APALACHICOLA RIVER, FLOODPLAIN AND BAY SITUATION REPORT

I. Introduction

The Apalachicola River Ecosystem is recognized internationally by conservation organizations, the United Nations and the U.S. Congress as an extraordinary ecological system.[1] It is also in extraordinary peril: in 2016 the conservation group *American Rivers* designated the Apalachicola River as the nation's most endangered.[2] The ecosystem is suffering potentially irreversible damage because of the current institutional framework and unsustainable water-management practices in the Apalachicola-Chattahoochee-Flint (ACF) River System.[3] Climate change presents additional challenges to recovery and sustainability. Our goal is to break the political stalemate to alter those practices, for the betterment of the ecosystem, and for the people of the Apalachicola River basin who rely upon that system.

The 106-miles of the Apalachicola River lie entirely in the state of Florida. However, 85% of the river's watershed lies in the states of Georgia and Alabama, in the basins of the Chattahoochee River and the Flint River. In those basins, water that would otherwise flow into the Apalachicola River is consumed, stored, lost to evaporation, and wasted. The economies of the cities of northern Georgia, and the expanding irrigation-dependent agriculture of southern Georgia, operate at the expense of Florida and combine to diminish the flow in the Apalachicola to historically-low levels. Low flows substantially diminish biological productivity, which in turn substantially diminishes economic productivity. Communities in and around the city of Apalachicola suffer significant economic and social hardship. To date, there has been little that those who suffer can do about it.

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[1] The lower portion of the system was established as a *National Estuarine Research Reserve* in 1979. The United Nations designated the Bay and a substantial portion of the Apalachicola River as a *Man in the Biosphere Reserve* in 1983. More recently, *The Nature Conservancy* described the Apalachicola River as one of the six high-priority "*biodiversity hotspots*" in the nation. In 2004 the *Natural Resource Defense Council* included the Apalachicola River system in an area designation as a "*BioGem.*" This designation is shared with the Arctic National Wildlife Refuge, Yellowstone National Park and South America's Patagonia Region (https://www.nrdc.org/media/2004/040226). The ACF is one of 20 plus designated America's Great Waters program administered by the National Parks and Conservation Association and the National Wildlife Federation. Last, the National Wildlife Federation adopted a resolution in 1990 calling for a comprehensive solution to the basin's ecological problems and the need to provide ecologically sustainable flows.

[2] http://news.nationalgeographic.com/2016/04/160412-americas-most-endangered-rivers-list-conservation/

[3] http://apalachicolariverkeeper.org/threats/

II. Historical context

Alteration of the ACF watershed began in the 1860s. Over time, nine dams, for mills and low-capacity hydroelectric generation, were constructed. The 1870s brought the involvement of the US Army Corps of Engineers, which constructed "wing dams" on the Apalachicola River to deepen and stabilize the navigation channel.[4] The federal *Rivers and Harbors Act of 1946* gave the Corps the authority to manage water in the Chattahoochee River for three purposes: navigation, flood control, and hydroelectric generation. Nowhere in the Act is environmental sustainability mentioned, nor was the Corps given responsibility for the lower reaches of the Apalachicola River. From the 1950s through the 1970s, the Corps constructed five large multipurpose dams and reservoirs on the Chattahoochee River. On hot days, these reservoirs evaporate as much water as Atlanta uses.[5] In addition to the reservoir-caused depletion of water from the system, the Corps stores water in these reservoirs for drought mitigation in Georgia, further reducing the amount of water available downstream during the most critical periods. Flows to the Apalachicola River portion of the basin have been insufficient to maintain ecosystem services that support the ecology and natural-resource-based economy of the region.

The rapid development and growth of north Georgia, especially the city of Atlanta, greatly increased the consumptive demand for the water stored in the reservoirs on the Chattahoochee River, particularly Lake Lanier. Years of conflict and litigation ensued regarding the reservoirs, as Florida interests maintained that water supply was not a federally-authorized use per the Rivers and Harbors Act of 1946. In 2011, the Eleventh Circuit Court of Appeals ruled that water supply was implied by the Rivers and Harbors Act of 1946[6] and the Water Supply Act of 1958. From that point onward, the use of the water to meet drinking water needs in Georgia was legally authorized.

The population of North Georgia has grown from slightly over 1 million in the 1960s to over 6 million in the early 2000s. Meanwhile, development of irrigated agriculture in Georgia grew from 75,000 acres in 1970 to over 825,000 acres in 2014.[7] The expansion of irrigated agriculture was made possible by surface and groundwater withdrawals, which profoundly affected the Flint River system's hydrology – and its contributions to the Apalachicola. Although agricultural use is nominally regulated by the state of Georgia, regulation has been ineffective in limiting withdrawals for irrigation.

[4] *Annual Report of the Chief of Engineers*, United States Army, Volume 2, 1881

[5] Georgakakos, Aris. 2015. "Technical Support for the Development of a Sustainable Water Management Plan for the Apalachicola-Chattahoochee-Flint (ACF) River Basin." Georgia Water Resources Institute.

[6] *In re MDL-1824 Tri-State Water Rights Litigation*, 644 F.3d 1160 (11th Cir. 2011)

[7] Lancaster, Ralph (2017). Report of the Special Master, p. 33

III. ***Hydrology and productivity***

As a consequence of upstream structures and management practices, as well as dredging activity on the Apalachicola River, the biological productivity of the Apalachicola River ecosystem has been reduced. Ecological impacts due to reduced freshwater flow over the past 50 years are both significant and well-documented.[8] In the 1960s-80s, the Apalachicola River and Apalachicola Bay were demonstrated to be among the most productive estuaries in the northern hemisphere.[9,10] Other research pronounced the Apalachicola River and floodplain to be one of the most biologically diverse river systems in North America.[11]

The Apalachicola River's floodplain has the highest species diversity of reptiles (over 80 species) and amphibians (over 40 species) found north of Mexico. It also provides habitat for more than 280 species of birds, over 130 species of fish, over 52 species of mammals, and over 1,300 species of plants – including over 70 different species of trees. Among this biodiversity are more than 30 federally threatened or endangered animal species. Listed, rare, threatened, endangered and otherwise imperiled species in the floodplain include Gulf sturgeon, striped bass, spotted bullhead, five species of mussels, Apalachicola dusky salamander, eastern indigo snake, Florida manatee, bald eagle, swallow-tailed kite, Mississippi kite, Barbour's map turtle, fox squirrel, and Florida black bear. Nearly the entire river floodplain is identified by the Florida Natural Areas Inventory as priority rare species habitat.[12]

Crucial to the biological productivity of the Apalachicola ecosystem are the floodplain swamps of the middle and lower sections of the river. Under un-managed conditions, water flows into the swamps during spring, enabling plant growth, and back out during the summer and fall, carrying nutrients to the estuary and far beyond.[13] The *Rivers and Harbors Act of 1946* authorized the Corps to maintain a navigation channel – 100 feet wide by 9 feet deep – from Columbus, Georgia to Apalachicola, a distance of about 200 river miles.[14] Dredged sand has accumulated on the riverbanks, blocking the mouths of creeks and sloughs; water is often

[8] See, for example Darst, Melanie, and Helen Light (2008). "Drier Forest Composition Associated with Hydrologic Change in the Apalachicola River Floodplain, Florida," US Geological Survey Scientific Investigations Report 2008-5062; FFWCC (Florida Fish and Wildlife Conservation Commission), 2011, The Impact of Reduced Flows on the Apalachicola River and Bay Ecosystems, Attachment to February 22, 2011 Letter to Mr. Donald Imm (USFWS) and Major General Semonite (Corps) from Harold G. Vielhauer, FFWC, Regarding ACF Master Water Control Manual Update, Fish and Wildlife Coordination Act comments. 117pp.; FDEP (Florida Department of Environmental Protection). 2013. Addendum to February 2011 Fish and Wildlife Coordination Act (FWCA) report. Attachment to January 14, 2013 letter from Thomas Beason (DEP) to Tetra Tech (USACE contractor) RE: Comments on ACF Master Water Control Manual. 26 p. plus digital appendix with species lists (Appendix III).

[9] Livingston, Robert (1984). "The Ecology of the Apalachicola Bay System: An Estuarine Profile." US Fish & Wildlife Service Publication FWS/OBS-82/05

[10] Livingston, Robert (2008). "Importance of River Flow to the Apalachicola River-Bay System." Report to the Florida Department of Environmental Protection.

[11] White, P.S., S.P. Wilds, and G.A. Thunhorst. 1998. "Southeast." Pages 255–314 In M.J. Mac, P.A. Opler, C.E. Puckett Haecker, and P.D. Doran (Eds.). *Status and Trends of the Nation's Biological Resources.* US Department of the Interior, US Geological Survey

[12] Apalachicola River Ecosystem Florida Forever Proposal. 2017. Hilsenbeck, Richard et. Al, The Nature Conservancy, Florida

[13] Coleman, Felicia. 2008. "Linking Coastal Waters to Fish and Fisheries."

[14] http://myfwc.com/viewing/recreation/wmas/lead/apalachicola-river/history/

unable to inundate the swamps, impacting productivity, and disconnecting the food source of the estuary.

The productivity of the estuary and nearby waters was evident in the port of Apalachicola's importance as a source of seafood products. Until the recent low-flow-induced declines, Apalachicola Bay produced 90% of Florida's oysters and over 10% of the nation's oysters. Oysters reach maturity faster here than anywhere else, allowing harvests of up to 1200 bushels/acre/year of oysters and 2,000,000 pounds of meat annually.[15] While oysters are the iconic product (and primary source of employment) for the Apalachicola Bay area, other seafood products including shrimp, blue crab and finfish are also significant, and often worth more than the oysters. As late as 1984, Apalachicola ranked as the 33rd largest seafood port in the United States (by dollar value); and, as recently as 1993, seafood landings in Apalachicola topped 12 million pounds.[16]

Perhaps the largest economic impact attributable to the Apalachicola System is its value to the Eastern Gulf of Mexico fishery. The Green River Effect is a nutrient plume that extends over 250 miles from the River's mouth along the west coast of Florida.[17] This plume nourishes and supports primary and secondary activity of the Eastern Gulf of Mexico offshore fishery.[18] The recreational and commercial fishing industries contribute over $8 billion to the West Florida economy and support almost 80,000 jobs.[19]

The regional droughts of 2007-2008 and 2011-2012, exacerbated by increased water consumption in Georgia, changed the river's ecological and economic impact in a matter of years. Oysters depend upon freshwater flows to maintain optimal salinity and nutrition in the Bay. In 2012, with insufficient flow in the River, oyster harvest in Apalachicola Bay fell to less than 25 bushels/acre/year;[20] the fishery collapsed when ecological productivity crashed. A Federal Commercial Fishing Disaster was declared in August of 2013.[21] Oyster, shrimp, blue crab and finfish harvest fell to the lowest point since the mid-1960s.[22] Shrimp landings dropped from 1,720,000 pounds in 2005 to 154,000 pounds in 2012. Oyster landing in 2012 were 341,000 pounds and have not recovered over five years later.[20] By 2015, Apalachicola's rank had fallen to 89th among U.S. ports for seafood landings[23] (in dollar value) and production had fallen to 3.1 million pounds. Oyster-harvester and seafood industry jobs plummeted. Social upheaval in the communities around the bay has displaced families and driven poverty to historic highs.

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[15] Edmiston, H. Lee (2008). *A River Meets the Bay*: *A Characterization of the Apalachicola River and Bay System.* Apalachicola National Estuarine Research Reserve

[16] NOAA, "Total Commercial Fishery Landings At Major U. S. Ports Summarized By Year And Ranked By Dollar Value," https://www.st.nmfs.noaa.gov/commercial-fisheries/commercial-landings/other-specialized-programs/total-commercial-fishery-landings-at-major-u-s-ports-summarized-by-year-and-ranked-by-dollar-value/index

[17] Coleman, Felicia. 2008. "Linking Coastal Waters to Fish and Fisheries."

[18] Edmiston, H. Lee. 2008. *A River Meets the Bay: A Characterization of the Apalachicola River and Bay System*. Apalachicola National Estuarine Research Reserve.

[19] Wakeman, Douglas J. Personal communication

[20] Production less than 155 bushels/acre/year is considered unsustainable, according to Florida DACS

[21] http://www.noaanews.noaa.gov/stories2013/20130812_oysterdisasterdeclaration.html

[22] Detailed information about the collapse of the oyster fishery may be found in *"Apalachicola Bay Oyster Situation Report*". University of Florida Oyster Recovery Task Force, 2013

[23] NOAA, *op. cit.*

The plight of the floodplain is similar to that of the Bay. The U.S. Geological Service (USGS) documented a drier floodplain due to the reduced flows, and estimated that there are about 4 million fewer trees in the floodplain since 1976, over 3 million of which are swamp species.[24] Tupelo trees have been among the hardest hit species: almost 2 million tupelo trees have been lost,[25] including water tupelo, the most prevalent tree in the floodplain, and Ogeechee tupelo, the source of tupelo honey. The USGS reported a 44% decline in the number of Ogeechee tupelo trees from 1976-2004.[26] The tupelo honey industry reports the lowest production in three generations, citing the decline in the Ogeechee tupelo forest as a probable cause.[27]

Importantly, these recognized economic losses take no notice of the social disruption and environmental injustice to communities that rely on the river, swamps, bay, and nearshore waters for their livelihoods. In contrast to the lost productivity and social suffering in Apalachicola and the six riparian counties in Florida, upstream water users in Georgia are thriving. In 2012, farm output in southwest Georgia reached its highest yield ever.[28]

IV. ***Law & Politics***

While litigation about dredging, snagging and sediment management has been successful, the history of failed negotiation and litigation over *water management* in the ACF system culminated in action in 2013 before the Supreme Court of the United States. In the case known as *Florida v. Georgia,* Florida sought (a) changes to Georgia's right and ability to use and store water, and (b) changes in the way the Corps manages the lakes and dams in Georgia.[29] The Supreme Court appointed an arbitrator known as a *Special Master* to examine evidence and recommend a solution; that recommendation has been made, and awaits final action by the Court (expected in autumn of 2017). The *Special Master* decided in favor of Georgia and the Corps, holding that Florida failed both substantively and procedurally to carry its burden of proof. If ratified by the Court as expected, no significant improvement in basin management and environmental outcomes will occur.

Florida interests have lost in federal courts before. As noted above, in 2011 the Eleventh Circuit rejected Florida's claim that use of the reservoirs in Georgia for water supply was not a legitimate use. That decision had a chilling effect on a collaborative effort known as the *Apalachicola-Chattahoochee-Flint Stakeholders* (*ACFS*) that began in 2008. Still, that process provided insights and appreciation among the stakeholders for the water needs of the different regions of the watershed until 2013 when *Florida v. Georgia* was filed. That litigation destroyed the transparency required for the ACFS to proceed to solutions. Ultimately, despite the constraints imposed by litigation, the group released the *ACF Basin Sustainable Water*

[24] Darst and Light (2006), *op. cit.*
[25] Darst and Light (2006), *op. cit.*
[26] Darst and Light (2006), *op. cit.*
[27] Lanier, Donald. Personal communication. Lanier is a third-generation tupelo honey producer on the Apalachicola River.
[28] University of Georgia Stripling Irrigation Research Park Tour
[29] Original Action 142, Supreme Court of the United States

Management Plan in May of 2015.[30] The plan recommended specific actions to provide improved water supply and instream flow conditions throughout the basin.

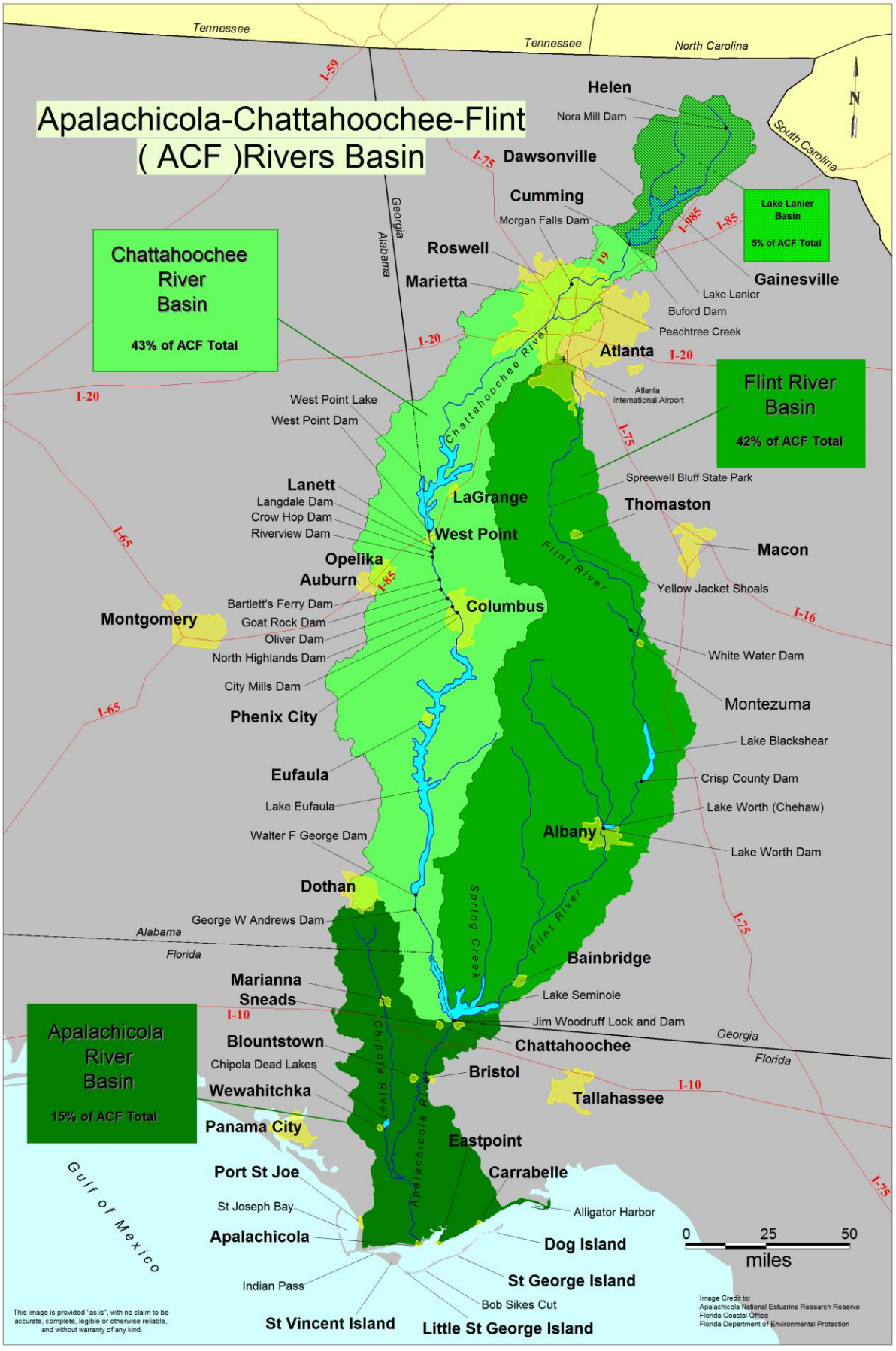
The Corps is revising the *ACF Master Water Control Manual*, which had not been updated since 1958.[31] The *Manual* guides the Corps' management of the ACF basin. Despite clearly demonstrated need for more flow (and better timing of flows) in the Apalachicola River, the revised *Manual* further reduces downstream flows. Comments submitted during the revision process state that the update is based on flawed assumptions, lacks accurate and up-to-date data, and gives insufficient consideration to the freshwater needs of the Apalachicola. The Environmental Impact Statement and analysis by the Corps on its updated Water Control Manual did not adequately assess the impacts of the lower Apalachicola River, floodplain, and bay as required by the National Environmental Policy Act and the Council on Environmental Quality guidelines. Although the environmental impact statement accompanying the *Manual* has been challenged by conservation groups including the *National Wildlife Federation*, the *Florida Wildlife Federation*, *Apalachicola Riverkeeper*, and by the State of Alabama, real change through legal challenge remains a difficult path.

V. Conclusion

The outlook for the Apalachicola River and Bay could not be bleaker: the ecosystem suffers greatly, perhaps irreparably, from the negative impacts of insufficient and poorly-timed flows of water. The insufficiency is a direct consequence of management practices in Georgia on the Chattahoochee River and throughout the Flint River basin. Congressional action has been stymied by the alliance of economic interests in Georgia and the Corps has demonstrated little interest in moving toward environmental and economic sustainability for portions of the system in Florida. Years-long negotiation has failed, as Georgia interests appear to hold all the important cards. Legal action in the federal courts, including the Supreme Court, has failed in the past and is expected to fail again.

Supporters of the Apalachicola, including the Florida Conservation Coalition, 1000 Friends of Florida, the Florida Wildlife Federation, Tall Timbers Research Reserve, Defenders of Wildlife, the Riparian Counties Stakeholders Coalition, and the Apalachicola Riverkeeper, are looking for means to bring the issue to a broader audience, raise awareness, and educate decision-makers in the public and private sectors to save this unique and valuable ecosystem, and enhance the well-being of the human communities that depend on it.

[30] http://acfstakeholders.org/swmp/
[31] http://www.sam.usace.army.mil/Missions/Planning-Environmental/ACF-Master-Water-Control-Manual-Update/


Apalachicola-Chattahoochee-Flint
(ACF)Rivers Basin
Tennessee
Tennessee
North Carolina
South Carolina
N
Helen
Nora Mill Dam
Dawsonville
Cumming
Morgan Falls Dam
Roswell
Marietta
Gainesville
Lake Lanier
Buford Dam
Peachtree Creek
Atlanta
Atlanta International Airport
Lake Lanier Basin
5% of ACF Total
Chattahoochee River Basin
43% of ACF Total
Flint River Basin
42% of ACF Total
Georgia
Alabama
Chattahoochee River
Flint River
West Point Lake
West Point Dam
Lanett
Langdale Dam
Crow Hop Dam
Riverview Dam
LaGrange
West Point
Opelika
Auburn
Bartlett's Ferry Dam
Goat Rock Dam
Oliver Dam
North Highlands Dam
City Mills Dam
Phenix City
Columbus
Montgomery
Spreewell Bluff State Park
Thomaston
Macon
Yellow Jacket Shoals
White Water Dam
Montezuma
Lake Blackshear
Crisp County Dam
Lake Worth (Chehaw)
Albany
Lake Worth Dam
Eufaula
Lake Eufaula
Walter F George Dam
Dothan
George W Andrews Dam
Alabama
Florida
Spring Creek
Bainbridge
Lake Seminole
Jim Woodruff Lock and Dam
Chattahoochee
Georgia
Florida
Bristol
Tallahassee
Marianna
Sneads
Blountstown
Chipola Dead Lakes
Wewahitchka
Panama City
Chipola River
Apalachicola River
Apalachicola River Basin
15% of ACF Total
Eastpoint
Carrabelle
Port St Joe
St Joseph Bay
Apalachicola
Alligator Harbor
Dog Island
St George Island
Bob Sikes Cut
Little St George Island
St Vincent Island
Indian Pass
Gulf of Mexico
I-59
I-75
I-985
I-85
I-20
I-65
I-16
I-10
0
25
50
miles
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