No. 142, Original

In the
Supreme Court of the United States

STATE OF FLORIDA,

Plaintiff,

v.

STATE OF GEORGIA,

Defendant.

STATE OF GEORGIA'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

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ABBREVIATED TERMS

2006 Plan	2006 Flint River Basin Regional Water Development and Conservation Plan
ACF	Apalachicola-Chattahoochee-Flint
cfs	cubic feet per second
Corps	United States Army Corps of Engineers
EPD	Environmental Protection Division
FDACS	Florida Department of Agriculture and Consumer Services
GRP	Gross Regional Product
HEC	(The Corps') Hydrologic Engineering Center
M&I	municipal and industrial
Metro Water District	Metropolitan North Georgia Water Planning District
ppt	parts per thousand
RIOP	(The Corps') Revised Interim Operations Plan
state-line flow	water flowing across the state line into Florida
UF	University of Florida
UFA	Upper Floridan Aquifer
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

I. Florida Did Not Prove Harm Or Causation By Clear And Convincing Evidence.

1. Florida did not present evidence of injuries during non-drought years.

2. Florida previously provided sworn testimony in federal court that "in years of at least average annual flows, the Apalachicola River's flows are more than adequate to ... sustain the significant biological processes on which the health of the River and Apalachicola Bay relies, and upstream consumption is not significant enough to interfere with those processes." GX-1276, ¶ 31.

3. Florida did not offer any proof as to whether populations of mussels, Gulf sturgeon, or any fish species are increasing, decreasing, or have changed over time in the ACF Basin. Tr. 389:17-390:3, 390:14-18, 392:9-17, 395:2-10, 396:11-14 (Allan). No Florida witness presented evidence of any changes to the populations of birds, reptiles, amphibians, or mammals in the ACF Basin. *Id.* at 547:1-548:1.

4. USFWS estimates that the population of the fat threeridge mussel in the Apalachicola and Chipola Rivers is approximately 18.65 million, is "stable to improving," and, in suitable habitat, is "common to abundant." JX-168, at 113, 124.

5. USFWS describes the Gulf sturgeon population in the Apalachicola River and Bay as "roughly stable or slightly increasing." JX-168, at 63.

6. The construction of Woodruff Dam lowered water levels in the upper Apalachicola River by up to five feet. Kondolf Direct, ¶ 17; Tr. 123:2-20 (Hoehn); Tr. 554:13-18 (Allan).

7. Dredging by the Corps has deepened the channel in the middle section of the

Apalachicola River and "lower[ed] water levels for the same flows from upstream, such that overflows onto the floodplain (and through sloughs) occur less frequently and for shorter periods of time." GX-248, at 13-18, 43; GX-72; GX-88, at 4, 13, 28-29, 32 (Figs. 2, 15-16, 18; Table 4); FX-796, at App. B. (Fig. D).

8. When dredging, the Corps removed sand from the bottom of the Apalachicola River and pumped it onto the floodplain forest, which "killed everything that lived under it." Tr. 2585:5-7 (Kondolf); GX-248, at 33-34. That sand continues to return to the River, where it clogs tributaries and sloughs and cuts them off from the main stem, resulting in less floodplain inundation and more frequent dried-out sloughs. Tr. 2574:11-24, 2588:13-18 (Kondolf).

9. Swift Slough formerly connected to the Apalachicola River at less than 4,500 cfs but, because of channel changes, later connected only at 5,600 cfs. GX-123, at 63; GX-1272, at 9 (Table 1).

10. USGS, in cooperation with Florida agencies, found that the Corps' channel deepening changed the types of trees found in the floodplain forest. Menzie Direct, ¶¶ 173, 176, 186; *id.* at p. 103 (Demo. 51); GX-88, at 1, 48-49; GX-1335, at 10; Tr. 135:20-24, 141:11-22 (Hoehn); Tr. 2729:8-2731:13 (Kondolf).

11. Harvesting pressures contributed to the decline in oyster populations in the Bay. JX-77, at FL-ACF-3386187, FL-ACF-3386197; FX-412, at NOAA-3818.

12. In 2010 and 2011, Florida removed oyster-harvesting restrictions in Apalachicola Bay out of concern that the Deepwater Horizon oil spill might cause the closure of the oyster fishery. Tr. 767:2-11 (Berrigan). More oysters were harvested in the

Bay in 2011 and 2012 than in any of the prior 25 years. GX-1248; FX-839.

13. FDACS data comparing oyster densities pre-collapse (May 2008-July 2012) with those during and after the collapse (October 2012-August 2014) shows that oyster density dropped by 78% on heavily fished oyster bars, but rose by 3-13% on bars that were not heavily fished. Lipcius Direct, ¶¶ 39, 41-44; *id.* at pp. 12-13 (Demos. 3-4).

14. At the request of Florida's Governor, UF Professors Pine and Havens studied the cause of the 2012 oyster collapse in Apalachicola Bay and were unable to reach conclusions about the connection between oyster-population dynamics, river flow, and salinity. GX-568; GX-1349, at 128:19-24; GX-1355, at 222:13-18, 223:19-225:5.

15. After additional research, Dr. Pine published a peer-reviewed journal article finding no correlation between freshwater inflows from the Apalachicola River and oyster mortality or recruitment. GX-789, at 6; GX-1355, at 288:3-16, 289:15-20, 290:6-291:13.

16. Pine rejected Florida's claim that "reduced freshwater inflows … caused [the] collapse," GX-1355, at 307:15-308:6, and testified that there is no clear or convincing evidence connecting Apalachicola flows to oyster mortality, *id.* at 291:14-292:14.

17. Dr. Kimbro's snail experiments found that reductions in salinity between 5-10 ppt did not significantly reduce the number of oysters killed by snails, and only reductions by 20 ppt resulted in "significant" differences. FX-797, at App. II p. 38.

18. Dr. Greenblatt's model predicted how salinity in the Apalachicola Bay might change under various scenarios, and none showed changes even close to 20 ppt. For 2012, the year of the oyster collapse, her model showed that cutting 50% of Georgia's agricultural water use (in conjunction with other cuts) would not have changed salinity by more than 1

ppt for the vast majority of the Bay. Greenblatt Direct, at p. 37 (Fig. 3-16); *id.* at pp. 32-36 (Figs. 3-11, 3-12, 3-13, 3-14, 3-15) (showing changes of less than 1 ppt for most of the Bay for 2007-2011). Even her model runs purporting to show the impact of eliminating all of Georgia's water consumption rarely show changes of more than 3 ppt for most of the Bay. *Id.* at pp. 25-30 (Figs. 3-3, 3-4, 3-5, 3-6, 3-7, 3-8).

II. Georgia's Use Of Flint River Water Is Equitable.

19. Georgia's total consumptive use in the ACF Basin (reflecting streamflow depletions from both the Flint and Chattahoochee Rivers) is a small fraction of total streamflow in the ACF Basin. Bedient Direct, ¶¶ 94-95. In non-drought years (*i.e.*, wet or normal years), Georgia consumes an annual average of only 540 cfs, or 2.4% of state-line flow (22,812 cfs).[1] In dry years, Georgia consumes an annual average of 757 cfs, or 6.1% of state-line flow (12,424 cfs). Florida thus receives more than 93% of total annual ACF Basin streamflow in all years. JX-128; GX-939; Zeng Direct, at p. 6 (Demo. 1).

20. In non-drought years, Georgia consumes an annual average of 282 cfs from the Flint River, or 1.2% of state-line flow (22,812 cfs). In dry years, Georgia consumes an annual average of 425 cfs from the Flint, or 3.4% of state-line flow (12,424 cfs). JX-128; GX-939; Bedient Direct, at p. 45 (Demo. 27).[2]

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[1] In this briefing, Georgia adheres to the Corps' guidance in classifying years as wet, normal, or dry. *See* JX-124, at 4-25 (Table 4.1-9).

[2] The "Flint" numbers technically reflect Georgia's total agricultural use in the ACF Basin, which is 94% from the Flint and 6% from the Chattahoochee. JX-129. Thus, actual Flint use is slightly lower than the numbers reported here.

21. In May-September of non-drought years, Georgia consumes a seasonal average of 425 cfs from the Flint, or 2.4% of state-line flow (17,913 cfs). In May-September of dry years, Georgia consumes a seasonal average of 804 cfs from the Flint, or 10.2% of state-line flow (7,892 cfs). JX-128; GX-960.

22. Georgia's average monthly consumptive use from the Flint River (in cfs and as a percentage of state-line flow) from 1970-2013 is shown below. JX-128; GX-960.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
All Years	22 (0.08%)	25 (0.07%)	73 (0.19%)	147 (0.47%)	424 (2.18%)	501 (3.22%)	618 (3.69%)	613 (4.26%)	397 (3.33%)	176 (1.53%)	129 (0.95%)	112 (0.53%)
Dry Years	22 (0.11%)	29 (0.12%)	124 (0.49%)	240 (1.39%)	667 (6.47%)	815 (9.82%)	956 (13.05%)	926 (13.94%)	654 (9.53%)	281 (4.28%)	209 (2.66%)	180 (1.95%)
Non-Drought Years	22 (0.08%)	24 (0.07%)	58 (0.14%)	120 (0.34%)	353 (1.59%)	408 (2.31%)	518 (2.66%)	521 (3.13%)	321 (2.39%)	145 (1.12%)	105 (0.69%)	91 (0.37%)

23. Georgia's average monthly consumptive use in the ACF Basin (from the Chattahoochee and Flint Rivers) has rarely exceeded 1,400 cfs and has never exceeded 1,884 cfs in any month. Georgia's highest-ever monthly consumptive use from the Flint was 1,407 cfs during extreme drought in July 2012. GX-940; GX-960; Zeng Direct, at pp. 7, 23 (Demos. 3, 9).

24. Georgia's consumptive-use calculations are accurate and based on a robust and reliable methodology. Georgia maintains a comprehensive database tracking Georgia's M&I and agricultural consumptive use in the ACF Basin. Georgia's calculations are based in part on field measurements collected over decades by state agencies, universities, contractors, and water-planning districts. Experts in Georgia EPD's Hydrology Unit calculate Georgia's water use in the ordinary course. Georgia's water-use numbers have been reviewed and accepted by federal agencies, including the Corps,

USFWS, and USGS. Zeng Direct, ¶¶ 15-20, 24-29, 44-62; Tr. 3312:2-3313:13 (Zeng); Tr. 3041:24-3042:22 (Turner); JX-72, at 123 (Table 3.2.1A); JX-124, at 4-25 (Table 4.1-8); GX-267; Corps, *Final EIS*, at App. O pp. 28-50, https://bit.ly/2VItTqF.

25. Florida uses a flawed and unreliable method in purporting to calculate Georgia's consumptive use, and it greatly exaggerates Georgia's consumptive use. That method uses hydrologic models that attempt to reverse engineer Georgia's streamflow depletions, is susceptible to substantial error and bias, and inflates Florida's estimates of Georgia's water use by up to thousands of cfs. Bedient Direct, ¶¶ 215-17, 225-44.

26. Dr. Hornberger, Florida's expert hydrologist, admitted that his model contains inherent error of 2,000-6,000 cfs. Tr. 2009:4-2013:9; Bedient Direct, ¶¶ 226-27.

27. Hornberger simply adopted the consumptive-use estimates made by a separate Florida expert who did not testify at trial. Hornberger did not independently calculate Georgia's consumptive use from the data underlying the other expert's calculations. Tr. 2013:25-2015:14.

28. Dr. Lettenmaier, another Florida expert, admitted his modeling contains error of up to 10,000 cfs. Tr. 2402:23-2403:15; Bedient Direct, ¶¶ 237, 240.

29. The degree of error and bias in Hornberger's and Lettenmaier's models means that they cannot reliably estimate Georgia's water use. Bedient Direct, ¶¶ 217, 229.

30. Georgia's water use is reasonable and disproportionately small in light of Georgia's share of the population, economic output, and land area in the ACF Basin. Stavins Direct, ¶ 33; *id.* at p. 17 (Demo. 7).

31. In the ACF Basin, Georgia accounts for more than 92% of population, 96%

of employment, Mayer Direct, ¶¶ 27-28, and 99% of economic activity, Stavins Direct, ¶ 33. Georgia produces 129 times the GRP—$283 billion each year—and makes up more than 5 times the land area of Florida in the ACF Basin. *Id.* at pp. 16, 18 (Demos. 7, 8).

32. ACF waters provide the principal M&I water supply for metro-Atlanta—the ninth-largest metropolitan area in the country. Kirkpatrick Direct, ¶ 11; Tr. 3447:12-3448:4 (Kirkpatrick). Approximately 5.1 million Georgians rely on the ACF Basin for their domestic water supply. Kirkpatrick Direct, ¶ 9.

33. ACF waters provide an essential input to Georgia's agricultural industry, which had total revenues of $4.7 billion in 2013. Stavins Direct, ¶¶ 4, 31. Georgia industries that use agricultural commodities as inputs to production contribute an additional $687 million in GRP each year. *Id.* at ¶ 93.

34. In the ACF Basin, Georgia is home to several other water-dependent manufacturing and green industries, which contribute approximately $31 billion in economic output and employ approximately 50,000 Georgians. Stavins Direct, at p. 7 (Demo. 1); *id.* at ¶¶ 13-16; Tr. 4507:21-4508:20 (Stavins).

III. Florida Greatly Overstates The Extent To Which A Cap On Georgia's Water Use Would Increase Streamflow In The Flint River.

35. Florida's economist, Dr. Sunding, significantly overstates the extent to which flows in the Flint River would increase if the Court ordered Georgia to implement his proposed "conservation measures." Stavins Direct, ¶¶ 4, 140.

36. In many cases, Sunding's streamflow-increase estimates exceed Georgia's total consumptive use in the ACF Basin, and in the Flint Basin specifically. For example,

Sunding's "2,000-cfs remedy scenario" is physically impossible because Georgia's maximum monthly consumptive use in the ACF Basin has never reached 2,000 cfs. Tr. 3310:13-19 (Zeng). Sunding's estimates also exceed the streamflow savings that Florida's groundwater hydrologist, Dr. Langseth, estimated could be generated by eliminating all agricultural use from hydrologically connected sources. Panday Direct, ¶¶ 107-08.

37. Sunding inflated his streamflow-increase estimates by overstating irrigated acreage in Georgia by more than 35%. The appropriate acreage calculation for 2011 is 582,516 acres, Zeng Direct, at p. 18 (Demo. 7), but Sunding based his streamflow-increase estimates on 793,613 total irrigated acres in 2011, Sunding Direct, at p. 15 (Table 1). Zeng's irrigated-acreage estimate is conservative and represents an upper-bound estimate of irrigated acreage. Zeng Direct, ¶ 50; Masters Direct, ¶¶ 29-30.

38. Sunding's estimates are further inflated because he erroneously included acres irrigated by aquifers deeper than the UFA, Tr. 3308:15-3309:5 (Zeng); Sunding Dep. Tr. 272:6-14, even though the streamflow impact of pumping from those deeper aquifers is negligible, Panday Direct, ¶¶ 73-81; *id.* at p. 46 (Demo. 28).

39. Sunding's estimates are also overstated because the correct groundwater-impact factor for pumping in the ACF Basin is 0.4, not 0.6. Panday Direct, ¶¶ 86-88; Langseth Dep. Tr. 356:14-19. The 0.4 groundwater-impact factor is from the USGS's Jones & Torak Model (2006), is based on accurate data, and is what the U.S. government uses when modeling ACF Basin streamflow. Panday Direct, ¶¶ 36, 88.

40. Sunding also erred in converting annual average streamflow data to monthly streamflow estimates by using an incorrect 2.28 "monthly conversion factor." Sunding

Direct, ¶ 48. That conversion factor is overstated. Panday Direct, ¶¶ 93-97.

41. Imposing a 30% cap on Georgia's average peak monthly use on the Flint River during dry years (956 cfs in July, GX-960) would result in only 287 cfs in average additional flow. Cutting Georgia's highest peak consumptive use ever recorded (1,407 cfs in July 2012, *id.*; GX-940) by 30% would yield only 422 cfs in additional Flint River flow.

42. There is a time lag of many months between when groundwater pumping is stopped and the resulting increase in streamflow is realized. Panday Direct, ¶¶ 68-71.

43. No evidence in the record supports Sunding's claim that reduced farm-pond evaporation will yield an additional 182-279 cfs in streamflow because it is based entirely on analysis by Dr. Flewelling, a Florida expert who did not testify at trial and whose testimony was not admitted into evidence. Sunding Direct, ¶ 70.

44. Sunding significantly overstates the streamflow increases that would result from his proposed M&I-conservation measures. Mayer Direct, ¶¶ 95, 98-104, 110-127.

IV. A Cap On Georgia Would Not Meaningfully Increase Flows Into Florida.

45. A cap on Georgia's consumptive use would not meaningfully increase state-line flows at the times of year, or in the amounts, necessary to significantly ameliorate Florida's alleged harms. Even if inflows to Lake Seminole from the Flint were to increase by 2,000 cfs during drought operations or extreme low flows, Florida would receive little-to-no additional state-line flows because of the Corps' reservoir operations in the ACF Basin. U.S. Post-Trial Br. 17-18; Bedient Direct, ¶¶ 37, 43-47, 145-47; Tr. 3340:24-3343:19 (Zeng); Tr. 1982:4-1985:10 (Hornberger).

46. During drought operations or extreme low flows, the Corps' releases from

Woodruff Dam would remain virtually the same, even with a significant cap on Georgia's water use. Bedient Direct, ¶¶ 60-61, 78-87; U.S. Post-Trial Br. 17-18; GX-986; GX-911.

47. During drought operations and extreme low flows, the Corps maintains flows of roughly 5,000 cfs to Florida by offsetting increased inflows to Lake Seminole from the Flint by releasing less water from upstream reservoirs on the Chattahoochee. Bedient Direct, ¶¶ 45-47, 87; Tr. 3342:7-3343:19 (Zeng); Tr. 2551:21-2553:7 (Shanahan).

48. HEC-ResSim, the Corps' official reservoir-simulation and water-management model for the ACF Basin, is an accurate and reliable model for evaluating the impact of potential consumption caps on state-line flows. Bedient Direct, ¶¶ 62-72; Tr. 4000:12-4002:5 (Bedient); JX-124, at 4-3; *id.* at ES-14 n.2.

49. ResSim modeling by both parties shows that drastic reductions in Georgia's consumptive use from the Flint River—including cuts of up to 50%—would not meaningfully increase flows in Florida, especially during the summer months of dry years. Bedient Direct, ¶¶ 61, 78-82, 177-80; Tr. 1933:20-1935:23 (Hornberger).

50. The table below shows the state-line flow increases in cfs (and as a percent of state-line flow) for various consumption caps under various hydrologic conditions. GX-986; GX-866 (model output files "SeparateReduction.rar," "Uniform Reduction.rar," and "Baseline2011,1992,ScenarioB.rar").

	30% Flint	**30% Total**	**~50% Total**
All Dry Years Since 1975 (May-Sept.)	218 (2.9%)	185 (2.5%)	342 (4.6%)
2007 (May-Sept.)	0 (0.0%)	37 (0.7%)	37 (0.7%)
2011 (May-Sept.)	107 (1.7%)	110 (1.8%)	153 (2.5%)

51. When the Corps is in drought operations or basin inflow is below 5,000 cfs, severe cutbacks on Georgia's total consumptive use would provide no meaningful increase in state-line flows. For example, in a year matching 2007 drought conditions, a 30% cap would increase state-line flows by 0 cfs in June-September, and by an average of 183 cfs (2.6%) in May. Instead, Florida would receive flows of roughly 5,000 cfs. Under the same conditions, a cap of nearly 50% would also generate 0 cfs in extra state-line flows in June-September, and just 183 cfs (2.6%) in May. GX-986; Bedient Direct, at p. 38 (Demo. 20).

52. Even a hypothetical 1,000-cfs increase in Flint flows, which cannot realistically be achieved from a cap on Georgia, would increase state-line flows by 0 cfs in June-August in a year matching 2007 hydrologic conditions, 183 cfs (2.6%) in May, and only 43 cfs (0.9%) in September. GX-911; Bedient Direct, at p. 41 (Demo. 24).

53. In a year matching 2011 drought conditions, a 30% cap on Georgia's total consumptive use would produce 0 cfs in extra state-line flows in August-November, and an average of only 182 cfs (2.6%) in May-July. A nearly 50% cap would increase state-line flows by 0 cfs in September-November and only 189 cfs (2.9%) in May-August. GX-986; Bedient Direct, at p. 38 (Demo. 21).

54. A 1,000-cfs increase in Flint flows, which cannot realistically be achieved from a cap, would increase state-line flows by 177 cfs (2.9%) in May-September in a year matching 2011 conditions. GX-911; Bedient Direct, at p. 41 (Demo. 24).

55. There is no evidence that Florida would receive meaningful benefits from "pass-through" flows during non-drought operations in the summer months of dry years.

56. Pass-through operations (*i.e.*, when the Corps' releases from Woodruff Dam

match basin inflow) are infrequent and unpredictable during actual droughts. In 2012, pass-through operations occurred 0% of the time during the summer and fall months, when streamflow was at its lowest. Under the new Master Manual, which governs the Corps' operations today, even a significant cap on Georgia would not meaningfully increase pass-through flows. A 30% Flint cap would provide 0 cfs in pass-through flows in May-September of years matching the conditions of 2000, 2002, 2007, and 2008. A 30% Flint cap would provide 20 total pass-through days in May-September in a year matching 2011 conditions, for an average flow increase of only 350 cfs (2.9%) over those 20 days. In a year matching 2006 conditions, a 30% Flint cap would provide 31 total pass-through days in May-September, for an average flow increase of 28 cfs (0.19%) over those 31 days. Bedient Direct, ¶¶ 39, 57; GX-866 (model output file "SeparateReduction.rar").

57. Florida offered no evidence at trial to refute any of Georgia's ResSim modeling of how a cap could affect pass-through state-line flows.

58. A severe cap on Georgia's consumptive use would not meaningfully shorten the Corps' drought operations. Bedient Direct, ¶¶ 48-57, 60-65, 78-87; GX-866, at 69.

59. Georgia's ResSim modeling accurately predicts how long the Corps could avoid drought operations under different basin-inflow scenarios. Bedient Direct, ¶¶ 62-87.

60. A 30% cap on Georgia's consumptive use from the Flint River would not have shortened drought operations by a single day during any dry or drought month in the entire 37-year hydrologic record. The period of drought operations would have been the exact same with or without a cap on Georgia for all dry years: 1981, 1986, 1988, 1999, 2000, 2006, 2007, and 2011. GX-866 (model output file "SeparateReduction.rar").

61. A 30% Flint cap would not shorten drought operations by a single day in a year matching the hydrologic conditions of 2006: The Corps still would enter drought operations on June 1 and exit on December 1. Although a 30% Flint cap in a year matching 2011 conditions would delay reservoir storage dropping into Zone 3 by one day (on May 9 instead of May 8), it would not shorten drought operations: the Corps would still enter drought operations on June 1. Florida's modeling shows that even with a 50% cap in 2012, the Corps would still have entered drought operations on May 1. GX-866 (model output file "SeparateReduction.rar"); FX-785 (model output file "Ag50%IBT100%addback").

62. Over the entire hydrologic record, a 30% Flint cap would have affected the length of drought operations only in two instances and only during wet conditions: The Corps would exit drought operations one month earlier in a year matching 2001 hydrologic conditions and two months earlier in a year matching 2009. These two isolated instances of shortening drought operations during wet periods would provide no meaningful state-line flow increase because flows were already very high at those times. GX-866 (model output file "SeparateReduction.rar"); JX-128.

63. The Corps assesses whether to enter or exit drought operations on the first day of each month. JX-124, at App. A pp. 7-11 n.c, 7-23. Thus, the Corps' monthly monitoring plan for drought operations is not sensitive to minor intra-monthly adjustments in reservoir storage. *Id.*; GX-866, at 69.

64. A cap on Georgia would not generate 1,500-2,000 cfs in additional reservoir storage; instead, a nearly 50% cap (reducing Georgia's peak consumptive use to 1992 levels) would increase reservoir storage by only 180 cfs in a year matching 2000

conditions, 57 cfs in a year matching 2006, 187 cfs in a year matching 2007, 21 cfs in a year matching 2008, and 234 cfs in a year matching 2011. A cap thus could not generate enough reservoir storage to delay the onset of drought operations or meaningfully quicken the return to non-drought operations, and therefore would not materially increase state-line flows into Florida by shortening drought operations. GX-866, at 69 (Table 6).

65. Florida offered no evidence at trial to refute Georgia's ResSim modeling of how a cap could affect the length of drought operations.

V. Florida Failed To Prove By Clear And Convincing Evidence That A Feasible Remedy Would Significantly Ameliorate Its Alleged Harms.

66. Florida has never identified the rates, timing, or duration of state-line flows that it believes are necessary to remedy its alleged harms.

67. Florida's experts analyzed a "Remedy Scenario" (a 50% cap on Georgia and elimination of interbasin transfers), in which they counterfactually assumed "that virtually all of the water that Georgia conserves by implementing a remedy will become flow in the Apalachicola River in the summer it is conserved." Hornberger Direct, ¶ 123; Greenblatt Direct, ¶ 6(c). Florida presented no evidence quantifying any ecological benefits it expected to receive under any potential remedy other than its proposed Remedy Scenario.

68. In most of the Apalachicola Bay, the Remedy Scenario would have no meaningful ecological benefit. The difference in salinity between observed flows in 2010-2012 and those that would have occurred if the Remedy Scenario were applied to those conditions is less than 1 ppt on average, and never more than 3 ppt. Tr. 1776:12-15, 1777:21-1778:1 (Greenblatt); Greenblatt Direct, at pp. 35-37 (Figs. 3-14, 3-15, 3-16).

69. Applying the Remedy Scenario to 2012 conditions would change salinity at the Cat Point and Dry Bar oyster bars by less than 1 ppt. Tr. 1777:21-1778:1 (Greenblatt); Greenblatt Direct, at p. 37 (Fig. 3-16).

70. In summer 2011, even if Georgia had generated an additional 1,000 cfs of streamflow on the Flint River, that additional flow would not have changed salinity by more than 1 ppt anywhere in the Bay. McAnally Direct, ¶ 34; *id.* at p. 12 (Demo. 4).

71. A change in salinity of approximately 1 ppt is within the range of natural variability to which Bay organisms have adapted, would essentially be unnoticeable, and would not affect Bay ecology. Menzie Direct, ¶¶ 7, 76; Tr. 4240:6-23 (Menzie).

72. Florida's own model shows that the Remedy Scenario would not have increased oyster biomass by more than 1.4% at any point in time on any oyster bar in Apalachicola Bay. White Direct, at pp. 50-51 (Figs. 14-15); FX-830c; FX-830d.

73. When analyzing the potential impact on the Apalachicola River ecosystem from the Remedy Scenario, 11 out of 15 of Dr. Allan's metrics showed a change of less than 2.5% in "harm days." Tr. 542:11-544:10; Allan Cross Demo. 4. His other metrics also show small changes: 3.4% (Sturgeon YOY60), 5.1% (Mussels Hog Slough), 7% (Fish Swift Slough), and 8.3% (Mussels MC 6k). *Id.*

74. "Harm days" under Allan's mussel metrics do not quantify actual dead mussels or even expected changes to the mussel population. Tr. 399:6-20, 427:16-24. There is no evidence that changes in tree metrics from the Remedy Scenario will even help the tupelo-cypress swamp trees in the Apalachicola. Tr. 546:9-13. Florida presented no evidence that any changes under the fish metrics would affect real-world fish populations.

75. Increasing Apalachicola River flow by 1,000 cfs would increase floodplain inundation by only 1%. Menzie Direct, ¶ 160; *id.* at p. 88 (Demo. 39).

VI. Georgia Employs Extensive Measures To Conserve Water In The ACF Basin.

76. Georgia is a national leader in M&I water conservation. Mayer Direct, ¶¶ 82-86. Georgia has made substantial investments in water conservation and efficiency programs in metro-Atlanta, including leak-abatement programs, bans on outdoor water use, and dozens of other conservation measures. Mayer Direct, ¶¶ 51-81.

77. Georgia has spent billions on wastewater infrastructure. Mayer Direct, ¶ 75. Even in drought years, the Metro Water District's annual water-withdrawal return rate is at least 70%. *Id.* at ¶ 34. The actual return rate may be higher than 70%, since return-rate statistics exclude unmetered treatment systems that return water to the system at a high rate (including septic tanks and M&I land-application systems). *Id.* Georgia treats and returns an annual average of 742 cfs to the ACF Basin. Zeng Direct, at p. 10 (Demo. 4); JX-165.

78. Even as the metro-Atlanta population increased by 50% from 1994 to 2013, Georgia's total M&I consumptive use trended constant (and even declined slightly). Mayer Direct, ¶¶ 7, 32.

79. Since 2000, daily per-capita water use in the Metro Water District has declined by 36.7%. Mayer Direct, ¶ 44.

80. The vast majority of Georgia farmers under-water their crops and apply less water than required for maximum yield. Tr. 2822:23-2823:13 (Sunding).

81. Under its 2006 Plan, Georgia divided the Flint Basin into three "zones" based on hydrologic sensitivity to groundwater withdrawals. Couch Direct, ¶¶ 12, 22; Cowie

Direct, ¶¶ 6, 12-14. Georgia requires all new or modified permits to meet advanced, zone-specific conservation requirements, and imposes the most stringent ones on areas where withdrawals have the greatest streamflow impact. *Id.* at ¶¶ 17-19; JX-21, at 33-35.

82. In 2012, Georgia suspended new agricultural withdrawal permit applications in the Flint Basin from surface water and UFA groundwater sources. That moratorium is still in place today and has essentially capped the number of irrigated acres in the Flint Basin that withdraw water from sources hydrologically connected to the Flint River. Turner Direct, ¶¶ 96-97; Tr. 3058:6-11, 3060:24-3061:7 (Turner); JX-73.

83. In 2014, Georgia passed legislation requiring all center-pivot irrigation systems to "achieve a minimum of 80% irrigation efficiency by January 1, 2020." Turner Direct, ¶ 110; Cowie Direct, ¶¶ 53-57; JX-105; GX-765.

84. As of 2016, the Lower Flint Basin had achieved approximately 90% center-pivot irrigation efficiency, covering approximately 93% of irrigated acreage in the region. Masters Direct, ¶¶ 67-68; Tr. 3697:17-24, 3710:23-3711:18 (Masters).

VII. Florida Has Not Proven By Clear And Convincing Evidence That The Potential Benefits Of Its Proposed Cap Substantially Outweigh The Harm To Georgia.

85. The costs Florida's proposed caps would impose on Georgia greatly exceed the potential benefits those caps might yield to Florida. Stavins Direct, ¶¶ 131, 136-39.

86. Even using Florida's flawed and unreliable hydrological assumptions, generating an additional 2,000 cfs in streamflow would require eliminating up to 73% of Georgia's irrigation during drought years and 60% of M&I water use. Stavins Direct, ¶ 134; Tr. 2773:3-5 (Sunding). Using the correct hydrologic conditions calculated by

Georgia's experts, even eliminating all of Georgia's agricultural water use would not generate Sunding's additional 2,000 cfs in streamflow. Stavins Direct, ¶ 134.

87. Florida's deficit-irrigation proposal would cost Georgia's agricultural industry more than $335 million in direct costs each year it was implemented. Stavins Direct, ¶ 65; *id.* at p. 56 (Demo. 20); Tr. 4513:02-13 (Stavins).

88. On an annual basis, Florida's proposed cuts to agricultural water use would cost Georgia an additional $322 million in lost GRP and $15.4 million in lost tax revenue. It would also eliminate 4,173 jobs. Stavins Direct, ¶ 90.

89. Buying back irrigation permits for 20% of irrigated acreage would cost Georgia $809 million in lost-crop yields. Stavins Direct, ¶ 110.

90. Florida's leak-abatement proposal would cost Georgia at least $260 million to implement plus $1.2-2.4 billion in line-replacement costs. Mayer Direct, ¶ 100.

91. Florida's proposal to eliminate 50% of municipal outdoor water use in drought years would cost Georgia more than $445 million in welfare losses each year it was implemented. Stavins Direct, ¶ 85; Mayer Direct, ¶ 130.

92. Florida's proposal to completely eliminate interbasin transfers would require developing and constructing substantial new wastewater infrastructure, which could cost billions of dollars to implement. Mayer Direct, ¶¶ 101-11; Tr. 3545:8-15 (Mayer).

93. In the Apalachicola Bay, Florida's fishery industry generates $11.7 million in revenue per year. Stavins Direct, ¶ 31. Prior to the 2012 collapse, its oyster industry generated $5-8 million in revenue per year. JX-77; GX-1075.

94. Capping Georgia's water consumption in the ACF Basin would provide

negligible benefits to Florida. Stavins Direct, ¶ 123. Stavins calculated that the benefits to Florida's oyster and blue crab industries under Sunding's proposed cap would be approximately $40,000 per year. *Id.* at ¶ 127.

VIII. Conclusions Of Law.

95. Florida must prove by clear and convincing evidence that the benefits of an equitable apportionment substantially outweigh the harm that would result. *Colorado v. New Mexico*, 459 U.S. 176, 187 (1982) (*Colorado I*); *Florida v. Georgia*, 138 S. Ct. 2502, 2527 (2018).

96. The clear-and-convincing-evidence standard imposes a "burden on the complaining state … much greater than that generally required to be borne by private parties." *Colorado v. Kansas*, 320 U.S. 383, 393 (1943). It requires "hard facts, not suppositions or opinions," and can be satisfied only if the State seeking to upset the status quo leaves the factfinder with "an abiding conviction that the truth of its factual contentions are 'highly probable.'" *Colorado v. New Mexico*, 467 U.S. 310, 316, 320-21 (1984) (*Colorado II*).

97. This high bar "reflects th[e] Court's long-held view that a proposed diverter"—here, Florida—"should bear most … of the risks of erroneous decision: The harm that may result from disrupting established uses is typically certain and immediate, whereas the potential benefits from a proposed diversion may be speculative and remote." *Colorado II*, 467 U.S. at 316 (quotations omitted). "[T]he equities supporting the protection of existing economies will usually be compelling." *Id.* at 313.

98. Florida has failed to prove, as it must, that it suffered a substantial invasion

of rights of a serious magnitude. *Connecticut v. Massachusetts*, 282 U.S. 660, 669 (1931).

99. To the extent Florida has proven that it suffered a substantial invasion of rights, it has failed to prove, as it must, that such harms were caused by Georgia's water use. *Pennsylvania v. New Jersey*, 426 U.S. 660, 663 (1976) (per curiam).

100. To the extent Florida has proven injury and causation, it has not proven by clear and convincing evidence that the benefits of an equitable apportionment substantially outweigh the harm that would result.

101. The benefit to Florida of a cap on Georgia would be *de minimis*. Florida has not identified, let alone proven, the specific flows necessary to significantly ameliorate its alleged harms. Even if Florida had presented such evidence, Florida has not proven (1) that a cap on Georgia would result in meaningful additional streamflow from the Flint River into Lake Seminole at the times and in the amounts necessary to remedy it alleged harms; or (2) that, given the Corps' Master Water Control Manual operational rules, any additional streamflow into Lake Seminole would result in meaningful additional streamflow into the Apalachicola River at the times and in the amounts necessary to remedy its alleged harms.

102. The Court will not grant an equitable apportionment "for no other or better purpose than to vindicate a barren right." *Washington v. Oregon*, 297 U.S. 517, 523 (1936); *Colorado v. Kansas*, 320 U.S. at 386.

103. A consumption cap would impose significant costs on Georgia. Those costs would outweigh the speculative and *de minimis* benefits Florida might receive from a cap.

104. Florida has failed to establish an entitlement to an equitable apportionment.

Dated: January 31, 2019

Respectfully submitted,

/s/ *Craig S. Primis*

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No. 142, Original

In The
Supreme Court of the United States

STATE OF FLORIDA,

Plaintiff,

v.

STATE OF GEORGIA,

Defendant.

Before the Special Master

Hon. Paul J. Kelly, Jr.

CERTIFICATE OF SERVICE

This is to certify that STATE OF GEORGIA'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW has been served on this 31st day of January, 2019, in the manner specified below:

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