire annual water use of San Diego, the state’s second largest city. With California facing acute water shortages after the driest year in its recorded history - and a glimpse of the “new normal” produced by a changing climate - the time has come to measure, manage, and eliminate the unnoticed and unnecessary waste of water that is happening literally right under foot.

The [Cutting Our Losses website](#) is frequently updated to track the adoption of new state policies, provide links to additional water audits, and highlight the latest developments in the field of water loss auditing and control.

Utility personnel, public officials, and advocates will find useful links to specific policies and regulations adopted in other

states, as well as information on the benefits and costs of performing audits.

Legislators and advocates can download model legislation that can be adapted for any state.

And those new to the topic can start learning about what water loss means to his or her own community with [8 Questions for Every Water Utility](#), and bring the discussion home.

## LEARN MORE

- [Cutting Our Losses](#) by NRDC
- [Water Loss Terms and Definitions](#) by Alliance for Water Efficiency







# NET BLUE

Making New Development Sustainable

by Mary Ann Dickinson and Bill Christiansen, Alliance for Water Efficiency

Are you looking for ways to restore or protect waters flowing through your river? Does your river support urban water needs? Have you considered the important role of planning and zoning processes to the water footprint of new development?

Water constraints of all kinds are becoming a familiar pattern for cities and towns across the United States, not just those in the arid West (see article on Georgia's Flint River). As population continues to grow in many communities, local planners and decision makers are challenged with the task of accommodating new water customers and new water-using development with increasingly strained water supplies and limited water and wastewater infrastructure. To cope with this problem, several communities across the United States have adopted policies that aim for water neutrality by requiring the projected water demand associated with new construction to be "offset" via on-site and off-site water efficiency measures. This works as follows: On-site water demand offsets are achieved by outfitting the structures in a new development with water efficient fixtures that exceed baseline legal codes, or incorporating the use of recycled water; Off-site water demand offsets require the developer to achieve water demand reductions on the properties of pre-existing customers, typically through the replacement of inefficient fixtures on their properties. The goal of the offsets is to make the new development water-neutral to the community, and thus reduce the need to take additional water from rivers and aquifers.

Where are these offset policies happening? Although many of the communities that have adopted water demand offset policies are located in California, Massachusetts and New

Mexico also provide examples. These examples or pilots have been summarized in report, *Water Offset Policies for Water-Neutral Community Growth* (available on [AWE's website](#)) provide a laboratory to help us evaluate how this approach can and should work. And the time is right for this experiment. Communities with high growth and stressed water supplies are finding that water scarcity is affecting their economic development potential. Water demand offset policies thus offer communities a meaningful and sustainable way to enable population and economic growth without increasing overall water demands in a utility service area, or without enacting contentious building moratoriums. Although this approach doesn't automatically translate into more water for our rivers, it is one important tool in the toolbox to reduce demand for highly treated water, taking some pressure off of our waterways.

## "NET BLUE"

Over the course of the next year, the Net Blue team (Alliance for Water Efficiency, River Network, and the Environmental Law Institute) will develop a national model template planning and zoning ordinance that communities can voluntarily adopt to make their new development water neutral. This template will be made available for you to use when working with your community. This three-year project builds on the experiences to-date of the pioneering communities who adopted offset policies. A Project Advisory Committee has been assembled with some of the nation's foremost experts in planning and zoning, water law, architectural sustainability, and water resource management to help us develop a workable and useful national template.

## WATER DEMAND OFFSET

The basic components of a water demand offset program include:

- A condition that triggers the requirement for a water demand offset (e.g., new development and/or expanded use of existing connection)
- Water demand projection of new development
- Methodology for estimating savings of on-site and off-site efficiency measures
- Water demand offset requirement as a proportion to the projected demand (i.e., offset ratio)
- Demand mitigation implementation options
  - On-site efficiency measures
  - Off-site efficiency measures
  - On-site recycled water use
  - Possible fee option in-lieu of developer implemented efficiency measures
- Administrative fees and other costs
- Verification of demands and implementation of efficiency measures
- Rule that ensures demand reductions are permanent



This model ordinance will create a new paradigm for land use planning and development by requiring that new development have a “neutral” impact on the total water use in the community. The most common scenario will be planning and zoning applications and building permits for development that will trigger offset of the new water use through water efficiency retrofits of other facilities to achieve a water-neutral impact.

Building on the results of the communities that have already adopted offset policies, the project partners are now developing a model planning and zoning ordinance that communities can tailor to create a water demand offset approach to meet their needs. River Network will then work within communities in different regions throughout North America to further refine the ordinance components and to ensure it is adaptable in political climates, legal frameworks, and environmental challenges, and to solicit interested communities. Seven pilot communities have already signed up to be part of the project (San Francisco, CA; Bozeman, MT; Albuquerque, NM; Austin, TX; Madison, WI; Cobb County, GA; and Acton, MA).

A water demand offset policy should have comprehensive legal requirements in place, along with sound methodologies for estimating the water demands of new development and for calculating credits resulting from the

savings of on-site and off-site water efficiency measures. Having an offset ratio greater than 1:1 can guard against uncertainty in both the projections for new demands and the demand reductions resulting from water efficiency measures. The offset ordinance can also include provisions that measure actual consumption once the development is constructed and occupied to ensure it is not exceeding the projected demand. It is also important to ensure that the off-site and on-site water efficiency measures are permanent and enforceable.

## NEXT STEPS

The project team will be rolling out a draft ordinance in time for a workshop at River Rally in May 2016. The workshop at River Rally will demonstrate how the ordinance and the offset methodology could work and will seek feedback about how it could function in communities where participants are from. The project will conclude by September 2017 after the ordinance has been vetted in the seven pilot communities. Stay tuned!

## LEARN MORE

- [Net Blue Project](#)
- [“Net Blue – Water Neutral Community Growth” workshop at River Rally 2016 in Mobile, Alabama on Saturday, May 21.](#)





# COLLABORATIVE APPROACHES TO FLOW RESTORATION

Georgia's Flint River

by Ben Emanuel, *American Rivers*

Photo source: Alan Cressler

**“YOU COULD WALK  
ACROSS IT IN YOUR  
SUNDAY SHOES  
WITHOUT THEM  
GETTING WET.”**

I'll never forget those startling words describing Georgia's Flint River, uttered to me by Dr. Mack Dallas the first time he and I talked with one another about the state of his beloved local river during a recent drought.

Dr. Dallas, a lifelong fisherman and resident of Thomaston, Georgia, and a long-time board member of Flint Riverkeeper, wasn't describing a creek that could be rock-hopped across on an average day. He was describing one of the state's major rivers, a gem of the Georgia outdoors, a treasure of Southeastern biodiversity, and one of only 40 rivers in the United States that runs for more than 200 miles unimpeded by dams. Its flows, however, were decimated in a drought in 2011 and 2012, as well as in two previous severe, multi-year droughts that occurred since 2000. The Flint, with its headwaters in the southern Piedmont, is no stranger to drought and periodic low flows—but its dewatering in the 21st century droughts to date reflects the new strains on its health and creates an urgent call to bring drought resilience back to the river system.

Georgia's last three droughts have reduced the valuable shoal habitat in popular sections of the Upper Flint to wide expanses of exposed rock with trickles of water running in between. And in most summers, severe drought or not, the river runs lower, for longer periods of time, than it did in the past. This altered hydrology

with little remaining drought resilience mirrors trends in the lower Flint River Basin, where the river courses through the highly productive farm belt of Southwest Georgia. So great is the draw on the Flint system and its associated aquifers for irrigated agriculture, that major tributaries now run at what used to be drought flows even in wet years, and in droughts they run dry..

Farming is not much of a factor in the Upper Flint Basin, and the causes of severe low flows during droughts are more complex. But the over-arching issue is the same throughout the entire length of the river: there has been a failure of policy to protect the river's flows in the face of high demand on the basin's resources. The task now is to restore some balance, and restore the river to health.

## **CITY, SUBURBS, AND RIVER**

Since 2011, American Rivers and Flint Riverkeeper have collaborated with a special focus on the Upper Flint Basin, where strains on the river come from urban and suburban water use and land use patterns. We are advocating that the Flint should be managed holistically as a watershed. However when it comes to working directly with stakeholders to improve water management, we have found value in identifying particular challenges faced by different sectors at the sub-basin scale. In this case, the challenge is restoring flows to a river whose very headwaters provide water to the growing communities in the Southeast's biggest metropolis.

The Flint's mainstem begins on the south side of Atlanta, near Atlanta's international airport, the world's busiest airport. Other headwater tributaries rise from within Atlanta's

sprawling development. These streams, many with reservoirs built on them, supply water to hundreds of thousands of people in Atlanta's southern suburbs. Of that water, only roughly one-quarter to one-third returns directly to the river system as treated wastewater. About a quarter is exported via interbasin transfers, discharged as wastewater to neighboring river basins. The remainder has myriad destinations — land application systems, numerous septic tanks, and a great deal of summertime landscape irrigation in certain areas — all considered “consumptive uses.” Some of this water makes its way back to the river, but in a drought year, the poor timing and quantity of “return flows” compound the strain on an already stressed system.

In addition to water infrastructure issues, landscape change is also a big cause of decline in flows. The river's urbanized headwaters limit groundwater recharge and baseflow, and wetland loss has been significant. Numerous impoundments — some water-supply reservoirs, some farm ponds, many amenity lakes and ponds — increase evaporative losses in hot, dry weather. The Upper Basin's public water supply systems, which have reservoir storage, and an innovative indirect potable water reuse system that uses constructed wetlands — are relatively resilient to drought. The river, though, has lost its safety net.

## A NEW DIALOGUE

To begin finding ways to restore drought resilience to the river system, American Rivers has brought the Upper Basin's water utility, non-profit organizations and other stakeholders into an ongoing dialogue about the future of the Upper Flint. After documenting the Upper Basin's low-flow issues and their causes in a [2013 report](#) published with Flint Riverkeeper, we convened the [Upper Flint River Working Group](#) to provide an open forum for this dialogue and encourage more communication among parties throughout the basin, regardless of service areas or political jurisdiction lines. In 2014, we created an Action Plan to chart out various areas of collaborative work in both the short and long term.

The Working Group's discussions are wide-ranging, but there are several key initiatives. We are working closely with the Fayette County Water System on water conservation planning and peak demand management strategy. In a county with high rates of lawn and turf irrigation where summertime water usage can be double wintertime usage, we hope to lessen impacts on the river while engaging in financially smart forward-looking water-supply planning at the utility level. And in a year when El Nino's rains have brought floods to the basin, we are working to cement a framework for improved communications and information-sharing among water suppliers for the next time drought arrives in the Upper Flint, be it in 2017 or 2027.

It took a long time for the problems affecting the Upper Flint's hydrology to emerge, and it will take a long time to repair them. At present, we are focusing our efforts largely on drought because its impacts have been severe. But we also hope to build a foundation for the collaborative work that will need to happen to balance the whole range of the river's flows, from low to high and everything in between in order for the river's hydrology to be truly healthy.

The challenges in the Upper Flint represent just one part of the immense set of challenges facing healthy flows and water availability throughout the larger Apalachicola-Chattahoochee-Flint (or ACF) River Basin, which is shared by Georgia, Alabama and Florida and now has a decades-long history of conflict over water supplies. It is our hope that finding some solutions in the upper Flint will contribute toward setting the ACF Basin on a path toward healing rather than further degradation. We hope to identify strategies that will be useful for other rivers facing similar challenges to the upper Flint.

## LEARN MORE

- [The Flint River website](#) by American Rivers
- [Upper Flint River Resiliency Action Plan](#) by American Rivers
- [“Restoring Flows: Georgia's Flint River”](#) workshop at River Rally 2016 in Mobile, Alabama on Monday, May 23





# THE BIG DAM CONTROVERSY

by Cindy Martin, *Let Rivers Flow*

Berta Cáceres, winner of the Goldman Environmental Prize, indigenous rights activist and dam fighter was murdered in her home in Honduras on March 3, 2016. The U.S. is warning of a 'tsunami wave' across Iraq that could kill hundreds of thousands of people if the deteriorating Mosul dam - considered by some to be the most dangerous dam in the world - collapses. The largest dam removal in U.S. history on the Elwha River, the subject of the popular award winning documentary *DamNation*, will soon be eclipsed by the removal of four Klamath dams and backed by PacifiCorp, the power company that owns them. Dams are making big news, and big waves.

The subject of free flowing rivers and dam removal is complex, and touches many aspects of our lives. My interest in the complex and multifaceted topic of free flowing rivers and dam removal was first heightened when my husband and I bought a piece of property near Alabama's Coosa River and befriended the local Riverkeeper groups. I learned that, according to the Center for Biological Diversity, the Coosa River suffered the greatest extinction event in modern North American history following construction of eight hydropower dams in the early 1900s that wiped out 36 freshwater species. The verdict is still out, though not very hopeful, for survival of the wild Alabama Sturgeon, with the last specimen seen in 2007.

Outside of conservation groups, few people seem to be aware of the negative consequences of dams. Because few people are aware of the full consequences of dams, I started *Let Rivers Flow* in 2015 with the objective of broadening awareness of the benefits of free-flowing rivers through improvements and removal of obsolete and outdated dams.

## WHAT IS AT STAKE?

Free-flowing rivers are imperiled, with only six remaining in the United States. In contrast, there are [more than 80,000 dams](#) over three feet tall in the country. Dams and other obstructions fundamentally inhibit rivers from functioning properly. They remove water from rivers for electricity generation, domestic and industrial water supply, irrigation, and flood damage reduction, changing the flow characteristics that species and ecosystem processes depend upon, often eliminating triggers for reproduction and growth. Dams also block the movement of fish and other aquatic species, sediment, and nutrients. Water trapped behind dams in reservoirs and man-made lakes moves slower, has different water temperature and chemistry, and results in reduced species variety and increased risk of predators. Water trapped behind dams also generates evaporative losses, particularly in hot and dry areas. Additionally many dams are aging and pose safety threats to people.

## AQUATIC LIFE

As mentioned above, dams put many forms of aquatic life at risk. They have caused the extinction of some fish species and have imperiled others by hindering their ability to spawn and by causing changes in water quality. And efforts to address these concerns are not foolproof. For example, fish hatcheries, which have been built to help replenish the dwindling wild fish supply, have problems with [in-breeding and disease](#).

Freshwater mussels are another example of aquatic life at risk. Mussels are natural cleaning machines for rivers, but need flowing water to reproduce. Dams harm mussel reproduction by diminishing the host fish that are needed



A flotilla on the Snake River in Washington State in 2015 draws hundreds of dam removal advocates.  
Photo source: Let Rivers Flow

to carry the mussels' embryos. According to the Virginia Department of Game and Inland Fisheries, over 70% of the U.S. mussel species are endangered due to pollution, dams and invasive species. Because of the long lifespan of many mussels (upwards of 40 years), the true impact of mussel species extinction has yet to be fully realized.

## WATER QUALITY

As for water quality, dams hinder the natural cleansing process of free-flowing rivers that carry sediment all the way to the ocean, building beaches and delta habitats. Instead, silt backs up, many times collecting pollutants, and can require expensive dredging to allow vessel passage. For instance, for a project on [Ohio's Mahoning River](#) the cost of removing polluted sediment (in this case totaling \$3.5 million) was the bulk of the entire dam removal expense.

## HUMAN RISK

Dams can be dangerous. News stories have reported paddlers who have tumbled to their

deaths over low head dams that weren't seen on their journey. South Carolina suffered the breach of dozens of dams this past fall due to historic flooding after a major storm. The number of dams considered unsafe and in need of repair is rising and the [State Association of Dam Safety Officials](#) estimates that there are tens of billions of dollars in needed repairs. In a recent report by NPR, "the American Society of Civil Engineers gave the state of America's dams a 'D,' in part because about 4,000 dams in the country are in need of repairs — and about half of those deficient dams could cost lives if they were to fail."

## THE COST

Hydropower dams provide our world with significant amounts of electricity ([20% globally and 9% in the U.S.](#)), which many argue is cleaner than fossil fuel. However, the expense of maintaining dams is increasing as many dams are aging and are in dire need of repair. In addition, the expense of silt management and fish hatcheries add heft to the cost of dams.



More importantly, the great majority of dams have long since outlived their purpose, and are sitting idle, becoming hazards and holding back wild, flowing rivers. According to the New York Times, despite the potential for dams to provide hydropower, worldwide the [“construction costs of large dams are too high to yield a positive return”](#).

## THE FUTURE

What can we as river advocates and citizens do? We can become informed. We can ask questions. We can spread the interest outside our circles by challenging the status-quo of dams and sharing information about the pros and cons of their existence. The good news is that there is a growing movement to effectively remove dams.

In 2015, [62 dams were removed in the United States](#) according to American Rivers. A couple of notable examples include the largest dam removal in California history, the 106 feet high [San Clemente Dam](#), which blocked the Carmel River and threatened the safety of 1,500 homes in the event of a large flood or earthquake. This dam removal freed over 25 miles of steelhead habitat, secured habitat for the threatened California Red-Legged Frogs and provided a path for sediment movement for downstream beaches.

In North Carolina, two old, unstable dams were removed from the lower [Big Hungry River](#). The dams were originally built over 100 years ago to provide hydropower, but have long since lost their purpose and became a safety hazard. The Big Hungry is an important and largest tributary to the Green River, and the dam removal will restore fish habitat and paddling opportunities in this popular recreational area.

The largest dam removal in U.S. history was on the Elwha River in Washington. The Elwha Dam and Glines Canyon Dam removals were completed in 2014. And now the river is showing signs of recovery and much faster than thought possible. According to American Rivers, “The salmon runs are strengthening the entire web of life, providing food for a host of wildlife including bear, cougar, bobcat, mink and otter.”

And with 15 years in the making and \$26 million worth of funding, a team of river advocates and business leader, John Turner, spearheaded the removal of the Eagle and Phenix dams on the lower Chattahoochee River in 2012. Removal of the antiquated dams has been transformative for the city of Columbus, Georgia, providing two and a half miles of whitewater activities that hadn’t previously existed. “We had done all of this research, but nobody had actually seen what the river was like in 150 years almost,” [Turner said](#). Mr. Turner will share this story, along with others who have led dam removals, at our upcoming workshop at River Rally 2016. Join us!

## LEARN MORE

- [News](#) by Let Rivers Flow
- [Dam Removal Resource Center](#) by American Rivers
- [DamNation](#) the film
- [“Sex, Dams and Dynamite”](#) at River Rally 2016 in Mobile, Alabama on Saturday, May 21.

“WILD RIVERS  
ARE EARTH’S  
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CHIPPING AWAY,  
AND EVENTUALLY  
ALWAYS WINNING.”

-Richard Bangs, River Gods

# RIVER RALLY 2016

MOBILE, ALABAMA | MAY 20-23

## WATER SECURITY & SUSTAINABILITY WORKSHOPS

### Building Blocks:

Getting Ample Water from Water Efficiency

How to Build a Rain Barrel Program

### Policy Updates and New Approaches:

Trends in Hydropower Policy and Development:

Challenges Coming to a River Near You

Net Blue – Water Neutral Community Growth

Source Water Protection: Solutions and Innovations for Clean Water

### Climate Change and Flooding:

Community-based Leadership in Resilience

Collaborative and Innovative Approaches to Flood Recovery

### Market-based Solutions:

Connecting Companies and NGOs through Flow Restoration

Water Transactions: Market-driven Solutions to Environmental Flows

### What Works – Effective Solutions from the Field:

Sex, Dams and Dynamite: What Works in Dam Removal

Restoring Flows in Georgia's Flint River

A Tale of Two Cities, Three Rivers, and a Bay: The Best and Worst of Water Management in the ACF Basin

And for the first time ever you can participate in our **Flow Intensive Track** on Saturday, May 21 beginning with “Restore the Flow” followed by a double session, “Keep it Flowing: Building Flow Policies That Work”. Advocates will hear from experts and then have time to work together to share and develop effective strategies to keep water in our rivers.

## OTHER HIGHLIGHTS

Join us for a special keynote presentation “**Biodiversity, the Southeast, and our Future**” from Professor Scot Duncan, Associate Professor at Birmingham-Southern College and the author of the book *Southern Wonder: Alabama's Surprising Biodiversity* on Saturday, May 21 at lunch.

And don't miss our screening of the **Wild and Scenic Film Festival** on Saturday night, May 21. Included in the line-up is “Flint”, a film by American Rivers that celebrates the unique beauty and character of Georgia's Flint River; and “Mother of all Rivers”, which documents the life and work of Honduran dam activist and environmental hero, Berta Cáceres.

## REGISTER

For more information and to register, please visit the River Rally website: [www.riverrally.org](http://www.riverrally.org)

## ABOUT RIVER RALLY

River Rally, hosted annually by River Network, is a national conference that focuses on education, inspiration and celebration within the river and watershed community. Unique in its focus on connecting peers, providing practical education, inspiring courage, and celebrating achievements, River Rally draws hundreds of people together every year from across the United States including NGO staff, academics, agency and foundation representatives, industry innovators, and concerned citizens.





## MISSION, VISION, AND FOCUS

River Network empowers and unites people and communities to protect and restore rivers and other waters that sustain all life. We envision a future of clean and ample water for people and nature, where local caretakers are well-equipped, effective and courageous champions for our rivers. Our three strategies for focused investment are strong champions, clean water, and ample water.

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