STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In Re Florida Administrative Code Rules 40D-8.041(16) and (17)

REQUREST FOR HEARING
(with corrected certificate of service)

Pursuant to Section 373.114(2)(a), Florida Statutes, Petitioners Save the Homosassa River Alliance, Inc., Chassahowitzka River Restoration Committee, Save the Manatee Club, Inc., Brad Rimbey, Mitchell Newberger, and Priscilla Watkins, submit this Request for Hearing to determine the Southwest Florida Water Management District's (the "**District**") rule amendments adding Florida Administrative Code ("**FAC**") Rules 40D-8.041(16) and (17) are inconsistent with the Water Resource Implementation Rule, and state:

AGENCY AND FILE

1. This matter relates to rule amendments adding FAC Rules 40D-8.041(16) and (17), establishing "minimum flows" for the Chassahowitzka and Homosassa Springs Systems (the "**Proposed MFLs**"). The Proposed MFLs were adopted on February 28, 2013 by the District, whose address is 2379 Broad Street, Brooksville, Florida 34604-6899. Petitioners are not aware of any other agency designation regarding this rulemaking. A copy of the Proposed MFLs adopted by the District is attached as "**Exhibit A**."

PETITIONERS AND REPRESENTATIVE

2. Petitioners are Save the Homosassa River Alliance, Inc., Chassahowitzka River Restoration Committee, Save the Manatee Club, Inc., Brad Rimbey, Mitchell Newberger, and Priscilla Watkins. All correspondence and pleadings in this proceeding

shall be served on Petitioners by service upon the undersigned at Law Office of John R. Thomas, P.A., 233 Third Street North, Suite 101, St. Petersburg, Florida 33701, who can be reached at (727) 550-9072, and will receive e-mail transmissions at jrthomasesq@gmail.com.

3. The "establishment and implementation of minimum flows and levels is a decision that is of the utmost importance to the citizens who live within the District's jurisdiction and one that will affect future generations." *Southwest Florida Water Management Dist. v. Charlotte Cty.*, 774 So.2d 903, 923 (Fla. 2d DCA 2001)

4. The waters of the Chassahowitzka and Homosassa Springs/River Systems are classified as "Outstanding Florida Waters" ("**OFW**") under Florida's surface water classification system. Despite this designation, these waters are severely degraded by nitrate pollution to the extent that DEP has identified most of their segments as "impaired" segments under §33 USC 1313(d) of the Clean Water Act ("**CWA**"). Flow in these systems has been substantially below historical levels during recent years also, and water quality and quantity trends continue a downward trajectory.

5. The individual Petitioners use and enjoy the affected waters, and a substantial number of the members of the organizational Petitioners use and enjoy the affected waters, for nature observation and recreation, including, but not limited to: canoeing, kayaking, boating, snorkeling, fishing, swimming, birding, and manatee watching. Petitioners are affected persons because their use and enjoyment of the waters affected by the Proposed MFLs will be adversely impacted by the further degradation the Proposed MFLs would allow, and Petitioners are citizens whose tax dollars are being wasted by the District's efforts that are not consistent with the law.

NOTICE OF RULE ADOPTION AND TIMELINESS

6. The District filed the rule amendments adding FAC Rules 40D-8.041(16) and (17) with the Department of State on February 28, 2013 and Petitioners were notified by Ernest L. Reddick, Esq., Assistant General Counsel, Department of State by e-mail on the same date.

7. Petitioners timely submit this Request for Hearing pursuant to Section 373.114(2)(a), Florida Statutes, which provides that:

> Within 30 days after adoption of a [water management district] rule, any affected person may **request that a hearing be held before the secretary of the department, at which hearing evidence and argument may be presented relating to the consistency of the rule with the water resource implementation rule**, by filing a request for hearing with the department and serving a copy on the water management district. (emphasis in bold added)

LEGAL BACKGROUND AND NATURE OF PROPOSED RULES

8. Minimum flows rulemaking is authorized by Section 373.042, Florida Statutes, which provides:

> **373.042 Minimum flows and levels.—**
>
> (1) Within each section, or the water management district as a whole, the **department or the governing board shall establish** the following:
>
> (a) Minimum flow for all surface watercourses in the area. **The minimum flow for a given watercourse shall be the limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area.**
>
> (b) Minimum water level. **The minimum water level shall be the level of groundwater in an aquifer and the level of surface water at which further withdrawals would be significantly harmful to the water resources of the area**.
>
> The minimum flow and minimum water level **shall be calculated by the department and the governing board using the best information available**. When appropriate, minimum flows and levels may be calculated to reflect seasonal variations. **The department and the governing board shall also consider, and at their discretion may provide for, the protection of nonconsumptive uses in the establishment of minimum flows and levels.** (emphasis in bold added)

9. "The scientific methodologies for establishing minimum flows and levels under s. 373.042, and all established minimum flows and levels" must be included in District Water Management Plans developed by each Water Management District. §373.036(1), Fla. Stat. District Water Management Plans become part of the Florida Water Plan, which must also include the State's Water Quality Standards ("**WQS**"), and the State Water Policy, now named the "Water Resource Implementation Rule." *Id.*

10. The Water Resource Implementation Rule is codified as FAC Chapter 62-40 and is "intended to provide water resource implementation goals, objectives, and guidance for the development and review of programs, rules, and plans relating to water resources, based on statutory policies and directives in Chapters 187, 373, and 403, Florida Statutes." FAC Rule 62-40.110(2); see also, §373.036(1)(d), Fla. Stat.

11. The Water Resource Implementation Rule "includes Surface Water Quality Standards, Chapter 62-302 and Rule 62-4.242, F.A.C." See FAC Rule 62-40.120(1).

12. FAC Rule 62-302.200(31) defines "Water Quality Standards" as follows:

> "Water quality standards" shall mean standards composed of designated present and future most beneficial uses (classification of waters), the numerical and narrative criteria applied to the specific water uses or classification, **the Florida antidegradation policy**, and the moderating provisions contained in this rule and in Chapter 62-4, F.A.C., adopted pursuant to Chapter 403, F.S. (emphasis in bold added)

13. The Department of Environmental Protection ("**DEP**") is empowered and obligated by Section 403.061, Florida Statutes to establish WQS as part of a comprehensive water pollution prevention program, including specifically:

> to control and prohibit pollution of air and water in accordance with the law and rules adopted and promulgated by it and, for this purpose, to:
> . . . .

(6) **Exercise general supervision of the administration and enforcement of the laws, rules, and regulations pertaining to . . . water pollution.**

(7) Adopt rules pursuant to ss. 120.536(1) and 120.54 to implement the provisions of this act. **Any rule adopted pursuant to this act shall be consistent with the provisions of federal law**, if any, relating to . . . effluent limitations, pretreatment requirements, or standards of performance. . . .

(8) Issue such orders as are necessary to effectuate the control of . . . water pollution and enforce the same by all appropriate administrative and judicial proceedings.

(9) **Adopt a comprehensive program for the prevention, control, and abatement of pollution of the . . . waters** of the state, and from time to time review and modify such program as necessary.

(10) **Develop a comprehensive program for the prevention, abatement, and control of the pollution of the waters** of the state. . . . In order to effect this purpose, a **grouping of the waters into classes** may be made **in accordance with the present and future most beneficial uses.**

(11) **Establish ambient . . . water quality standards** for the state as a whole or for any part thereof, . . .

(27) **Establish rules which provide for a special category of water bodies within the state, to be referred to as "Outstanding Florida Waters**," which water bodies shall be worthy of special protection because of their natural attributes. . . .

(28) **Perform any other act necessary to control and prohibit . . . water pollution, and to delegate any of its responsibilities, authority, and powers, other than rulemaking powers, to any state agency** now or hereinafter established.

(29) **Adopt by rule special criteria to protect Class II and Class III shellfish harvesting waters**. . . .

(34) **Adopt rules which may include stricter permitting and enforcement provisions within Outstanding Florida Waters, aquatic preserves**, . . . (emphasis in bold added)

14. Florida's Antidegradation Policy is contained and described in FAC Rules 62-302.300, 62-302.700 and 62-4.242. Florida's Antidegradation Policy was adopted to comply with the CWA. Florida's Antidegradation Policy includes in relevant part:

62-302.300 Findings, Intent and Antidegradation Policy for Surface Water Quality

(1) **Article II, Section 7 of the Florida Constitution requires abatement of water pollution and conservation and protection of Florida's natural resources and scenic beauty**.

(2) **Congress, in Section 101(a)(2) of the Federal Water Pollution Control Act, as amended, declares that achievement by July 1, 1983, of water quality sufficient for the protection and propagation of fish, shellfish, and wildlife, as well as for recreation in and on the water, is an interim goal to be sought whenever attainable**. Congress further states in Section 101(a)(3), that it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited.

(3) **The present and future most beneficial uses of all waters of the State have been designated by the Department by means of the classification system set forth in this Chapter pursuant to Subsection 403.061(10), F.S. Water quality standards are established by the Department to protect these designated uses.**

. . . .

(9) **The criteria set forth in this Chapter are minimum levels which are necessary to protect the designated uses of a water body** . . . .

. . . .

(11) **Section 403.021, Florida Statutes, declares that the public policy of the State is to conserve the waters of the State to protect, maintain, and improve the quality thereof for public water supplies, for the propagation of wildlife, fish and other aquatic life, and for domestic, agricultural, industrial, recreational, and other beneficial uses**. It also prohibits the discharge of wastes into Florida waters without treatment necessary to protect those beneficial uses of the waters.

(12) **The Department shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources, and all cost-effective and reasonable best management practices for nonpoint source control.** For the purposes of this rule, highest statutory and regulatory requirements for new and existing point sources are those which can be achieved through imposition of effluent limits required under Sections 301(b) and 306 of the Federal Clean Water Act (as amended in 1987) and Chapter 403, F.S. For the purposes of this rule, cost-effective and reasonable best management practices for nonpoint source control are those nonpoint source controls authorized under Chapters 373 and 403, F.S., and Department rules.

(13) The Department finds that excessive nutrients (total nitrogen and total phosphorus) constitute one of the most severe water quality problems facing the State. **It shall be the Department's policy to limit the introduction of man-induced nutrients into waters of the State. Particular consideration shall be given to the protection from further nutrient enrichment of waters which are presently high in nutrient concentrations or sensitive to further nutrient concentrations and**

sensitive to further nutrient loadings. Also, particular consideration shall be given to the protection from nutrient enrichment of those presently containing very low nutrient concentrations: less than 0.3 milligrams per liter total nitrogen or less than 0.04 milligrams per liter total phosphorus.

(14) **Existing uses and the level of water quality necessary to protect the existing uses shall be fully maintained and protected**. Such uses may be different or more extensive than the designated use.

(15) **Pollution which causes or contributes to new violations of water quality standards or to continuation of existing violations is harmful to the waters of this State and shall not be allowed.** Waters having water quality below the criteria established for them shall be protected and enhanced. However, the Department shall not strive to abate natural conditions.

62-302.700 Special Protection, Outstanding Florida Waters, Outstanding National Resource Waters.

(1) It shall be the Department policy to afford the highest protection to Outstanding Florida Waters and Outstanding National Resource Waters. **No degradation of water quality, other than that allowed in subsections 62-4.242(2) and (3), F.A.C., is to be permitted in Outstanding Florida Waters and Outstanding National Resource Waters, respectively, notwithstanding any other Department rules that allow water quality lowering.**

62-4.242 Antidegradation Permitting Requirements; Outstanding Florida Waters; Outstanding National Resource Waters; Equitable Abatement.
. . . .
(2) **Standards Applying to Outstanding Florida Waters.**
(a) **No Department permit or water quality certification shall be issued for any proposed activity or discharge** within an Outstanding Florida Waters, or **which significantly degrades, either alone or in combination with other stationary installations**, **any Outstanding Florida Waters, unless** the applicant affirmatively demonstrates that:
. . . .
2. The proposed **activity or discharge is clearly in the public interest**, and either

a. A Department permit for the activity has been issued or an application for such permit was complete on the effective date of the Outstanding Florida Water designation; or

b. **The existing ambient water quality within Outstanding Florida Waters will not be lowered** as a result of the proposed activity or discharge, except on a temporary basis during construction . . . . (emphasis in bold added)

15. Section 373.103(1), Florida Statutes requires the Water Management Districts to administer and enforce all provisions of Chapter 373 consistent with the Water Resource Implementation Rule.

16. Within the Water Resource Implementation Rule, FAC Rule 62-40.430(1)(a) indicates "Water quality standards shall be enforced pursuant to Chapters 403 and 373, F.S., to protect waters of the State **from point and nonpoint sources of pollution**." (emphasis in bold added)

17. Section 403.031(7), Florida Statutes defines "Pollution" as:

> the presence in the outdoor atmosphere or waters of the state of any substances, contaminants, noise, or **manmade or human-induced impairment of air or waters or alteration of the chemical, physical, biological, or radiological integrity of air or water** in quantities or at levels which are or may be potentially harmful or injurious to human health or welfare, animal or plant life, or property or which unreasonably interfere with the enjoyment of life or property, including outdoor recreation unless authorized by applicable law. (emphasis in bold added)

See also, FAC Rule 62-302.200(21)(almost identical definition of "Pollution").

18. The CWA's definition of pollution also includes "the man-made or man induced alteration of the chemical, physical, biological, and radiological integrity of water," which has been determined to encompass the effects of reduced water quantity. 33 U.S.C. § 1362(19); *PUD No. 1 of Jefferson County v. Wash. Dep't of Ecology, et al.,* 511 U.S. 700 (May 31, 1994).

19. A "point source" is defined under the CWA as any "discernible, confined and discrete conveyance ... from which pollutants are or may be discharged." 33 U.S.C. § 1362(14). Nonpoint source pollution is not defined, but is considered "the type of pollution that arises from many dispersed activities over large areas, and is not traceable to any single

discrete source." *N.W. Envt'l Def. Ctr. v. Brown,* 640 F3d 1063, 1070 (9th Cir. 2011) (citation omitted).

20. The foregoing regulatory scheme establishes that the Water Management Districts' implementation of minimum flows and levels under Section 373.042, Florida Statutes must be consistent with the Water Resource Implementation Rule, Florida's Water Quality Standards, and Florida's Antidegradation Policy. §§ 373.036 and 373.103(1), Fla. Stat.; FAC Rule 62-40.430(1)(a)

21. The requirement that MFLs comply with Florida's WQSs and Florida's Antidegradation Policy is reinforced in the Water Resource Implementation Rule's list of specific matters which must be considered in the establishment of MFLs, as follows:

> **62-40.473 Minimum Flows and Levels.**
> (1) In establishing minimum flows and levels pursuant to Sections 373.042 and 373.0421, F.S., consideration shall be given to natural seasonal fluctuations in water flows or levels, nonconsumptive uses, and **environmental values associated with coastal, estuarine, riverine, spring, aquatic, and wetlands ecology**, including:
> **(a) Recreation in and on the water;**
> **(b) Fish and wildlife habitats and the passage of fish;**
> **(c) Estuarine resources;**
> (d) Transfer of detrital material;
> (e) Maintenance of freshwater storage and supply;
> (f) Aesthetic and scenic attributes;
> **(g) Filtration and absorption of nutrients and other pollutants;**
> (h) Sediment loads;
> **(i) Water quality**; and
> (j) Navigation.

(emphasis in bold added). FAC Rule 62-40.473(1)(i) explicitly requires consideration of "water quality," and the other Rule 62-40.473(1) criteria all relate to matters that are encompassed by the concept of water quality and/or are closely related and associated with water quality and nonconsumptive uses.

DISTRICT IMPLEMENTATION OF MINIMUM FLOWS AND LEVELS

22. The District intends the proposed MFLs for Chassahowitzka and Homosassa Springs/River Systems to comply with Section 373.042, Florida Statutes and the Water Resource Implementation Rule, but in response to public comments urging greater protection by implementation of Florida's Antidegradation Policy to protect these Outstanding Florida Waters, the District, through its staff, said:

> Water quality criteria are designed to protect a water body's designated use. Florida's anti-degradation policy, including its policy for Outstanding Florida Waters, is designed to prevent worsening of water quality from specified activities unless it is found to be in the public interest. **Florida's anti-degradation policy does not apply to water quantity decisions such as MFLs; instead, it applies to activities that incorporate a discharge of pollutants or dredge and fill activities**. (emphasis in bold added)

See *Recommended Minimum Flows for the Chassahowitzka River System, July 15, 2012* at p.98; and *Recommended Minimum Flows for the Homosassa River System, July 15, 2012* at p.183. The foregoing Reports are attached as "**Exhibits B and C**."

23. Instead of basing these OFW MFLs on the Antidegradation Policy prohibiting degradation of water quality below "ambient water quality," the District employs a minimum flows and levels methodology that first identifies ecological resources of concern that could be affected by reduced flow. For example, with respect to Chassahowitzka Springs and River, the District identified submersed aquatic vegetation, benthic macroinvertebrates, molluscs, planktonic and nektonic fish and invertebrates, salinity-based habitat, and thermal refuge habitat for manatees during critically cold periods, as ecological resources of concern.

24. Using numeric and statistical models, the District then predicts how the identified ecological resources of concern will respond to reduced flows, and predicts which

resource would likely be the most sensitive to reduced flow. Next, the District employs an unadopted rule that presumes reduced flows causing a fifteen percent or less loss of the most sensitive ecological resource or habitat will not exceed the statutory "significantly harmful" threshold and will meet the requirements for an MFL.

25. The District's methodology results in MFLs that are less protective than Florida's WQSs and Florida's Antidegradation Policy require for Outstanding Florida Waters.

26. The District's methodology results in MFLs that are also not consistent with the CWA. The United States Environmental Protection Agency ("USEPA") has advised that States that choose to develop minimum flow standards that are not based on the CWA "should ensure that those instream flow standards are consistent with the state WQSs . . . should not set conditions which would be less stringent than or in conflict with the state WQSs under the CWA." See USEPA Region 4 Letter to Alabama Department of Environmental Management and attached Memorandum at numbered page 12 and discussion of "Instream Flows" on pages 9 through 13, a copy of which is attached as "**Exhibitt D**".

DISPUTED ISSUES OF MATERIAL FACT

27. The material facts in dispute, which Petitioners assert in good faith and which may include good faith argument for the application, extension, modification of existing law, or the establishment of new law as necessitated by this matter, include, but are not limited to: Petitioners are not aware of any disputed issues of material fact at this time, but Petitioners reserve the right to amend this statement in the event any respondent identifies

any issues of material fact that the respondent intends to dispute in this proceeding and the tribunal indicates warrant an evidentiary contest.

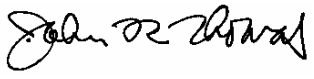
ULTIMATE FACTS

28. The ultimate facts, which Petitioners assert in good faith and which may include good faith argument for the application, extension, modification of existing law, or the establishment of new law as necessitated by this matter, include, but are not limited to, the Proposed MFLs are not consistent with the Water Resource Implementation Rule because the Proposed MFLs do not comply with the State's Water Quality Standards, Antidegradation Policy and the Clean Water Act.

STATUTES AND RULES

29. Petitioners are entitled to relief under and/or this Amended Petition is supported by Chapters 403, 373, and 120, Florida Statutes and Florida Administrative Code Chapters 40D-8, 28-106, 62-40, 62-302, and 62-4.242.

WHEREFORE, Petitioners respectfully request that a hearing be held before the Secretary of DEP, at which hearing Petitioners must be allowed to present evidence and argument relating to the Water Resource Implementation Rule inconsistency of the Southwest Florida Water Management District's February 28, 2013 amendments to FAC Rule 40D-8.041.



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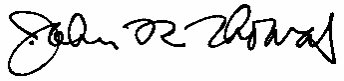
Corrected Certificate of Service

I HEREBY CERTIFY that the foregoing was served via E-Mail Transmission on March 28, 2013, upon the Service List below.



JOHN R. THOMAS, ESQUIRE
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SERVICE LIST

Adrienne E. Vining, Esquire
Laura Donaldson, Esquire
Southwest Florida Water Management District
7601 U.S. Highway 301 North
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40D-8.041 Minimum Flows.

(1) Minimum Flows for the Lower Hillsborough River.

(a) For the purposes of Minimum Flows, the Lower Hillsborough River is defined as the River downstream of Fletcher Avenue. A tributary of the Lower Hillsborough River is Sulphur Springs, an artesian spring which enters the River via a short spring run at a point 2.2 miles downstream of the City's dam.

(b) The Minimum Flows for the Lower Hillsborough River are based on extending a salinity range less than 5 ppt from the Hillsborough River Dam toward Sulphur Springs. The Minimum Flows for the Lower Hillsborough River are 20 cubic feet per second ("cfs") freshwater equivalent from July 1 through March 31 and 24 cfs fresh water equivalent from April 1 through June 30 at the base of the dam as adjusted based on a proportionate amount that flow at the United States Geological Survey Gauge No. 0203000 near Zephyrhills, Florida ("Gauge") is below 58 cfs. The adjustment is that for each one cfs that Hillsborough River flow at the Gauge is below 58 cfs, when 20 cfs freshwater equivalent is otherwise required, the Minimum Flow is adjusted by reducing it by 0.35 cfs; when 24 cfs freshwater equivalent is otherwise required, the Minimum Flow is adjusted by reducing it by 0.40 cfs. For purposes of this paragraph 40D-8.041(1)(b), F.A.C., freshwater equivalent means water that has a salinity concentration of 0.0 ppt for modeling purposes.

(2) Minimum Flows for the upper Hillsborough River.

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the river are met.

(b) Minimum Flows for the upper Hillsborough River at the USGS Hillsborough River near Morris Bridge Gage USGS # 02303330 ("Morris Bridge Gage") are set forth in Table 8-12 below. The long-term compliance standards set forth in Table 8-13 are established based on the application of the Minimum Flows to the lowest anticipated natural flow conditions. Minimum Flows for the upper Hillsborough River are both seasonal and flow dependent. Two standards are flow based and applied continuously regardless of season. The first is a Minimum Low Flow threshold of 52 cfs at the Morris Bridge Gage. The second is a Minimum High Flow threshold of 470 cfs at the Morris Bridge Gage. The Minimum High Flow is based on changes in the number of days of inundation of floodplain features. There are also three seasonally dependent or Block specific Minimum Flows. The Block 1 and Block 2 Minimum Flows are based on potential changes in habitat availability for fish species and macroinvertebrate diversity. The Block 3 Minimum Flow is based on changes in the number of days of connection with floodplain features.

Table 8-12 Minimum Flow for Upper Hillsborough River at USGS Hillsborough River near Morris Bridge Gage

Period	Effective Dates	Where Flow on Previous Day Equals:	Minimum Flow Is
Annually	January 1 to December 31	≤52 cfs >52cfs and <470 cfs ≥470 cfs	52 cfs Seasonally dependent – see Blocks below Previous day flow minus 8%
Block 1	April 20 to June 24	≤52 >52cfs and <470 cfs ≥470 cfs	52 cfs previous day flow minus 10% Previous day flow minus 8%
Block 2	October 28 to April 19	≤52 >52cfs and <470 cfs ≥470 cfs	52 cfs previous day flow minus 11% previous day flow minus 8%
Block 3	June 25 to October 27	≤52 cfs >52 cfs and <470cfs ≥470 cfs	52 cfs previous day flow minus 13% previous day flow minus 8%

(c) Compliance – The Minimum Flows are met when the flows in Table 8-13 are achieved.

Table 8-13 Compliance Standards for the Hillsborough River near Morris Bridge Gage

Minimum Flow	Hydrologic Statistic	Flow (cfs)
Annual Flow	10-Year Mean	190
	10-Year Median	96
	5-Year Mean	149
	5-Year Median	74

Table 8-13 Compliance Standards for the Hillsborough River near Morris Bridge Gage		
Minimum Flow	Hydrologic Statistic	Flow (cfs)
Block 1	10-Year Mean	74
	10-Year Median	62
	5-Year Mean	57
	5-Year Median	52
Block 2	10-Year Mean	153
	10-Year Median	89
	5-Year Mean	105
	5-Year Median	72
Block 3	10-Year Mean	287
	10-Year Median	150
	5-Year Mean	235
	5-Year Median	107

(3) Minimum Flow for Sulphur Springs – The Minimum Flow for Sulphur Springs is based on minimization of salinity incursions into the Upper Sulphur Springs Run ("Upper Run") from the Lower Hillsborough River ("LHR") and to moderate temperature levels within the manatee protection zone of the LHR.

(a) As of October 1, 2012, the City of Tampa shall maintain a Minimum Flow for Sulphur Springs of:

1. 18 cfs, as measured at the United States Geological Survey Sulphur Springs Gauge No. 02306000 at Sulphur Springs, Florida, or;

2. 13 cfs when water levels in the Hillsborough River reservoir fall below 19 feet NGVD; and

3. 10 cfs during low tide stages in the LHR, provided that salinity incursions from the LHR into the upper spring run do not occur. Salinity incursions shall be defined as when salinity values in the upper spring run as measured at the United States Geological Survey Gauge Sulphur Springs Run at Sulphur Springs, Florida (#023060003) are greater than 1 ppt than the concurrent salinity value in the spring pool as measured at the United States Geological Survey Gauge Sulphur Springs Run at Sulphur Springs, Florida (#023060000) for a period of greater than 1 hour.

(b) Notwithstanding paragraph 40D-8.041(2)(a), F.A.C., above, and beginning the effective date of this rule, when spring flow is available, a Minimum Flow of 18 cfs shall be required if the temperature of either surface or bottom waters in the LHR near the Spring Run's outlet is below 15° C.

(c) The City of Tampa may propose to the District modifications to the weirs and gates located within the upper and lower spring run that affect the flow rates and salinity levels in the Upper Run and the LHR. The District shall evaluate the modifications to determine whether the flow resulting from the operating capabilities of the modifications and modeling simulations of the resulting salinity incursions into the Upper Spring Run achieve the salinity goal of the Minimum Flow for Sulphur Springs. If the District determines that flows different from the Minimum Flows ("Different Flows") will achieve the salinity goal and otherwise protect the resources of the Upper Spring Run, the District, upon request by the City, will recommend to the Governing Board revision of the Minimum Flow to reflect the Different Flow.

(4) The Minimum Flow for the Tampa Bypass Canal at structure 160 shall be 0 cfs.

(5) Minimum Flows for Middle Peace River.

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the river are met.

(b) Minimum Flows for the Middle Peace River at the USGS Peace River Arcadia Gage ("Arcadia Gage") are set forth in Table 8-6 below. The long-term compliance standards set forth in Table 8-7 are established based on the application of the Minimum Flows to the lowest anticipated natural flow conditions. Minimum Flows for the Middle Peace River are both seasonal and flow-dependent. Two standards are flow-based and applied continuously regardless of season. The first is a Minimum Low Flow threshold of 67 cfs at the Arcadia Gage. The second is a Minimum High Flow threshold of 1,362 cfs at the Arcadia Gage. The Minimum High Flow is based on changes in the number of days of inundation of floodplain features. There are also three seasonally dependent or Block-specific Minimum Flows. The Block 1 and Block 2 Minimum Flows are based on potential changes in habitat availability for fish species and macroinvertebrate diversity. The Block 3 Minimum Flow is based on changes in the number of days of connection with floodplain features.

Table 8-6 Minimum Flow for Middle Peace River at USGS Peace River at Arcadia Gage			
Period	Effective Dates	Where Flow on Previous Day Equals:	Minimum Flow Is:
Annually	January 1 to December 31	≤67 ≤67 cfs and <1,362 >1,362	67 cfs Seasonally dependent – see Blocks below Previous day flow minus 8%
Block 1	April 20 to June 25	≤67 >67 cfs and <75 cfs >75 cfs and <1,362 >1,362	67 cfs 67 cfs previous day flow minus 10% previous day flow minus 8%
Block 2	October 27 to April 19	≤67 >67 cfs and <82 cfs >82 cfs and <1,362 >1,362	67 cfs 67 cfs previous day flow minus 18% previous day flow minus 8%
Block 3	June 26 to October 26	≤67 cfs >67 cfs and <73 cfs >73 cfs and <1,362 cfs >1,362	67 cfs 67 cfs previous day flow minus 13% previous day flow minus 8%

Table 8-7 Compliance Standards for Middle Peace River at Arcadia Gage		
Minimum Flow	Hydrologic Statistic	Flow (cfs)
Annual Flow (January 1 through December 31)	10-Year Mean 10-Year Median 5-Year Mean 5-Year Median	547 243 534 196
Block 1 (April 20 through June 25)	10-Year Mean 10-Year Median 5-Year Mean 5-Year Median	219 121 160 64
Block 2 (October 27 through April 19)	10-Year Mean 10-Year Median 5-Year Mean 5-Year Median	359 182 300 122
Block 3 (June 26 through October 26)	10-Year Mean 10-Year Median 5-Year Mean 5-Year Median	977 631 790 382

(c) Compliance – The Minimum Flows are met when the flows in Table 8-7 are achieved.

(6) Minimum Flows for Myakka River.

(a) Upper Myakka River.

1. The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the river are met.

2. Minimum Flows for the Myakka River at the USGS Myakka River near Sarasota Gage USGS #02298830 (“Sarasota Gage”) are set forth in Table 8-10 below. The long-term compliance standards set forth in Table 8-B are established based on the application of the Minimum Flows to the lowest anticipated natural flow conditions. Minimum Flows for the Myakka River are both seasonal and flow dependent. Two standards are flow-based and applied continuously regardless of season. The first is a Minimum Low Flow threshold of 0 cfs at the Sarasota Gage. The second is a Minimum High Flow threshold of 577 cfs at the Sarasota Gage. The Minimum High Flow is based on changes in the number of days of inundation of floodplain features. There are also three seasonally

dependent or Block specific Minimum Flows. The Block 1 and Block 2 Minimum Flows are based on potential changes in habitat availability for fish species and macroinvertebrate diversity. The Block 3 Minimum Flow is based on changes in the number of days of connection with floodplain features.

Table 8-10 Minimum Flow for Myakka River at USGS Myakka River near Sarasota Gage			
Period	Effective Dates	Where Flow on Previous Day Equals:	Minimum Flow Is
Annually	January 1 to December 31	0 cfs 0 cfs	0 cfs Seasonally dependent see Blocks below
Block 1	April 20 to June 25	0 cfs >0 cfs	0 cfs previous day flow minus 15%
Block 2	October 27 to April 19	0 cfs >0 cfs	0 cfs previous day flow minus 5%
Block 3	June 26 to October 26	0 cfs >0 cfs and >577 cfs >577 cfs	0 cfs previous day flow minus 16% previous day flow minus 7%

3. Compliance – The Minimum Flows are met when the flows in Table 8-11 are achieved.

Table 8-11 Compliance Standards for Myakka River at USGS Myakka River near Sarasota Gage		
Minimum Flow	Hydrologic Statistic	Flow (cfs)
Annual Flow	10-Year Mean 10-Year Median 5-Year Mean 5-Year Median	172 12 149 5
Block 1	10-Year Mean 10-Year Median 5-Year Mean 5-Year Median	23 0 4 0
Block 2	10-Year Mean 10-Year Median 5-Year Mean 5-Year Median	28 4 15 3
Block 3	10-Year Mean 10-Year Median 5-Year Mean 5-Year Median	324 181 241 133

(b) Lower Myakka River.

1. The Minimum Flows are necessary to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the Lower Myakka River are met. The Lower Myakka River extends from the outlet of Lower Myakka Lake to the mouth of the river at Charlotte Harbor.

2. The Lower Myakka River receives flows from the Upper Myakka River sub-basin at the location of the USGS gage Myakka River near Sarasota No. 02298830 (the “Myakka Gage”) that are in excess of the naturally occurring flows. The District will remove the excess flows at rates between 0 and 130 cfs in the upper river sub-basin in order to restore natural flows.

3. The Minimum Flows for the Lower Myakka River at the Myakka Gage is 90% of the adjusted flow, when the adjusted flow exceeds 400 cfs. The adjusted flow at the Myakka Gage shall be calculated by adding the flows measured at the Myakka Gage and the excess flows removed by the District from the Upper Myakka River.

(7) Minimum Flows for upper Peace River.

(a) Over the last several decades there has been a significant decline in flow in the upper Peace River, especially during the dry season. One of the major contributing factors is the elimination of baseflow as a result of ground water withdrawals that have

lowered the potentiometric surface of the upper Floridan aquifer. In addition, surface-water drainage alterations, reduction in surface storage, long-term cyclical declines in rainfall and karst openings in the riverbed have played significant roles in reducing flow in the upper Peace River.

(b) The minimum flows are to ensure that the minimum hydrologic requirements of fish and natural systems associated with the river are met and not jeopardized by withdrawals. At this time only Minimum Low Flows are being established. It is anticipated that mid- and high-minimum flows will be established once the controlling factors that affect those flows are better understood.

(c) The Minimum Low Flows for the upper Peace River are set forth in Table 8-8 below. The Minimum Low Flows are established based on the lowest acceptable flow under the lowest anticipated flow conditions. This is determined by providing for the hydrologic requirements of biological communities associated with the upper Peace River system, as well as considering non-consumptive uses including fishing, wildlife observation, general recreation, aesthetic enjoyment, canoeing and boating. This determination uses professional experience and judgment to identify key habitats and hydrologic requirements for specific biotic assemblages. This approach results in establishing Minimum Low Flows for the upper Peace River based on maintaining the higher of the water elevations needed for fish passage (0.6 feet or 7.2 inches) or the lowest wetted perimeter inflection point (as much stream bed coverage as possible for the least amount of flow) as set forth below. A ninety-five percent annual exceedance occurs when the flow is greater than the Minimum Low Flow at least ninety-five percent of the days, or 350 days, of a calendar year.

Table 8-8 Minimum Flows for the upper Peace River

Location/Gage	Minimum Flow (cubic feet per second)
Bartow / USGS Bartow River Gage No. 02294650	Annual 95% exceedance flow of 17 cfs
Ft. Meade / USGS Ft. Meade River Gage No. 02294898	Annual 95% exceedance flow of 27 cfs
Zolfo Springs / USGS Zolfo Springs River Gage No. 02295637	Annual 95% exceedance flow of 45 cfs

(d) Compliance – The Minimum Low Flow is achieved when the measured flow rate is at or above the Minimum Low Flow for three consecutive years. Once the Minimum Low Flow has been achieved for three consecutive years, the Minimum Low Flow is not met when the measured flow rate is below the Minimum Low Flow for two out of ten years commencing the year after achievement. If the two years below the minimum flow occur anytime before the ten year period is complete, the upper Peace River is deemed below its Minimum Low Flow and the three consecutive years above the Minimum Low Flow is again required for compliance. Once the ten-year period is complete, the period will roll forward one year each year.

(8) Minimum Flows for the lower Peace River.

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the estuarine reach of the lower Peace River are met.

(b) Minimum Flows for the estuarine reach of the lower Peace River are based on the sum of the combined flows of the USGS Peace River near Arcadia Gage #02296750 plus the flow at the USGS Horse Creek near Arcadia Gage #02297310, and the USGS Joshua Creek at Nocatee Gage #02297100, and are set forth in Table 8-20 below. Minimum Flows for the lower Peace River are both seasonal and flow dependent. One standard, the Minimum Low Flow Threshold, is flow based and applied continuously regardless of season. No surface water withdrawals shall be permitted that would cumulatively cause the flow to be reduced below the Minimum Low Flow Threshold of 130 cfs based on the sum of the mean daily flows for the three gages listed above. Additionally, permitted withdrawals shall cease when flows are below the Minimum Low Flow Threshold of 130 cfs. The total permitted maximum withdrawals on any day shall not exceed 400 cfs. There are also three seasonally dependent or Block specific Minimum Flows that are based on the sum of the mean daily flows for the three gages denoted above that would occur in the absence of any permitted upstream withdrawals. The Block Minimum Flows are based on potential changes in habitat availability for select salinity ranges within a season.

Table 8-20-Minimum Flow for Lower Peace River based on the sum of flows from Horse Creek, Joshua Creek, and the Peace River at Arcadia gages.

Period	Effective Dates	Where Flow on Previous Day Equals:	Minimum Flow Is
Annually	January 1 through December 31	≤130 cfs	Actual flow (no surface water withdrawals

		>130 cfs	permitted) Seasonally dependent – see Blocks below
Block 1	April 20 through June 25	≤130 cfs >130 cfs	Actual flow (no surface water withdrawals permitted) previous day's flow minus 16% but not less than 130 cfs
Block 2	October 28 through April 19	≤130 cfs >130 cfs and <625 cfs ≥625 cfs	Actual flow (no surface water withdrawals permitted) previous day's flow minus 16% but not less than 130 cfs previous day's flow minus 29%
Block 3	June 26 through October 27	≤130 cfs >130 cfs and <625 cfs ≥625 cfs	Actual flow (no surface water withdrawals permitted) previous day's flow minus 16% but not less than 130 cfs previous day's flow minus 38%

(c) Minimum five-year and ten-year moving mean and median flow values are set forth in Table 8-20 as a tool to assess whether flows to the lower Peace River remain above flow rates that are expected to occur with implementation of the Minimum Flow described in Table 8-21 and a daily maximum withdrawal rate of 400 cfs. The means and medians are based on evaluation of daily flow records for the three gages listed above for the period 1951 through 2008. Yearly means and medians were computed for January 1 through December 31 of each year, then moving five-year and ten-year averages were calculated from these yearly values. Therefore, the five-year and ten-year means and medians are hydrologic statistics that represent the flows that will be met or exceeded if compliance with the Minimum Flow and the 400 cfs maximum withdrawal rate is maintained during hydrologic conditions similar to the 1951-2008 period. Climatic changes or future structural alterations in the watershed could potentially affect surface water or groundwater flow characteristics within the watershed and flows in the river. Therefore, as additional information relevant to Minimum Flows development becomes available, the District is committed to periodically evaluate whether any declines in these minimum moving average values below that expected with the application of the Minimum Flow are due to factors other than permitted water use.

(d) The Minimum Flows for the lower Peace River will be reevaluated to incorporate additional ecological data for the Lower Peace River within 5 years of adoption of this rule.

Table 8-21 Minimum Five-Year and Ten-Year Moving Mean and Median flows for the lower Peace River based on the sum of flows from Horse Creek, Joshua Creek, and the Peace River at Arcadia

Minimum Flow	Hydrologic Statistic	Flow (cfs)
Annual Flow	10-Year Mean	713
	10-Year Median	327
	5-Year Mean	679
	5-Year Median	295
Block 1	10-Year Mean	284
	10-Year Median	264
	5-Year Mean	204
	5-Year Median	114
Block 2	10-Year Mean	429
	10-Year Median	383
	5-Year Mean	330
	5-Year Median	235
Block 3	10-Year Mean	1260
	10-Year Median	930
	5-Year Mean	980

Table 8-21 Minimum Five-Year and Ten-Year Moving Mean and Median flows for the lower Peace River based on the sum of flows from Horse Creek, Joshua Creek, and the Peace River at Arcadia		
Minimum Flow	Hydrologic Statistic	Flow (cfs)
	5-Year Median	595

(9) Minimum Flows for the Braden River.

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the river are met.

(b) Minimum Flows for the Braden River at the USGS Braden River near Lorraine Gage USGS # 02300032 ("near Lorraine Gage") are set forth in Table 8-14 below. The long-term compliance standards set forth in Table 8-15 are established based on the application of the Minimum Flows to the lowest anticipated natural flow conditions. Minimum Flows for the Braden River are both seasonal and flow dependent. Two standards are flow based and applied continuously regardless of season. The first is a Minimum Low Flow threshold of 7 cfs at the near Lorraine Gage. The second is a Minimum High Flow threshold of 54 cfs at the near Lorraine Gage. The Minimum High Flow is based on changes in the number of days of inundation of floodplain features. There are also three seasonally dependent or Block specific Minimum Flows. The Block 1 and Block 2 Minimum Flows are based on potential changes in habitat availability for fish species and macroinvertebrate diversity. The Block 3 Minimum Flow is based on changes in the number of days of connection with floodplain features.

Table 8-14 Minimum Flow for Braden River at USGS Braden River near Lorraine Gage			
Period	Effective Dates	Where Flow on Previous Day Equals:	Minimum Flow Is
Annually	January 1 to December 31	≤7 cfs >7cfs and <54 cfs ≥54 cfs	7 cfs Seasonally dependent – see Blocks below Previous day flow minus 10%
Block 1	May 7 to June 19	≤7 >7 cfs	7 cfs previous day flow minus 10%
Block 2	October 25 to May 6	≤7 >7 cfs and <54 cfs ≥54 cfs	7 cfs previous day flow minus 11% previous day flow minus 10%
Block 3	June 20 to October 24	≤7 cfs >7 cfs and <54 cfs ≥54 cfs	7 cfs previous day flow minus 19% previous day flow minus 10%

(c) Compliance – The Minimum Flows are met when the flows in Table 8-15 are achieved.

Table 8-15 Compliance Standards for Braden River near Lorraine Gage		
Minimum Flow	Hydrologic Statistic	Flow (cfs)
Annual Flow	10-Year Mean 10-Year Median 5-Year Mean 5-Year Median	31 3 26 2
Block 1	10-Year Mean 10-Year Median 5-Year Mean 5-Year Median	5 1 2 0
Block 2	10-Year Mean 10-Year Median 5-Year Mean 5-Year Median	20 3 10 1
Block 3	10-Year Mean 10-Year Median	65 23

Table 8-15 Compliance Standards for Braden River near Lorraine Gage		
Minimum Flow	Hydrologic Statistic	Flow (cfs)
	5-Year Mean 5-Year Median	43 7

(10) Minimum Flows for Crystal Springs Located Within the Hillsborough River Basin, Hillsborough County, Florida

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the upper Hillsborough River are met.

(b) The Minimum Flow for Crystal Springs is stated as the flow measured by USGS physical measurements. Flows from Crystal Springs are calculated as the difference between upstream flow measurements at USGS Gage No. 02301990 – Hillsborough River Above Crystal Springs near Zephyrhills, FL and downstream flow measurements at USGS Gage No. 02302010 – Hillsborough River Below Crystal Springs near Zephyrhills, FL measurements and constitute the combined flow of the main spring vent and numerous smaller vents in the river channel. The minimum flow for the Crystal Springs complex is 46 cfs based on a 5-year running mean and median.

(11) Minimum Flows for Alafia River – Freshwater Segment.

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the river are met.

(b) Minimum Flows for the Alafia River at the USGS Alafia River at Lithia Gage USGS # 02301500 ("Lithia Gage") are set forth in Table 8-16 below. The long-term compliance standards set forth in Table 8-17 are established based on the application of the Minimum Flows to the lowest anticipated natural flow conditions. Minimum Flows for the Alafia River are both seasonal and flow dependent. Two standards are flow-based and applied continuously regardless of season. The first is a Minimum Low Flow threshold of 59 cfs at the Lithia Gage. The second is a Minimum High Flow threshold of 375 cfs at the Lithia Gage. The Minimum High Flow is based on changes in the number of days of inundation of floodplain features. There are also three seasonally dependent or Block specific Minimum Flows. The Block 1 and Block 2 Minimum Flows are based on potential changes in habitat availability for fish species and macroinvertebrate diversity. The Block 3 Minimum Flow is based on changes in the number of days of connection with floodplain features.

Table 8-16 Minimum Flow for Alafia River at USGS Alafia River at Lithia Gage			
Period	Effective Dates	Where Flow on Previous Day Equals:	Minimum Flow Is
Annually	January 1 to December 31	≤59 cfs >59 cfs and <374 cfs >374 cfs	59 cfs Seasonally dependent – see Blocks below Previous day flow minus 8%
Block 1	April 20 to June 25	≤57 cfs >57 cfs and <66 cfs >66 cfs and <374 cfs >374 cfs	59 cfs 67 cfs previous day flow minus 10% previous day flow minus 8%
Block 2	October 27 to April 19	≤59 cfs >59 cfs and <69 cfs >69 cfs and <374 cfs >374 cfs	59 cfs 67 cfs previous day flow minus 15% previous day flow minus 8%
Block 3	June 26 to October 26	≤59 cfs >59 cfs and <64 cfs >64 cfs and <374 cfs >374 cfs	59 cfs 67 cfs previous day flow minus 13% previous day flow minus 8%

(c) Compliance – The Minimum Flows are met when the flows in Table 8-17 are achieved.

Table 8-17 Compliance Standards for Alafia River at Lithia Gage		
Minimum Flow	Hydrologic Statistic	Flow (cfs)
Annual Flow	10-Year Mean 10-Year Median	192 101

Table 8-17 Compliance Standards for Alafia River at Lithia Gage		
Minimum Flow	Hydrologic Statistic	Flow (cfs)
	5-Year Mean	163
	5-Year Median	86
Block 1	10-Year Mean	85
	10-Year Median	35
	5-Year Mean	53
	5-Year Median	27
Block 2	10-Year Mean	137
	10-Year Median	82
	5-Year Mean	110
	5-Year Median	66
Block 3	10-Year Mean	318
	10-Year Median	179
	5-Year Mean	276
	5-Year Median	163

(12) Minimum Flow for Lower Alafia River System.

(a) For purposes of this rule, the Lower Alafia River System includes the watercourse downstream of the USGS Gage No. 02301500 Alafia River at Lithia, FL (the "Alafia River at Lithia Gage") including Lithia Springs, Buckhorn Spring, and their associated spring runs.

(b) The Minimum Flow is to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the Lower Alafia River System are met. Daily flows to the Lower Alafia River System are calculated by multiplying mean daily flow values at the Alafia River at Lithia Gage by a factor of 1.117, then adding the mean daily flows from Lithia Spring Major and Buckhorn Spring. Flows are calculated in the absence of withdrawals and are based on mean flows at the Alafia River at Lithia Gage from the previous day and the most recently recorded periodic values from Lithia Spring Major and Buckhorn Spring. The Minimum Flow for the Lower Alafia River System is intended to preserve 81% of the natural flow to the Lower Alafia River System when flows exceed a low-flow threshold of 120 cfs.

(c) The Minimum Flow is 81% of the daily flow to the Lower Alafia River System that is above 120 cfs.

(d) Minimum five-year and ten-year moving average values are set forth in Table 8-19 as a tool to assess whether flows to the Lower Alafia River remain above flow rates that are expected to occur with implementation of the Minimum Flow. These values represent minimum values of the averages of yearly mean and median flows to the Lower Alafia River System calculated over moving five-year and ten-year periods. These values were calculated by applying the potential maximum withdrawals that do not violate the Minimum Flow to historic flow records. It is, therefore, expected that flows to the Lower Alafia River System will not go below these values if compliance with the Minimum Flow is maintained. However, future climatic conditions or structural alterations in the watershed of the Lower Alafia River System could potentially affect surface water or ground contributions to the Lower Alafia River System's flow regime. The District will, therefore, periodically evaluate whether these minimum moving average values expected with application of the Minimum Flow, or other factors, have possibly caused flows in the Lower Alafia River System to decline.

Table 8-19 Minimum Values of Five-year and Ten-year Moving Averages of Yearly Mean and Median Flows to the Lower Alafia River System	
Value	Flow (cfs)
Minimum 10-Year Moving Average (Based On Yearly Mean Flows)	247
Minimum 10-Year Moving Average Median (Based On Yearly Median Flows)	150
Minimum 5-Yearly Mean Flows (Based on Yearly Mean Flows)	217
Minimum 5 Year Moving Average (Based On Yearly Median Flows)	120

Flows to the Lower Alafia River System were estimated for the period of record at the Alafia River at Lithia Gage. The period from 1987 to 2003 was used to create a relationship between daily flows at the Gage and total flows to the Lower Alafia River System.

Five-year and ten-year moving average statistics were then calculated for estimated long-term flows to the Lower Alafia River System that were derived from the Alafia River at Lithia Gage.

(13) Minimum Flows for Weeki Wachee River System located within Hernando County, Florida.

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the Weeki Wachee River System are met. The Minimum Flow for the Weeki Wachee River System is intended to maintain 90% of the natural flow of the Weeki Wachee River System. For purposes of this rule, the Weeki Wachee River System includes the watercourse from the Weeki Wachee Spring to the Gulf of Mexico including Twin Dees Spring, Mud River (including Salt Spring) from Mud Spring to the confluence with the Weeki Wachee River and Jenkins Springs and associated spring run.

(b) The Minimum Flow for the Weeki Wachee River System is 90% of its natural flow. This Minimum Flow is inclusive of spring flow, the freshwater and the estuarine portion of the Weeki Wachee River.

(c) The Minimum Flow applies upstream of the USGS Gage No. 02310525 at Weeki Wachee River near Brooksville ("Brooksville Gage") to the Weeki Wachee Spring vent and downstream of the Brooksville Gage to the Gulf of Mexico. The Minimum Flow shall be met continuously and is evaluated on a daily basis.

(d) Because climatic variation can influence river flow regimes, five and ten year mean and median standards have been developed and are set forth in Table 8-18 ("Means and Medians") as a tool to assess whether compliance with the Minimum Flow maintains 90% of the natural flow of the Weeki Wachee River System. The Means and Medians are hydrologic statistics that represent flows expected to occur during long-term periods when the Minimum Flows are being met. The Means and Medians are generated from flow records that are representative of a period devoid of significant anthropogenic impacts. The District will periodically evaluate the Means and Medians. These are evaluated as the mean and medians of annual means and medians, evaluated from January 1 through December 31 of each year. The evaluation is for both the flow at the Brooksville Gage and at the USGS Weeki Wachee Well No. 283201082315601. The flow at the Brooksville Gage is evaluated directly against Table 8-18. The well data is converted to flow with the relation Q (cfs) = -47.487 + 12.38 (well level) (ft) and then evaluated against Table 8-18. The Means and Medians were developed using the Minimum Flow and the presumed historic flow records. Therefore, it is expected that the Means and Medians will be met if compliance with the Minimum Flow is maintained. However, since future structural alterations could potentially affect surface water or groundwater flow characteristics within the watershed and additional information pertaining to Minimum Flows development may become available, the District is committed to periodic review and revision of the Minimum Flows, as necessary.

Table 8-18 Five and Ten Year Means and Medians for the Weeki Wachee River System

Criterion	Flow (cfs)
Minimum 10 Year Moving Average (Based On Annual Average Flows)	141
Minimum 10 Year Moving Average (Based On Annual Median Flows)	131
Minimum 5 Year Moving Average (Based On Annual Average Flows)	136
Minimum 5 Year Moving Average (Based On Annual Median Flows)	128

(e) Water Use Permits issued after May 10, 2009 that authorize surface water withdrawals from, or ground water withdrawals that impact Mud Spring, Salt Spring or Jenkins Spring, shall gauge the flow of the applicable spring and report the flow to the District as provided in the Water Use Permit.

(14) Minimum Flows for the Dona Bay/Shakett Creek System below Cow Pen Slough located within the Manasota Basin, Sarasota County, Florida.

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources and ecology of the natural systems associated with the Dona Bay/Shakett Creek System are met. For purposes of this rule, the Dona Bay/Shakett Creek System includes the watercourse and its tributaries from the most downstream control structure on Cow Pen Slough, known as CPS-2 and operated by Sarasota County (hereinafter referred to as "CPS-2″) to the Gulf of Mexico including Shakett Creek, Salt Creek, Fox Creek and Dona Bay.

(b) The Minimum Flow for the Dona Bay/Shakett Creek System is 100% of the natural flow of the system contributed by the watershed below CPS-2. This Minimum Flow is exclusive of flow, which is generated from the channelized watershed above CPS-2. Flow generated from the channelized watershed above CPS-2 shall be based on the flow records from CPS-2.

(15) Minimum Flows for the Anclote River.

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the freshwater and estuarine reaches of the Anclote River are met.

(b) Minimum Flows for the freshwater and estuarine reaches of the Anclote River are based on the natural flow at the USGS Anclote River near Elfers Gage No. 02310000 (the "Elfers Gage") and are set forth in Table 8-22 (estuarine reach downstream of the Elfers Gage) and Table 8-23 (freshwater reach upstream of Elfers Gage). Natural flow is defined as flow that would exist in the absence of withdrawal impacts. There are three seasonally dependent or Block specific Minimum Flows for each reach. In addition, the Minimum Flows for the freshwater reach are flow-based. The Minimum Low Flow Threshold for the freshwater reach is applied continuously regardless of season. No surface water withdrawal from the freshwater reach will be permitted that would cumulatively cause the natural flow to be reduced below the Minimum Low Flow Threshold of 12 cfs. Additionally, permitted withdrawals shall cease when flows are below the Minimum Low Flow Threshold of 12 cfs. In addition, the total permitted maximum withdrawals from the freshwater reach on any given day from July 22 through April 11 shall not exceed eight percent of the previous day's flow when natural flow equals or exceeds 138 cfs at the Elfers Gage.

Table 8-22 Minimum Flow for Anclote River below USGS Anclote River near Elfers Gage USGS No. 02310000 (Estuarine Reach)

Period	Effective Dates	Minimum Flow Is
Block 1	April 12 through July 21	Previous day's flow minus 12%
Block 2	October 15 through April 11	Previous day's flow minus 16%
Block 3	July 22 through October 14	Previous day's flow minus 18%
The Minimum Flow at any given point below the Elfers Gage is based on the previous day's natural flow at that point minus the percentage specified above corresponding to the applicable Block.		

Table 8-23 Minimum Flow for Anclote River above USGS Anclote River near Elfers Gage USGS No. 02310000 (Freshwater Reach)

Period	Effective Dates	Where Flow on Previous Day Equals:	Minimum Flow Is
Annually	January 1 to December 31	≤12 cfs >12 cfs and <138 cfs ≥138 cfs	Actual flow Seasonally dependent – see Blocks below Seasonally dependent – see Blocks below
Block 1	April 12 through July 21	≤12 cfs >12 cfs	Actual flow Previous day's flow minus 11% but not less than 12 cfs
Block 2	October 15 through April 11	≤12 cfs >12 cfs and <138 cfs ≥138 cfs	Actual flow Previous day's flow minus 14% but not less than 12 cfs Previous day's flow minus 8%
Block 3	July 22 through October 14	≤12 cfs >12 cfs and <138 cfs ≥138 cfs	Actual flow Previous day's flow minus 18% but not less than 12 cfs Previous day's flow minus 8%

(c) Minimum five-year and ten-year moving annual average values are set forth in Table 8-22 as a tool to assess whether flows to the Anclote River remain above flow rates that are expected to occur with implementation of the Minimum Flow described in Table 8-24. The Means and Medians are based on evaluation of daily flow records for the Elfers Gage, adjusted for withdrawal impacts for the period 1955 through 2006. Yearly means and medians are computed for January 1 through December 31 of each year. Therefore, the Means and Medians are hydrologic statistics that represent the flows that will be met or exceeded if compliance with the Minimum Flow is maintained during hydrologic conditions similar to the 1955-2006 period. However, since changes in the watershed such as future structural alterations and climatic change could potentially affect surface water or groundwater flow

characteristics and additional information relevant to Minimum Flows development may become available, the District is committed to periodic re-evaluation of the Minimum Flows.

Table 8-24 Minimum Five-Year and Ten-Year Moving Mean and Median Flows for the Anclote River above USGS Anclote River near Elfers Gage USGS No. 02310000 Based on Application of the Table 8-23 Minimum Flow on Adjusted Flows at USGS 02310000

Minimum Flow	Hydrologic Statistic	Flow (cfs)
Annual Flow	10-Year Mean	48
	10-Year Median	17
	5-Year Mean	36
	5-Year Median	15
Block 1	10-Year Mean	13
	10-Year Median	7
	5-Year Mean	11
	5-Year Median	6
Block 2	10-Year Mean	25
	10-Year Median	17
	5-Year Mean	21
	5-Year Median	15
Block 3	10-Year Mean	92
	10-Year Median	64
	5-Year Mean	81
	5-Year Median	56

(16) Minimum Flow for the Chassahowitzka River System.

(a) For purposes of this rule, the Chassahowitzka River System includes the watercourse from the Chassahowitzka Main Springs Complex to the Gulf of Mexico, including contributing tributaries, Blind Springs and all named and unnamed springs that discharge to the river.

(b) The Minimum Flow for the Chassahowitzka River System is 97% of the natural flow as measured at the United States Geological Survey (USGS) Gage Chassahowitzka River near Homosassa (Gage No. 02310650). Natural flow is defined for the purpose of this rule as the flow that would exist in the absence of water withdrawal impacts. The Minimum Flow at any point downstream from this Gage is measured as the previous day's natural flow at that point minus 3%.

(c) The District will reevaluate the Minimum Flow within six years of adoption of this rule.

(17) Minimum Flow for the Homosassa River System.

(a) For purposes of this rule, the Homosassa River System includes the watercourse from the Homosassa Main Springs Complex to the Gulf of Mexico, including the southeast fork of the Homosassa River, Halls River, Hidden River and all named and unnamed springs that discharge to these rivers.

(b) The Minimum Flow for the Homosassa River System is 97% of the combined natural flow as measured at the United States Geological Survey (USGS) Homosassa Springs at Homosassa Springs, FL Gage (No. 02310678), and the USGS SE Fork Homosassa Spring at Homosassa Springs, FL Gage (No. 02310688). Natural flow is defined for the purpose of this rule as the flow that would exist in the absence of water withdrawal impacts. The Minimum Flow at any point downstream from these Gages are measured as the previous day's natural flow at that point minus 3%.

(c) The District will reevaluate the Minimum Flow within six years of adoption of this rule.

Rulemaking Authority 373.044, 373.113, 373.171 FS. Law Implemented 373.036, 373.0361, 373.042, 373.0421 FS. History–Readopted 10-5-74, Amended 12-31-74, Formerly 16J-0.15, 40D-1.601, Amended 10-1-84, 8-7-00, 2-6-06, 4-6-06, 1-1-07, 11-25-07, 2-18-08, 3-2-08, 5-12-08, 5-10-09, 3-23-10, 3-28-10, 7-12-10, 8-2-10 (8), 8-2-10 (15), 10-16-12, 3-20-13(16), 3-20-13(17).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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NOV 19 2012

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Montgomery, Alabama 36130-1463

Dear Mr. LeFleur:

Thank you for the opportunity to provide input into the State of Alabama's development of a comprehensive statewide water management plan. The Environmental Protection Agency strongly supports Governor Bentley's directive to develop a plan that is based on sound science and that will "benefit Alabamians now and for generations to come." As we have discussed at the most recent State Directors meetings, our stewardship of water resources in the Southeast is facing new challenges from increased demands on limited freshwater supplies. Your effort acknowledges that competing uses of ground water and surface water for industrial, municipal and agricultural uses, power generation, new reservoirs, inter-basin transfers and water diversions are all bringing this issue into sharp focus. Planning is further complicated by droughts, floods, climate change and existing hydrologic modifications.

Fortunately, our understanding of the science of water management has evolved significantly over the past decade. We applaud your efforts to bring this science to bear in assisting Alabama's efforts to balance multiple water needs. Long-term planning for the stewardship of Alabama's waters will serve to protect the significant ecological resources of the state, as well as ensure future delivery of drinking water, power generation and sustainable economic development.

The EPA has been working to better understand the complex issues of addressing water quantity and water quality effectively under the existing authorities of the Clean Water Act (CWA). The EPA Region 4 has had the benefit of working with other state and federal partners that have long been involved in this issue. For instance, population pressures and water disputes compelled many states in New England to begin development of water plans more than twenty years ago. All six of the New England states have developed hydrologic protection of state waters either through their state water quality standards program under the CWA and/or through state water allocation and permitting programs. The eight states surrounding the Great Lakes, facing challenges of competing water uses, spurred development of water plans under the Great Lakes and St. Lawrence Seaway Compact, including innovative tools such as Michigan's Water Withdrawal Assessment Process and Internet Screening Tool. Alabama can draw on such tools, expertise, innovation and success both here in the Region and nationally. We have provided several examples in our comments and would welcome the opportunity to share with you any of these resources and contacts in the coming year as you develop and refine your plan.

As requested, the EPA has completed a review of the *Water Management Issues in Alabama* report. Our comments include recommendations about how Alabama could utilize tools that are already available under the CWA to address many of the State's water resource issues, with a focus on efficiency, conservation and reuse, and development of instream flow water quality standards under the CWA. We support Alabama's water conservation and efficiency efforts, which can be a key component in water resource management. In addition, the EPA recommends that the State consider using its CWA authority under the water quality standards program to develop "instream flows which can serve as a cornerstone

of a statewide water management plan" (*Water Management Issues in Alabama*, Alabama Water Agencies Working Group, pg. 6). We further support the proposal to examine and recommend "appropriate flow dynamics for rivers and streams to support biological, recreational, and industrial/transportation needs and requirements" (Id., pg. 4), and have included examples of successful flow standards from throughout the country. We share with you the expectation, as you move forward, that all newly developed water plans and policies will of course be consistent with your state water quality standards under the CWA.

Our enclosed comments follow the format of the Water Issues Area Summaries while also addressing the 2009 recommendations from the Permanent Joint Legislative Committee on Water Policy and Management and the areas of stated importance from the Governor in his charge to the Alabama Water Agencies Working Group in April 2012.

With the benefit of evolving research in this area, we believe it is possible to develop the tools needed to protect, and where possible restore, the hydrologic condition and ecological integrity of state waters, while efficiently carrying out necessary and important water supply planning and economic development. We stand ready to assist your group in any way possible, and please do not hesitate to contact me at (404) 562-9470 or Ms. Lisa Perras Gordon at (404) 562-9317 if you have any questions.

Sincerely,

James D. Giattina
Director
Water Protection Division

Enclosure

cc: Glenda Dean

Alabama Water Agencies Working Group
EPA Region 4 Stakeholder Comments
November 2012

The Region 4 office of the Environmental Protection Agency (EPA) has reviewed the report entitled *Water Management Issues in Alabama* (the WMI Report) by the Alabama Water Agencies Working Group (AWAWG) and offers the following stakeholder input.

General Stakeholder Input

The EPA supports the development of a statewide water management plan as detailed in the WMI Report. The EPA's two primary issues for stakeholder input are conservation and reuse, and the recommendation to develop instream flow water quality standards. The EPA is also providing comments below in seven other areas. In addition to those comments, the EPA is providing information regarding the significance of Alabama's aquatic ecology that was not included in the WMI Report.

Alabama's globally significant aquatic biodiversity

The United States is often cited as one of the top countries in the world for aquatic biodiversity, ranking 1st for crayfishes, freshwater mussels, freshwater snails and many aquatic insects and 7th for fish diversity. In fact, whereas the U.S. has over 300 species of freshwater mussels, all the rivers of Europe have only 10 and the entire continent of Africa just 56. There is no question that Alabama is at the heart of the U.S. freshwater diversity, with more species of mollusks (180 species of both snails and mussels) and fish (>300 species) than any other state (ADCNR 2012). *Rivers of Life*, a NatureServe report on aquatic biodiversity, highlights the state of Alabama in general and the Mobile River basin in particular as having "extraordinarily diverse assemblages of freshwater animal species..." and also references the Cahaba River which it describes as a "treasure trove of botanical life" (Master et al. 1998). However, the report notes that many of Alabama's species are vulnerable. In fact, Tennessee and Alabama came in 1st and 2nd for the greatest number of imperiled freshwater species nationally. The report finds that just two regions of the U.S., one of which is the Mobile River Basin, are home to 35% of all vulnerable species in the U.S. Seventy percent of those species occur nowhere else in the world. Conservation practices and development of instream flow protections may provide the safeguards needed for many of these species that make Alabama a unique ecological treasure.

Freshwater ecosystems, as a whole, have suffered more decline than terrestrial ecosystems in recent decades (Master et al. 1998). Nationally, aquatic systems are under significant stress, and particularly in the Southeast, with the largest number of imperiled species. More than two centuries of alterations to aquatic habitat, such as dams, surface water and ground water withdrawals, impervious cover, introduction of non-native species and channelization have significantly altered the aquatic environment. Only recently have scientists begun to quantify the extent of that alteration. In a national assessment, the U.S. Geological Survey found that alteration of waterways has impacted the magnitude of minimum and maximum streamflows in more than 86% of monitored streams nationally and may be the primary cause of ecological impairment in river and stream ecosystems (Carlisle et al. 2011). Every aspect of the lives of aquatic plants and animals is cued by and inextricably linked to the natural variability of our rivers and streams (Southern Instream Flow Network 2010). Alterations and reductions in stream flow and fragmentation of our waterways concentrate toxic and conventional pollutants, reduce fish passage, increase stream temperatures, increase predation, reduce access to stream bank habitat, eliminate the

connectivity to feeding and breeding locations in the flood plain and in some instances even eliminate stream flow altogether.

The EPA supports Governor Bentley's efforts to create a statewide comprehensive water plan that includes instream flow protection which may provide protection for Alabama's significant aquatic biodiversity. The EPA applauds this movement towards greater stewardship of these resources and hopes that with public outreach citizens can take even greater pride in their state's ecological riches.

Little was mentioned of Alabama's global significance in this area in the WMI Report. EPA encourages the AWAWG to acknowledge and support the exceptional aquatic biodiversity of Alabama as it works toward the completion of the statewide water management plan.

Water Issue Area Specific Comments

Water Resources Management

As a means of managing and planning for water supply while minimizing impacts to public resources such as streams and wetlands, we encourage the state to place up-front emphasis on conservation and management principles.

Fixing ~~leak~~king infrastructure and incentivizing efficient use can free up significant supply already in the treatment and distribution system, often closing demand-supply gaps at a fraction of the cost of developing new supply. Whereas many distribution systems have unaccounted-for water (UAW) volumes upwards of 20-30%, states that have UAW goals generally target losses of no more than 10-15% (EPA 2010a). With its *Water Conservation Standards* of 2006, for example, Massachusetts established that water suppliers should conduct annual audits and semi-annual system-wide leak detection surveys with a goal of reducing UAW volumes to below 10%. Suppliers must then work towards fixing system leaks and reducing unaccounted-for water, with regular reporting requirements. Fixing leaks and managing system losses can increase financial benefits because water treated and transported through the distribution system, but lost before reaching an end user, is unbilled and thus represents revenue loss that could be recovered. In the mid-1990s, for example, Gallitzin, Pennsylvania's small distribution system was experiencing high water losses exceeding 70% (EPA 2002). After a thorough leak detection and mapping effort, the authority initiated a leak repair program and a corrosion control program at the water treatment plant. Just four years after implementation, delivery had decreased by 68%, with UAW down to 9%. Chemical treatment and energy cost decreases were 47% and 61%, respectively, which allowed the authority to keep water rates down.

Projects that impact hydrology, such as new or expanded water supply, development, and recreational or amenity impoundments, often require Clean Water Act (CWA) Section 404 permits, making them subject to review for compliance with the 404(b)(1) Guidelines. In reviewing such projects EPA considers whether the applicant has demonstrated adherence to the mitigation sequence, with avoidance and minimization of impacts to aquatic resources as the first two steps. EPA also reviews proposed projects for full consideration of alternatives in selection of the Least Environmentally Damaging Practicable Alternative. For water supply project proposals, full implementation of conservation and

efficiency measures, including water reuse options, is a primary alternative that could have a fraction of the impacts to aquatic resources of developing new supply infrastructure. A study that surveyed multi-family residential units across several cities found that the introduction of sub-metering reduced water consumption by 10-26% (Mayer et al. 2004). EPA looks for such measures to minimize or altogether avoid aquatic resource impacts. A state water management plan can serve as the policy basis for prioritizing projects that use and improve upon existing infrastructure, and make use of existing investments so that they have less impact to aquatic resources. A state plan can facilitate such measures being considered together as a comprehensive approach rather than in isolation.

When water supply projects are determined to be necessary, demonstrated maximization of conservation and efficiency measures can facilitate federal permit review. Any new supply development (such as a reservoir) should be sized appropriately for the documented purpose and need, and designed to mimic the natural conditions as closely as feasible in the downstream waters. Dewatering of the downstream segments should not be allowed during the filling stages of impoundments. Many of these projects require long-term financial and maintenance obligations, which should be outlined and accounted for in all applications to ensure protection of the water quality necessary to protect designated and existing uses throughout the life of the project. The maintenance of impoundments, including the costs for activities such as dredging of sediments, is often not adequately considered, and can lead to degradation of resources. Whereas free-flowing streams can be economic boons by bringing recreational users and tourism, with associated hospitality and recreational gear business, reservoirs can be an economic liability. One such example is that of the Hickory Log Reservoir in Canton, Georgia. Costs for that reservoir have increased to more than five times the original estimate, creating an economic burden threatening other fundamental needs of the city. *The Atlanta Journal-Constitution* reported in June 2012 that water bills for city of Canton customers have increased 30% to pay for expenses for the reservoir, which is full but not yet delivering water (Scott 2012).

Incorporating protection for aquatic species is a critical element of a good water resource management plan. Impoundments, for example, represent a significant threat to connectivity of Alabama's exceptional aquatic resources, including the many threatened and endangered species of freshwater mussels found in the state.

Therefore, the EPA would like to encourage the State to give priority to maximizing efficiency measures and the possible expansion of existing facilities versus building new reservoirs in order to avoid impacts to aquatic resources such as streams and wetlands, and to protect overall ecological/environmental integrity. My staff would be happy to work with the AWAWG and member agencies to provide technical support of the state's efforts.

As the WMI Report recognizes, water resource management "needs to be holistic across an entire watershed or drainage basin due to the interrelationship of the natural and human processes and activities that can impact each other, in some cases from a great distance. This includes both land and water resources, since land use can have significant impacts on water resources and related ecosystems." A water management plan that incorporates all uses should give equal consideration to instream uses, e.g., aquatic life, aesthetic values, physical stability, and ecological viability (habitat, water quality) as it does to anthropogenic off-stream uses (supply, impoundment), as recognized for some time by western

states and more recently by eastern states and the Instream Flow Council (Breckenridge 2004). The CWA provides that each state must specify appropriate water uses to be achieved and protected for each waterbody (40 CFR 131.10(a)). The state must take into consideration the use and value of water for public water supply, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agriculture, industrial uses and other purposes including navigation. For the past 30 years, North Carolina has successfully utilized the designated use provisions under its water quality standards (WQS) program to work with local jurisdictions to directly address issues where land use affects water use. For instance, a use designation for Class WS-II Waters provides additional protections for drinking water supplies by requiring local jurisdictions to adopt "nonpoint source and stormwater pollution control criteria for the entire watershed" (NCDWQ 2007). Once the use designation is adopted, those provisions are placed into ordinances of local jurisdictions, which are then responsible for their implementation. These provisions also include best practices such as buffers, housing density options or advanced storm water management. The state is careful to point out that these practices do not limit economic development, but rather ensure sustainable development in sensitive areas. *Alabama could review North Carolina's use designations and consider more fully developing its designated uses under the CWA to provide protection for an entire watershed rather than just the waterbody, and require those provisions be adopted by local jurisdictions.*

Expanded Certificates of Use/Permitting:

The EPA strongly supports a comprehensive program for permitting and accounting for both ground water and surface water use in Alabama. Understanding water availability and use is essential to managing the resource (USGS 2012). Understandably, Alabama also would like to keep 'the regulatory burden to a minimum' (WMI Report p.12).

The EPA has three recommendations in this section:

- As other states have faced this challenge, new innovative tools have evolved that Alabama may want to explore. Michigan has developed an innovative and national award winning ground water withdrawal permitting system that provides detailed information on ground water use while keeping the regulatory burden to a minimum. Michigan's Water Withdrawal Assessment Process and Internet Screening Tool was developed collaboratively over six years by the Groundwater Conservation Advisory Council representing water users, state officials, technical experts and conservationists. This tool allows citizens to go on-line, type in information on proposed ground water use, and get instantaneous feedback to determine if the water withdrawal will affect local streams. If it does not, they need only complete forms to get permitted. If it does, they may try to change the location or withdrawal rate to get the "go-ahead." No direct government review is needed for the majority of the permits. Only those few wells that may cause biological effects on streams need to proceed to the more detailed site-specific permit review (Ruswick et al. 2010; Hamilton et al. 2011).

- As Alabama considers how to move ahead with issuing a Certificate of Use (COU) that 'will not interfere with an existing legal use of the water' we ask that you also consider a requirement that

the permitted use not cause or contribute to a violation of water quality standards, including any existing implicit protections for instream flow, such as support for aquatic life.

- In other states, authorities have found it important not to set the threshold too high for capturing withdrawals and impacts via a permitting system. In Massachusetts, for example (Breckenridge 2004), higher permit thresholds led to not capturing data on many withdrawals, compromising understanding of the total anthropogenic uses and impacts on systems, and increasing uncertainty in planning. An effective plan would incorporate estimates of unpermitted uses (e.g., those below the threshold and illegal withdrawals) to more accurately gauge impacts. A plan and permitting system that allows for periodic review and adaptive management will provide for more effective protection as lessons are learned, systems adjust to alterations and impacts, and new monitoring and scientific information becomes available, especially given the variability of hydrographs that is essential to maintenance of the physical/chemical system and aquatic life.

Economic Development

As indicated in Alabama's proposal, protecting the health of freshwater ecosystems is not only critical to biodiversity and ecology but also to the support of a thriving economy. Maintaining the integrity of natural biological and physical systems provides significant economic benefits to state and local economies. In July 2012, EPA Headquarters published a document entitled, *The Economic Benefits of Protecting Healthy Watersheds* (EPA 2012b). This fact sheet, based in part on a study that included data from Alabama entitled, *Forests for Water: Exploring Payments for Watershed Services in the U.S. South* (Hanson 2011) states that healthy intact watersheds provide many ecosystem services that are necessary for our social and economic well-being. These services include water filtration and storage, nutrient cycling, soil formation, flood prevention, food production and timber.

Protection of natural and aquatic resources can also be directly tied to the creation of jobs and a strong economy. For example:

- A 2012 report found that outdoor recreation contributed $646 billion in direct sales and services to the U.S. economy annually, supporting an estimated 6.1 million jobs, generating $39.9 billion in federal tax revenue and $39.7 billion in state/local tax revenue, and providing sustainable growth in rural communities (Outdoor Industry Foundation 2012). Outdoor recreation jobs numbering 215,126 were found in the East South Central states (AL, KY, MS and TN) (Outdoor Recreation Industry 2006).
- Twenty-four million Americans participate in paddling sports (kayaking, canoeing, rafting). Despite the national recession, the outdoor recreation economy grew approximately 5 percent annually between 2005 and 2011 (Outdoor Industry Association 2012).
- Local hydrologic restoration projects are bringing economic development to smaller communities in our region. A project to remove aging dams and restore naturalized white water flow to the Chattahoochee River on the Georgia/Alabama border is projected to bring 144,000 new visitors annually, create 700 jobs and add $42 million additional yearly revenue from recreational tourism (Adams 2011).

- Healthy estuaries, such as the Mobile Bay and coastal communities dependent on the natural timing and delivery of freshwater flows, contribute billions of dollars to state economies.

Protection of adequate instream flow also provides economic certainty to municipal and industrial dischargers. In recent years, there has been a trending downward of freshwater flows in many freshwater rivers and streams – much of which is anthropogenic in origin, such as over-pumping of ground water or surface water withdrawals. Some of these reductions may persist long enough to cause revisions to the calculated 7Q10 (the lowest recorded 7 days of flow in a ten year period). In addition, prolonged droughts have prompted those who control regulated rivers to consider dropping the low flow minimums or revise drought control manuals to allow for further reductions of the low flow values. National Pollutant Discharge Elimination System (NPDES) permits issued under Section 402 of the CWA use critical low flow values such as 7Q10s or negotiated low flows on regulated rivers to calculate a permittee's discharge limits. In areas where those low flow values are causing long-term changes, permits will have to be recalculated to protect for the new critical low flow. Where possible, protection of instream flows from anthropogenic alteration may prevent unnecessary and often costly additional treatment for those permittees.

Whereas resource management can often be portrayed as protection of ecology vs. protection for economic development, new data and studies indicate that they are quite often linked. Therefore, *the EPA encourages the AWAWG to acknowledge as they develop their plan that there may be significant economic benefits, in both ecosystem services, jobs and revenue, to protecting and maintaining intact aquatic ecosystems.*

Surface Water and Ground Water Availability

The EPA supports Alabama's approach of developing comprehensive scientific knowledge of surface water and ground water availability. The EPA recommends that as Alabama explores ground water development policy, it ensure that it addresses the linkages between ground water and surface water. Alabama notes surface water and ground water concerns in this section separately, but they should be treated in most areas as a single resource. Nearly all surface water bodies interact in some manner with ground water (Winter 1998). Withdrawal of surface water can deplete ground water and there are numerous areas in the Southeast where pumping of ground water has been known to directly affect surface water. Ground water depletion may cause significant reductions of surface water flow which may impair or remove designated uses without going through the provisions of the CWA (40 CFR 131.10 (g)). It should be noted that under the CWA, existing uses generally cannot be removed (40 CFR 131.10(h)).

The EPA recommends that newly developed ground water withdrawal policy directly link to Alabama's water quality standards so that any withdrawals will not cause or contribute to a loss of the water quantity needed to support the water quality, including support for meeting aquatic life uses, drinking water, recreation, etc.

The EPA will work with the State to explore any potential assistance that we can provide on funding options for maintenance of gaging stations, water quality and biological assessments and ground water and surface water assessments.

Water Conservation and Reuse

When it comes to protecting our limited fresh water supply, development and expansion of efficiency and conservation programs and efforts is an essential first step as we noted above, and we applaud the recognition in the *WMI Report* of the major impacts of water usage, and benefits of water conservation and reuse. Conservation not only reduces volumes requiring treatment (for consumption and as waste), but also reduces energy required to distribute and treat water. Conservation also preserves in-stream values such as water quality, habitat, physical stability, and aquatic life.

Water reuse, as recognized in the *Water Conservation and Water Reuse* section of the report, can be implemented in many settings. It can benefit municipal, agricultural, environmental, industrial, and private entities through uses such as those identified as well as through protection of environmental values. It can also represent an economic development advantage by reducing infrastructure and energy costs and resource demands in both public and private capacities. In September, EPA released its 2012 update of its manual *Guidelines for Water Reuse ("2012 Guidelines")*. This update includes new information on efforts by states across the country to develop water reuse, including regulations adopted by 30 states and one territory, and an inventory of diverse case studies (EPA 2012a). It can serve as a valuable resource and addresses two issue areas identified as considerations in the WMI Report. The first consideration given is:

- A tension exists within public water systems between the need to conserve water and a financial model predominantly based on water sales.

When water is reused as one measure for avoiding new withdrawals, this conflict is reduced; Chapter 7 of the *2012 Guidelines* addresses financial aspects of water reuse, including rate and fee structures. Other considerations describe success of these approaches as tied to public understanding and acceptance, for example:

- The public's perception of water reuse may be less receptive if they believe the recycled water is from a common public waste source.

This is a challenge that has played out nationally and in many communities as water reuse has been implemented, and Chapter 8 of the *2012 Guidelines* provides an excellent discussion of the issue and various approaches to public outreach and engagement. Much of this discussion, including the importance of proactively providing information to the public, is also translatable to conservation and efficiency programs.

An excellent example of a successful water reuse initiative is the Mobile Area Water and Sewer Systems (MAWSS) demonstration project funded by EPA through a $1.1 million National Community Decentralized Wastewater Demonstration Project grant. To deal with municipal treatment capacity overloads, the utility diverted wastewater to four satellite cluster facilities. Some of that diverted water is

then treated and used in a state-of-the-art underground drip irrigation system for a municipal park, decreasing the burden on the central treatment facility and reducing wastewater discharges to Mobile Bay (MAWSS 2005).

We have provided each of the southeastern states with a copy of EPA Region 4's 2010 *Guidelines on Water Efficiency Measures for Water Supply Projects in the Southeast* ("*WEGs*"). The *WEGs* emphasize many of the same goals expressed in the Alabama WMI report, and provide recommendations for effective implementation of conservation and efficiency measures (EPA 2010b). EPA is continually working to update these guidelines to incorporate more refined and quantifiable approaches and will continue to provide those as revised. The WMI Report issue area on conservation mentions measures such as fixing leaks, turning off water when not in use, rain barrel use, and non-potable water reuse in agricultural and industrial settings. We would highly recommend implementation of much more comprehensive measures (such as those identified in the *WEGs) and incentivizing them via funding programs and permitting requirements.* We especially endorse fixing leaking infrastructure, using an integrated resource management approach across residential, industrial, agricultural, and commercial settings, full-cost pricing, conservation pricing, metering of all water users, low-impact development and green infrastructure, retrofitting all buildings, water reuse, landscaping to minimize demand and waste, and efficient irrigation practices. Many state approaches can provide good examples of conservation and efficiency programs, such as the standards and recommendations in ten key areas in Massachusetts' *Water Conservation Standards* of 2006.

These approaches can conserve resources, reduce treatment costs, and reduce releases of pollutants into streams and rivers, as well as reduce unbilled losses. Conservation and efficiency measures can be promoted directly with residential, industrial, agriculture, commercial, municipal and local users, as well, not just public utilities, through establishment of codes, policies, and incentive programs, as demonstrated by many successful programs across the country. As recognized in the WMI report, developing a new water supply can be costly and time consuming, whereas demand can often be met for a fraction of the cost via conservation and efficiency measure implementation. Ashland, Oregon, for example, was facing a demand-supply gap and initially considered an $11 million reservoir or $7.7 million for 13 miles of new pipeline to withdraw from the Rogue River (EPA 2002). Instead they implemented an efficiency program comprised of system leak detection and repair, conservation-based water rates, a high-efficiency showerhead replacement program, and toilet retrofits and replacement. The cost of the program was just $825,875—less than 10% of the estimated cost of a reservoir—and less than a decade later demand was down considerably (16% of winter use), wastewater flow was reduced by 58 million gallons annually, and the town had realized considerable energy savings primarily associated with efficient showerhead replacement. Savings to utilities from avoiding additional infrastructure development can also be considerable. The WMI Report refers to the potential use of the Water Supply Assistance Fund; this presents an opportunity whereby efficiency-first guidelines could be established as part of this program. Additionally, the Regulated Riparian Model Water Code bolsters this emphasis by specifying a water authority's ability to "promulgate and establish guidelines and procedures relating to loans or grants" (ASCE 2004).

Again, EPA recommends that the state place up-front emphasis on conservation and efficiency as integral to water resource management. We highly recommend that the measures implemented be a far more comprehensive approach than that identified in the WMI Report, and that they be incentivized

through funding programs and permitting requirements. States such as Florida, Kansas, Colorado, Pennsylvania, Vermont, and Nebraska have used State Revolving Fund (SRF) programs to provide audit and leak detection programs, metering, and to improve efficiency in irrigation (EPA 2003). Kansas and Texas require implementation of approved water efficiency plans in order to receive SRF funding.

EPA welcomes the opportunity to work with Alabama to explore potential funding options to support Alabama's efforts to implement water efficiency measures and conservation and reuse programs. Nationally, the EPA already provides funding for efficiency, including reuse, through mechanisms such as the State Revolving Fund.

Interbasin Transfers

The EPA recommends that Alabama consider the procedures set out in Massachusetts' Interbasin Transfer Act (MGL Ch 21 Section 8B-8D), which governs water and wastewater transfers between river basins of the Commonwealth. This Act has been in effect for over 25 years and is considered part of an overall plan which has led Massachusetts to be considered a model for water supply efficiency. (See http://www.mass.gov/dcr/watersupply/intbasin/index.htm.) This well–established program includes many features that Alabama is considering, including defined basin units for evaluating and accounting for interbasin transfers and a "regulatory mechanism that provides for existing transfers and establishes criteria for new or expanded transfers." The Act also requires that efficiency measures be in place prior to approval of a transfer, such as conservation, leak detection, more accurate metering, etc. These efficiency measures correlate well with Alabama's stated goals regarding conservation.

Instream Flows

Under the WMI Report's Findings and Policy Options (pp.4-7) it recommends that the state:

- *Develop a policy concerning instream flows which can serve as a cornerstone of a statewide water management plan, and*
- *Develop an acceptable legal and regulatory framework for implementation of an instream flow policy.*

Under the issues identified by the Permanent Joint Legislative Committee on Water Policy and Management (2009) it recommended:

- *Examining and recommending appropriate flow dynamics [instream flows] for rivers and streams to support biological, recreational, and industrial/transportation needs and requirements.*

EPA concurs with these statements and recommends that Alabama utilize the well understood and well established tools under the CWA to develop instream flow water quality standards (WQS) for the protection of all designated uses and for application in all other purposes under the CWA. Under the CWA, WQS include the designated use of a waterbody, narrative and/or numeric criteria to protect those designated uses and the state's antidegradation requirements. All three of these WQS components can be used by Alabama as relevant and vital tools to protect and restore healthy hydrology in the state.

The WMI Report to the Governor states that "environmental legislation such as the Clean Water Act...often play[s] a major role in protecting instream flows in rivers and stream reaches but in a very indirect manner..." (WMI Report, p. 26). However, the EPA notes that the tools available under the CWA are increasingly being used to protect and restore the hydrology of waterbodies.

Many states have considered that the CWA is only concerned with water *quality* and does not regulate water *quantity*. However, the U.S. Supreme Court specifically addressed this under the CWA in PUD No. 1 of Jefferson County v. Washington Department of Ecology ("PUD"), 511 U.S. 700 (1994). In that case, the Court found that the distinction between water quality and quantity was "an artificial distinction" and that "[i]n many cases, water quantity is closely related to water quality..." (*PUD* at 1912-13). The linkage between water quality and water quantity has been well documented by the scientific community. Bunn and Arthington (2002) concluded that flow is a major determinant of physical habitat in streams and rivers and directly affects biological composition. Modifying flow regimes alters habitat and influences species diversity, distribution and abundance (Bunn and Arthington, 2002). Aquatic plant and animal species have evolved life cycle patterns directly tied to the frequency, magnitude, duration, timing and rate of change of natural flows. Ecologists now understand that flows following the range of the natural hydrograph are important for maintaining structure and function of aquatic ecosystems (Freeman and Marcinek, 2006). The *Regulated Riparian Model Water Code* recognizes the critical interconnectedness of water quantity and water quality at Section 1R-1-09, stating:

> Water allocation is inseparable from the regulation of water quality. Regardless of whether both functions are vested in a single agency, water allocation must be coordinated with water quality for effective management of a water source and to comply with federal laws and regulations. ... Two programs...will particularly affect State water allocation: 1. ambient water quality standards; and 2. effluent discharge standards for "point sources."

At this time, eight states and three tribes have adopted explicit narrative water quality criteria for protection of instream flows into their state WQSs under the CWA. Many more states are in the process of developing hydrologic standards under the CWA. Table 1 provides examples of how narrative criteria have been developed to protect not just the ecological conditions necessary to protect vital fisheries and aquatic life, but also recreation and all other designated uses under the CWA.

State/Tribe	Terms in WQS
NH	"surface water quantity shall be maintained at levels adequate to protect existing and designated uses"
RI	"quantity for protection of... fish and wildlife...adequate to protect designated uses" "For activities that will likely cause or contribute to flow alterations, streamflow conditions must be adequate to support existing and designated uses."
VT	Class A(1)- Changes from natural flow regime shall not cause the natural flow regime to be diminished, in aggregate, by more than 5% 7Q10 at any time; Class B WMT 1 Waters - Changes from the natural flow regime, in aggregate,

State/Tribe	Terms in WQS
	shall not result in natural flows being diminished by more than a minimal amount provided that all uses are fully supported; and when flows are equal to or less than 7Q10, by not more than 5% of 7Q10. Class A(2) Waters and Class B Waters other than WMT1 - Any change from the natural flow regime shall provide for maintenance of flow characteristics that ensure the full support of uses and comply with the applicable water quality criteria.
NY	For both Class N fresh surface waters and Class AA(S) fresh surface waters … "There shall be no alteration to flow that will impair the waters for their best usages."
VA	"Man-made alterations in stream flow shall not contravene designated uses including protection of the propagation and growth of aquatic life."
KY	"Aquatic Life. (1) Warm water aquatic habitat. The following parameters and associated criteria shall apply for the protection of productive warm water aquatic communities, fowl, animal wildlife, arboreous growth, agricultural, and industrial uses:...(c) Flow shall not be altered to a degree which will adversely affect the aquatic community."
TN	Criteria for Water Uses "(3) Fish and Aquatic Life (n) Habitat- The quality of stream habitat shall provide for the development of a diverse aquatic community that meets regionally-based biological integrity goals. Types of habitat loss include, but are not limited to: channel and substrate alterations… stream flow changes…. For wadeable streams, the instream habitat within each subecoregion shall be generally similar to that found at reference streams. However, streams shall not be assessed as impacted by habitat loss if it has been demonstrated that the biological integrity goal has been met. (o) Flow- Stream or other waterbody flows shall support the fish and aquatic life criteria." "(4) Recreational. (m) Flow- Stream flows shall support recreational uses."
MO	"Waters shall be free from physical, chemical, or hydrologic changes that would impair the natural biological community."
Seminole Tribe of FL	"Class 2-A waters shall be free from activities...that …Impair the biological community as it naturally occurs… due to …hydrologic changes"
Mole Lake Band of the Lake Superior Tribe of Chippewa Indians	"prohibited…human induced changes to … area hydrology that alter natural ambient conditions…such as…flow, stage…. Natural daily fluctuations of flow, stage… shall be maintained."
Bad River Band of the Lake Superior Tribe of Chippewa Indians	"Water quantity and quality that may limit the growth and propagation of, or otherwise cause or contribute to an adverse effect to wild rice, wildlife, and other flora and fauna of cultural importance to the Tribe shall be prohibited." "Natural hydrological conditions supportive of the natural biological community, including all flora and fauna, and physical characteristics naturally present in the waterbody shall be protected to prevent any adverse effects." "Pollutants or human-induced changes to waters, the sediments of waters, or area hydrology that results in changes to the natural biological communities

State/Tribe	Terms in WQS
	and wildlife habitat shall be prohibited. The migration of fish and other aquatic biota normally present shall not be hindered. Natural daily and seasonal fluctuations of flow (including naturally occurring seiche), level, stage, dissolved oxygen, pH, and temperature shall be maintained."

Table 1: Narrative language in WQS of select states and tribes relating to hydrologic criteria. See EPA website for full text of specific criteria: http://water.epa.gov/scitech/swguidance/standards/wqslibrary/index.cfm)

It should be noted that some other states have set instream flow standards that are implemented through provisions other than the state WQSs. Should Alabama choose to develop instream flow standards outside of the CWA, it should ensure that those instream flow standards are consistent with the state WQSs. That is, Alabama should not set conditions which would be less stringent than or in conflict with the state WQSs under the CWA. The EPA recommends setting the instream flow standard through existing CWA provisions in order to avoid that confusion. Specifically, EPA suggests that Alabama develop instream flow water quality criteria into the state WQSs (Chapter 335-6-10). Once approved, those standards would be in use for all purposes under the CWA in Alabama, such as Section 401, Section 404, etc.

The WMI Report states that the use of the public trust doctrine to protect instream flows often does not take into account the inter- and intra-annual flow variability needed to support stream ecology (p. 26). That is true of many state water policies or specific 'negotiated instream flow requirements' for regulated rivers that have historically focused on protecting a minimum or base flow. As Alabama succinctly captures, there is now a better understanding of the importance of addressing the seasonal, intra-annual and inter-annual variable flow patterns needed to maintain or restore processes that sustain natural riverine characteristics (Instream Flow Council 2009). The EPA concurs with Alabama and supports the approach that does not focus solely on the necessary minimum flows. While a low flow value such as the 7Q10 has been used as a critical flow value for developing waste load allocations for industrial and municipal dischargers, it was never intended as a value to protect ecological integrity.

The EPA Region 4 encourages states to consider adopting environmental flow standards under the CWA based on a "natural flow paradigm" that more closely resembles natural conditions (Poff et al. 1997). Where resources are available, site-specific environmental flow determinations can be made. When such studies are not practicable, the use of tools such as the "Ecological Limits of Hydrologic Alteration" (ELOHA; Poff et al. 2010) could be used which provides a scientifically sound means to assess environmental flows across large regions. Other natural flow approaches can be used where site-specific data are not available, such as using a Percent-of-Flow (POF) approach. The POF approach "explicitly recognizes the importance of natural flow variability and sets protection standards by using allowable departures from natural conditions, expressed as percentage alteration" (Richter et al. 2012). The POF approach is relatively simple to implement and may provide a high degree of protection for designated uses that are dependent on natural flow variability. Region 4 notes that the POF approach may need to be modified to be more protective for certain categories of highly sensitive or ecologically significant water bodies. This could include waters designated as Outstanding Alabama Waters or Outstanding National Resource Waters or waterbodies that have a significant contribution of base flow from ground water. The concept of supporting a "natural flow paradigm" as an important ecological objective fits in

naturally with the structure of CWA WQS as it can be explicitly stated as a narrative or numeric criterion with frequency, duration and magnitude, utilized to protect designated uses and evaluated during antidegradation reviews.

Development of an instream flow WQS under the CWA would address many of the concerns stated in the Instream Flows section of the WMI Report (pgs. 26-27), including the following:

- *Consistency with fulfilling the trustee resource conservation requirements for the Alabama Department of Conservation and Natural Resources regarding wildlife (Code of Alabama, 1975, §9-2-2).*
- *Relieving concerns regarding 'complex and cumbersome' implementation and enforcement and multi-agency coordination. Use of WQSs under the CWA is an established and well understood process. Other agencies could rely on the standards as the metric to be used in other state programs.*
- *Providing clear definition of the needed natural, variable instream flows versus static minimum flows which do not afford adequate protection.*

Interstate Coordination

EPA would welcome the opportunity to participate in any way with other state and federal agencies to facilitate coordination of interstate issues. EPA has access to facilitation services that could be utilized as needed for resolution of interstate issues.

As well, we encourage all states to keep in mind the CWA provision to protect all downstream uses, including the hydrologic conditions needed to meet the designated uses (40 CFR 131.10(b)) of downstream states.

Water Resources Data

EPA welcomes the opportunity to work with Alabama and other federal partners to explore potential funding options in Alabama's efforts to acquire quality surface water and ground water data.

The EPA also notes that there is a wealth of data and research that is already being developed in the area of water management, water efficiency, the flow-ecology relationship and ground water/surface water interactions that can be used by the state to supplement its own data and research, including work being done by the Southern Instream Flow Network, the USGS, the US Fish and Wildlife Service and academic researchers. Research that is taking place in neighboring states may also be of use to Alabama in those areas with similar physical and geological formations.

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