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# *Wakulla Springs Alliance*

*"Protecting and restoring water quality, spring flow and ecological health of Wakulla Spring."*

TO: Drew Bartlett, Deputy Secretary Ecosystem Restoration, Florida Department of  
Environmental Protection

FROM: Seán McGlynn, Chair

DATE: May 17, 2018

RE: Comments on May 18 Draft Upper Wakulla River and Wakulla Spring BMAP

After a thorough review, the Wakulla Springs Alliance concludes that the May 2018 *Draft Upper Wakulla River and Wakulla Spring Basin Management Action Plan* does not include all the necessary elements and policies to comprise an effective implementation plan to achieve the TMDL target within 20 years as required by section 373.807(1)(b)(8) F.S. We also find that the 2018 draft retreats from the critical goals articulated in the October 2015 Wakulla BMAP, thereby undermining the potential for the plan to achieve restoration of the Upper Wakulla River and Wakulla Spring ecosystem.

The Alliance therefore requests and recommends that the following changes be made to the May 2018 *Draft Upper Wakulla River and Wakulla Springs Basin Management Action Plan*. We believe these revisions will significantly increase the chance that the nitrogen reduction goal will be met and the biological community of the river and spring will begin to recover.

1. Amend the BMAP to specify the entire array of policies and programs that must be adopted and implemented to achieve the TMDL target and other actions that may be necessary to restore the biological community within the statutory twenty-year period.
2. Amend the OSTDS Remediation Plan to (a) require that ALL new development within the PFAs use nitrogen reducing OSTDS or connect to sewer regardless of lot size, (b) define the criteria for sewer connections to qualify as "available within 5 years," (c) require connection of existing OSTDS when sewer is available, and (d) allocate explicit OSTDS nitrogen reduction targets to each of the jurisdictions within the PFAs.
3. Clearly spell out how remediation policies will be implemented and enforced for each nitrogen source category: Which government entities are responsible under what statutory or other legal authorities? How will the entities implement their responsibilities? When will implementation take place?
4. Restore the goals from the adopted October 2015 BMAP to achieve the TMDL for nitrate nitrogen and restore the impaired biological community to meet the department's Class III biology criteria.
5. Provide full documentation for how nitrogen reduction credits are assigned for individual remediation strategies and computed for each nitrogen source category and apply the computation methods consistently for calculating loads as well as reduction credits.
6. Amend the list of nitrogen source loads in sections 2.1.2 and 2.1.4 to include sinking streams and sinking lakes and address nitrogen discharged into ground water in Georgia.

In the following sections we explicate each of the above points and offer specific recommendations for changes in text or additional explanatory language.

### **1. Specify the Entire Array of Policies and Programs that Must be Adopted and Implemented**

The BMAP as drafted is mostly just a catalogue of existing and proposed projects, programs, and BMAP policies based on existing state law and rules that will be insufficient for achieving the TMDL nitrogen reduction target set in Table 4 in section 2.1.5. The exception is policy D.1.3 for which no implementation responsibility or enforcement authorities are specified. Furthermore, the public education initiatives presented in Table D-2 do not include any new specific initiatives to achieve the public education objectives set forth in the OSTDS Remediation Plan.

As shown in Table 6, achieving the TMDL target load of 139,564 lb-N/yr will require OSTDS remediation projects that achieve greater than 10 times more nitrogen reduction than those to which responsible entities have committed as detailed in Table B-1. (The text in section 2.4 should clarify that only seven of the nine projects listed in Table B-1 include explicit nitrogen reduction target commitments.) Achieving the TMDL target also will require the adoption and implementation of policies beyond those stipulated in the BMAP for OSTDS and agricultural practices and procedures.

The BMAP must include additional policies in the OSTDS Remediation Plan in Appendix D to achieve the potential reductions tabulated in Table 6, along with clear delineation of implementation and enforcement responsibilities and how they are to be established. These we lay out in detail in the next sections. As detailed in the next section, the OSTDS Remediation Plan also must allocate OSTDS reduction targets to each jurisdiction within the PFA so that those responsible entities can scope their OSTDS remediation strategies efficiently and comprehensively.

The OSTDS Remediation Public Education Plan presented in section D.4 does not meet the section 403.067 F.S. requirement for presenting projects with “planning-level details” and priority rankings that will achieve the objectives of the plan. The opening paragraph states that DEP and FDOH “will develop and disseminate educational material focused on homeowners and guidance for builders and septic system contractors. The materials will identify the need for advanced, nitrogen reducing OSTDS along with the requirements for installing nitrogen reducing technologies under this OSTDS remediation plan.” No further details are provided as to content, timing, or commitment of funds. FDEP has recently put up a website designed to provide some public education. Section D.4. should describe that and include the url.

The specific public education initiatives presented in Table D-2 of the OSTDS Remediation Public Education Plan comprise only two items which are not ranked: (1) installation of education kiosks at the Woodville Community Center by Leon County beginning in 2015 and (2) a Wakulla County initiative, listed as “completed,” to provide citizens and officials with information on OSTDS and decentralized wastewater systems by means which are not detailed. Collectively these two specific projects plus the loosely described DEP/FDOH initiative will not reach all the target audiences nor address all the pertinent issues identified in the “plan” as described in section D.4. A substantially more robust public education plan is needed to meet the intent and the requirements of section 403.067 F.S.

## 2. OSTDS Remediation Plan Amendments

The Alliance requests and recommends that FDEP amend the OSTDS Remediation Plan in Appendix D as follows:

- a. **Require that ALL new development within the PFAs use nitrogen reducing OSTDS or connect to sewer regardless of lot size.**

Attaining the nitrogen reduction target will be increasingly difficult as new development adds wastewater and urban fertilizer to the springshed. Mitigating the effects of existing development will be insufficient if new development continues to add substantial nitrogen. In the PFAs, development on conventional septic tanks adds 10 to 25 times as much nitrogen as nitrogen-reducing OSTDS or connection to AWT sewer, respectively.

The extent to which a septic tank removes nitrogen from wastewater depends on the technology of the treatment train and the local soil conditions, not the size of the lot. The PFAs are located in the most environmentally vulnerable area of the springshed where enhancement or replacement of conventional septic tanks present the greatest opportunity to meet the TMDL. Adding new conventional OSTDS, especially in the PFAs, will substantially increase the nitrogen load to the Upper Floridan Aquifer and therefore should not be allowed.

Section D.1.3 appears to recognize this urgency by requiring that all existing conventional OSTDS must adopt enhanced nitrogen treatment within 20 years regardless of lot size. However, section D.1.1 calls for only requiring use of enhanced nitrogen treatment OSTDS or connection to sewer on new lots less than one acre. Limiting required remediation of new development to lots less than one acre will prompt developers to subdivide all lots to be no smaller than one acre thereby circumventing the policy and ensuring that little if any new development will deploy enhanced nitrogen treatment OSTDS. The BMAP should require that ALL new development achieve at least the same standard of wastewater treatment as is required for existing OSTDS and should direct FDOH to implement the necessary rulemaking to do so as is done in Section D.1.2 for permitting the modification or repair of existing OSTDS.

We therefore recommend the following language be substituted in section D.1.1:

### *D.1.1 Permits for Installation of New OSTDS*

Adding new conventional OSTDS, especially in the PFAs, will substantially increase the nitrogen load to the Upper Floridan Aquifer. Per statute, new OSTDS on lots of less than one acre are prohibited within PFAs, if the addition of the specific system conflicts with an OSTDS remediation plan incorporated into an OFS BMAP (see Section 373.811(2), F.S.). This OSTDS remediation plan prohibits installation of new conventional systems on ALL lots ~~of less than one acre~~ within the PFAs, regardless of size ~~are prohibited~~, unless the OSTDS includes enhanced treatment of nitrogen or unless the OSTDS permit applicant demonstrates that sewer connections will be available within 5 years.

Other sections of the draft BMAP must be changed for consistency with this amended policy:

- a. *Executive Summary – Restoration Approaches (pp. 13-14):*

***New OSTDS** – Upon BMAP adoption, the OSTDS remediation plan prohibits new systems on all ~~lots of less than 1 acre~~ within the PFAs, unless the system includes enhanced treatment of nitrogen as defined by the OSTDS remediation plan, or unless the OSTDS permit applicant demonstrates*

*that sewer connections will be available within 5 years. . . .*

*b. Section 1.5.2 Additional Requirements (p. 19):*

*New OSTDS on all lots ~~of less than one acre~~ inside the PFAs unless additional nitrogen treatment is provided, as specified in the OSTDS remediation plan (see **Appendix D** for details)*

*c. Section 2.10 Future Growth Management Strategies (p. 40)*

*The associated increased load from OSTDS to groundwater must also be addressed in addition to the current loads. Future development on all lots ~~less than one acre~~ in the PFAs must connect to central sewer, if available, or include nitrogen-reducing OSTDS, as described in Appendix D.*

**b. Specify criteria for sewer connections to qualify as “available within 5 years”**

The policy governing remediation of existing OSTDS within PFAs set forth in section D.1.1, and as we recommend being amended above, requires the use of enhanced OSTDS treatment of nitrogen “unless the OSTDS permit applicant demonstrates that sewer connections will be available within 5 years.” This clause also appears in the policy governing existing OSTDS in section D.1.2.

During one session of the OSTDS Advisory Committee, staff stated that “available within 5 years” refers to whether there is a project listed in the BMAP, i.e. Table B-1. However, there are no formal criteria for what can be listed as a BMAP project; projects are listed at the discretion of the “responsible entity.” While most of the OSTDS remediation projects listed do include information on the estimated cost, funding source, and funding amount, none provide explicit assurances that the projects will be implemented within five years of the adoption of the revised BMAP.

Furthermore, the text in Appendix B (p. 69) states that “Responsible entities submitted these management strategies to the department with the understanding that the strategies would be included in the BMAP, thus requiring each entity to implement the proposed strategies in a timely way and achieve the assigned load reduction estimates. However, this list of strategies is meant to be flexible enough to allow for changes that may occur over time.” Thus listing in the BMAP provides no guarantee as to when or if an OSTDS project will be implemented.

The BMAP should specify that sewer connections will only be classified as “available within 5 years” where projects are fully funded such that construction of the sewer line and stub-out for lots will be provided within a 5-year capital plan and construction will be completed within 5 years of the adoption of the BMAP.

This definition should be stated with the first reference to “available sewer connections” in the Executive Summary (p. 14) and in section D.1.1 as noted above.

**c. Require connection of existing OSTDS to sewer when sewer is available**

When sewer is made available, many owners connect, paying the system fees and plumbing costs themselves or through local government or utility programs that help finance the costs. These costs are quite low relative to the cost of bringing the sewer into the development or replacing septic tanks with nitrogen reducing onsite systems.

State law (section 381.00655 (1)(a) F.S.) requires utilities to notify property owners when sewer services have been extended to their property and there is the capacity for connection, i.e. sewer is “available”. It



also requires septic tank owners to connect when they have been so notified that sewer is available. However, relatively few utilities issue this notification and some owners continue to use their septic tanks although sewer lines run in front of their homes and the sewer would greatly reduce the nitrogen load from their wastewater. The statute only permits the utility to waive the connection requirement where it makes a case-by-case determination, with the approval of FDOH, that “such connection is not required in the public interest due to public health considerations.” An opinion rendered by the State Attorney General’s Office in 2000 (AGO 2000-71, December 4, 2000) indicates that there also is no enforcement capacity for getting owners to connect after notification unless local governments pass an ordinance that will then enable FDOH to assess penalties where property owners fail to comply after proper notification.

None of the local governments that are undertaking new BMAP sewer projects within the Wakulla BMAP basin require connection to sewer when the project is completed and sewer is available. It is also unclear if notification will be provided as per state law or if notification has been provided for owners who currently have sewer access. Even when sewer connection fees and plumbing are paid for through government grants, connection to sewer is still voluntary except where FDOH will not issue a permit for repair or replacement for an existing septic tank because sewer is available.

This is a huge waste of infrastructure. The cheapest way to help meet the TMDL is to notify all owners who have sewer lines in front of their property that they must connect to this utility. This should be obligatory. Many owners have already done so and paid the cost of connections themselves. The “holdouts” should be connected to sewer so that the public dollars that support sewer construction are not wasted and much greater amounts of nitrogen are removed from ground water. This should be considered for all locations inside the BMAP area. Connection of conventional septic systems outside of the PFAs to existing sewer lines reduces nitrogen to ground water by a factor of 11.

We therefore recommend that the following changes be made to the draft BMAP:

#### *D.1.3 Achieving Necessary Load Reductions*

All existing conventional OSTDS in areas subject to the remediation policy for existing systems the PFAs are required to connect to sewer if it is currently available within 5 years, or adopt enhanced treatment of nitrogen where sewer is not available, no later than 20 years after BMAP adoption. Within 1 year after BMAP adoption, all utilities that have existing available sewer are required to notify owners that sewer is available. Local governments should pass an ordinance that will enable FDOH to assess penalties where property owners fail to comply after proper notification.

#### **d. Allocate explicit OSTDS nitrogen reduction targets**

The BMAP should allocate explicit OSTDS nitrogen reduction targets to each of the jurisdictions within the PFAs, i.e. City of Tallahassee, Leon County, and Wakulla County.

Section D.1.1 encourages local governments to “develop master wastewater treatment feasibility plans to identify specific areas to be sewerred within 20 years of BMAP adoption” (p. 89). Furthermore, section D.1.2 (p. 91) appears to make the issuance of permits requiring use of enhanced nitrogen removal OSTDS for modification and repair of existing systems contingent upon completion of such a plan. Without explicit allocations of OSTDS remediation targets to each jurisdiction, there is no assurance that such plans will be scoped sufficiently to achieve the necessary reductions for meeting the TMDL.

The City of Tallahassee has long had a Master Water and Sewer Plan. Leon County has initiated the process of developing a Comprehensive Wastewater Treatment and Management Plan. Wakulla County should be encouraged to do also and funds should be made available to assist them.

### **3. Spell Out What Will be Required to Implement and Enforce These Policies**

As drafted, the BMAP fails to clearly and fully specify how and when the policies and strategies shall/can be implemented and enforced. In some cases, the BMAP identifies the implementing entity but does not clearly specify the authority under which that entity is empowered to act. In others the BMAP does not address implementation and enforcement at all.

#### **a. Provide direction to local governments regarding required revisions to local regulations and policies**

Many of the policies in the BMAP and OSTDS Remediation Plan involve aspects of land use, e.g. lot size, location within the PFAs, availability of utilities, zoning, and comprehensive planning. It appears that implementation of some BMAP policies will require local governments to revise their regulations and/or comprehensive policies.

For instance, the BMAP designates PFAs that encompass portions of the City of Tallahassee, Leon County, and Wakulla County, but neither the comprehensive plans nor the land development codes of these jurisdictions do so. Both Leon and Wakulla Counties have designated “springs protection zones” but these do not correspond to the PFAs. Because most of the BMAP OSTDS remediation policies apply solely within the PFAs, local plans and/or regulations must delineate the boundaries of the PFAs exactly so that parcels can be determined to be “in” or “out” of a PFA. “Fuzzy” boundaries will not serve when land owners wish to build or subdivide. The BMAP must make it clear how local governments which regulate land development should comply and when this must be done.

We suggest that this be addressed in section 2.10

#### *2.10 Future Growth Management Strategies (p. 40)*

*Local land development regulations, comprehensive plans, ordinances, incentives, BMPs, environmental resource permit requirements, and consumptive use permit limits provide mechanisms for protecting water resources and reducing the impact of new development and other land use changes as they occur. They are the primary mechanisms available to address additional nitrogen loadings from urban and agricultural growth. Within 1 year, local governments must amend their local land development regulations, comprehensive plans, ordinances, incentives, and BMPs to comply with the policies of this BMAP and the OSTDS Remediation Plan.*

#### **b. Clarify the legal authorities and responsibilities and the timing for implementing and enforcing the OSTDS Remediation Plan policies**

FDOH appears to have most of the responsibility for implementing the OSTDS Remediation Plan policies identified in Appendix D. However, the legal authorities for exercising those responsibilities are not clear.

- It is not clear if FDOH must promulgate formal rules to implement the policy currently set forth in section D.1.1 regarding new OSTDS on lots less than one acre (p. 89) by the July 1, 2018 statutory deadline, and if so, whether FDOH is on target to have those rules in place on time. Is it solely 373.811(2) FS? Must FDOH adopt rules to implement that statutory provision? If so, are the timing of implementation and enforcement contingent upon adoption of the final new rules rather than the

effective date of the BMAP?

- If the BMAP is amended to expand the D.1.1 policy to ALL new OSTDS within the PFAs as we recommend, the BMAP should spell out the options for providing the legal authority for FDOH to enforce such a policy. Discussions with FDEP staff suggest that implementing such a policy will require additional state statutory authorization. Because of the vagaries attending the adoption of new state legislation, we recommend that the BMAP direct local governments to adopt and enforce ordinances to effect this policy.
- The BMAP should similarly clarify the actions needed to implement and enforce the policies governing existing OSTDS as set forth in sections D.1.2. and D.1.3. As with extending remediation requirements to new OSTDS on lots of one acre or greater, it appears that new state statutory authorization may be required to enable FDOH to implement these policies or local governments will have to enact ordinances to implement these policies themselves.

The third bullet in section D.1.2 (p. 90) appears to stipulate that completion of a local master wastewater treatment feasibility plan and the procurement of additional funding are ~~is a~~ conditions to enforcing the BMAP policies governing existing OSTDS within PFAs. FDEP staff informed us that is not their intention. In addition, there are no “funding milestones” presented in sections D.3 or D.4. Therefore, we recommend that the third first-level bullet in section D.1.2 (top of p. 91) should be revised as follows:

*When ~~is~~ must the remediation policy for existing systems be implemented and what is necessary to do so effective? FDOH shall implement these policies ~~It begins following completion of the master wastewater treatment feasibility plans, rulemaking, and funding milestones included in Sections D.3 and D.4, but~~ no later than five years after BMAP adoption and adopt the necessary rules and/or secure the necessary legal authorization to do so through state law and/or adoption of local ordinances. Local governments are encouraged to prepare master wastewater treatment feasibility plans to inform strategies for cost-effective remediation of existing OSTDS. FDEP shall work with the State Legislature to secure the funding needed to support preparation of such plans and to implement these policies.*

- Section D.1.3 extends the reach of the policies in D.1.2 to require that “All conventional OSTDS in areas subject to the remediation policy for existing systems are required to adopt enhanced treatment of nitrogen no later than 20 years after BMAP adoption” (p. 91). Here again, the BMAP should clearly direct FDOH to adopt the necessary rules and/or secure the necessary legal authorization to implement and enforce that policy.

Furthermore, FDOH will only become aware of an existing OSTDS that needs replacement according to the Remediation Plan if the owner requires a permit for repair, modification, or replacement. What about all the conventional OSTDS that after 20 years, are still functional? Is FDOH obligated to use the septic tank inventory to identify the owners and to notify them so they have time to comply with the 20- year mitigation requirement?

**c. Resolve timing inconsistencies for meeting new requirements established in the BMAP**

As noted above, section D.1.2 of the OSTDS Remediation Plan does not require FDOH to implement the policies requiring remediation of existing OSTDS for which permits are required for modification or repair until five years after adoption of the BMAP. Section D.1.3 does not require FDOH to implement policies to remediate all other existing OSTDS for 20 years.

These implementation timeframes will seriously compromise the BMAP milestone to achieve the TMDL within 15 years as well as the intermediate 5-year (41,869 lb-N/yr) and 10-year (69,782 lb-N/yr) milestones. Failure to begin remediating existing OSTDS within the first five years will preclude achieving

the 5-year milestone of 41,869 lb-N/yr unless almost all of the potential remediation attributed to other sources (UTF, STF, FF, LW, and WWTP) is completed during that initial five-year period. The 10-year milestone can only be achieved if there is no net increase in nitrogen loading from new development, all potential remediation of other sources is completed, and 87 percent of existing OSTDS are enhanced with nitrogen-reducing OSTDS.

**d. Clarify the authority of local governments to adopt stricter rules and policies**

Can local governments adopt stricter rules and policies than those adopted in the BMAP? If so, the BMAP should make this explicit. This has been a confusing issue ever since the Legislature blocked local governments from making stricter requirements for wastewater treatment until after the Passive Treatment study was completed. Although it was completely in 2015 and the restriction is supposed to have sunsetted, local governments have been reluctant to move forward on improved wastewater treatment requirements because they have not received “affirmative” notification that they can so proceed. Please make it clear in the BMAP that local governments may adopt stricter regulations and policies, including BMPs for UTF and STF, than state law or the BMAP and OSTDS Remediation Plan if they believe it is appropriate for their community.

**e. Clarify what will be required to implement “advanced agricultural practices and procedures**

Section 2.7.3 of the BMAP should clarify how the nitrogen reduction credits attributed to “advanced agricultural practices and procedures” in Table 6 shall be effected – What initiatives must FDACs and/or other entities undertake to assure that these additional projects and practices are adopted and implemented? What additional legal authority, if any is required? What funding will be needed and how can that funding be procured?

**4. Restore the Adopted 2015 BMAP Goals**

The adopted 2015 Upper Wakulla River and Wakulla Spring BMAP states that the goals of the BMAP are to both meet the TMDL and restore the biological community of the river and spring. Meeting the TMDL for nitrogen is a necessary, but not sufficient, condition to restoring the biological community. The submerged aquatic vegetation communities of the river and spring have been severely degraded and are unlikely to immediately recover upon attainment of the TMDL. Of particular concern is the cyanobacterium (aka blue-green algae) *Lyngbya* which is notoriously difficult to displace once it is established. The 2018 Draft BMAP acknowledges the importance of attending to both the biological community as well as nitrate-nitrogen levels by delineating in section 3.3 continuation of a monitoring protocol for evaluating progress that includes both water quality and biological monitoring to assess the overall ecological health of the river and spring.

We request, therefore, that the entire goal, as stated in the adopted 2015 BMAP be added to the 2018 BMAP.

Specifically, we request that the following language from the 2015 BMAP be added to the Executive Summary, after the second paragraph on page 11.

*The goal of this BMAP is to restore Wakulla Springs and the Upper Wakulla River to a sustainable biological community that is resilient to the impacts of existing and continuing human use and development on the land from which Wakulla Springs draws its waters.*

We also request that the entire paragraph which describes the goal of the 2015 BMAP be added to section 1.2 and that the section be retitled “Restoration Targets for the Upper Wakulla River and Wakulla Spring.”



*The goal of the BMAP is to restore Wakulla Springs and the Upper Wakulla River to a sustainable biological community that is resilient to the impacts of existing and continuing human use and development on the land from which Wakulla Springs draws its waters. The BMAP addresses anthropogenic sources in the basin that have resulted in impairment of the ecological community of the Upper Wakulla River to the extent that the TMDL target is met. Management strategies in the BMAP have been developed to make progress towards the TMDL targets for allowable nitrate-nitrogen concentration (0.35 mg/L) and recovery of the biological impairment to meet the department's Class III biology criteria in the impaired segment and therefore, to meet the waterbody's designated uses.*

## **5. Fully Document How Nitrogen Reduction Credits are Assigned and Computed**

Failure to fully document the basis for nitrogen reduction credit calculations that lie behind the “potential credits” presented in Table 6 impedes informed public review and comment on the draft BMAP and undermines its credibility. Specific deficiencies include the following:

- a. **DEP approved credits for BMPs:** The BMAP does not document the basis for the “DEP approved credits” for the BMPs and public education activities that are the basis for the estimated nitrogen reduction credits for UTF, STF, FF, and LW presented in sections 2.5 – 2.7 and summarized in Table 6: e.g. 6% for public education activities, 6% for sports field BMPs, 10% for golf course BMPs, etc.
- b. **UTF load credit:** The value reported in Table 6 for UTF cannot be derived from either Table 8 or Table 9.
- c. **Appendix E is incomplete:** Section 2.5 (p. 33) describes Appendix E as containing “technical support information that further explains the concepts presented in this section, including nitrogen loading by source category, reduction obligations, and management strategies.” It does not do so; it only presents a summary of the NSILT.
- d. **Agricultural BMP credit basis:** In section 2.7 the BMAP states that “While DEP has listed larger percentage reductions in nitrogen from agricultural BMPs in estimating benefits to surface waters, the best data available indicate a 15 % reduction in the load to groundwater, where owner-implemented BMPs are in place.” Specifics about the “best available data” sources should be provided in Appendix F.
- e. **Provide a template for calculation of project credits for remediation of septic tanks to sewer or nitrogen reducing OSTDS.** Calculation of project credits for the amount of nitrogen reduced from remediation of conventional septic tanks must use the same arithmetic and parameter values as the calculation of nitrogen loading from septic tanks. These calculations should differentiate between nitrogen reduction provided by the treatment technology prior to discharge to the ground and attenuation that occurs thereafter. Credits also should be adjusted to account for the fact that not all of the nitrogen discharged into the Upper Floridan Aquifer within the Wakulla springshed is discharged at the main vent at Wakulla Spring. Attached is a template spreadsheet that can be used to calculate credits for OSTDS remediation projects.

## **6. Amend Nitrogen Source Loads to Address Sinking Streams, Sinking Lakes, and Loads from Georgia**

The source loads presented in sections 2.1.2 and 2.1.4, based on the February 2018 NSILT, fail to address three known sources of nitrogen loading to the Upper Floridan Aquifer within the Wakulla springshed: sinking streams, sinking lakes, and nitrogen discharged to the aquifer north of the state line. Exclusion of these sources presents an incomplete picture of the Wakulla springshed nitrogen budget and therefore inaccurately portrays the relative contributions of the other sources. While we recognize there are some challenges to estimating these loadings, challenges remain for other sources that are included. Rather than exclude these sources altogether, we recommend that they be included using the “best available data” consistent with the statutory directive for designating PFAs (section 373.803 F.S.) while acknowledging the limitations.

- a. **Sinking streams:** We recommend using the loading estimate for sinking streams from the 2014 NSILT as included in the 2015 BMAP, i.e. 33,221 kg-N/yr or 73,240 lb-N/yr. The November 2017 draft revised NSILT (section 2.8.1) dismissed sinking streams as not being major contributors and as not being susceptible to remediation. Staff also has raised concern about double counting atmospheric deposition. As shown in revised Table 3 below, using the 2014 NSILT loading estimate, sinking streams contribute more than three other sources included in the draft revised BMAP: STF, LW, and WWTF. Excluding sinking streams because they are not susceptible to remediation is inconsistent with the treatment of atmospheric loadings which the draft revised BMAP treats as non-remediable (see section 2.1.3, p. 24). An adjustment for atmospheric deposition within the respective watersheds could easily be made to refine the 2014 estimate.
- b. **Sinking Lakes:** We recommend using the loading estimate from the November 2017 draft revised NSILT, i.e. 42,709 lb-N/yr. Staff have raised concerns about the challenges of discerning the proportion of lake loadings that are attributable to atmospheric deposition and biological production within the watershed and the lakes themselves. As noted for sinking streams, double counting of atmospheric deposition can be addressed. Biological production within the watershed, while nonanthropogenic, is still contributing to the loadings that constrain achieving the TMDL for the Upper Wakulla River and Spring. The 2017 draft nevertheless makes an adjustment to account for naturally produced nitrogen, which again is inconsistent with the treatment of atmospheric deposition, some fraction of which is naturally occurring as well. While further refinements are possible, we believe that the November 2017 estimate should be used rather than pretending that the sinking lakes are not contributing to the nitrogen loadings affecting the river and spring.
- c. **Nitrogen Discharges North of the State Line:** The 2015 BMAP acknowledges that nitrogen discharges in Georgia are contributing to the loadings in the Upper Floridan Aquifer within the Wakulla BMAP basin in Florida: “Available data indicate that the largest nutrient loading sources reaching the Upper Wakulla River and Wakulla Springs are in Florida. However, if significant sources in Georgia are identified, addressing these sources should be considered in the next BMAP iteration” (p. 18). This revised BMAP should, at a minimum, continue to recognize those discharges as contributing to the loadings reaching the Upper Wakulla River and Spring by including a similar discussion in section 2.1.3.

We recommend that Table 3 be amended as shown here to include the estimated loadings for sinking streams and lakes and that the % contributions be recalculated and reflected in an amended Figure 2.

<b>Nitrogen Source</b>	<b>Total Nitrogen Load to Groundwater (lb-N/yr)</b>	<b>% Contribution with Lakes and Streams</b>
OSTDS	293,400	31%
UTF	77,282	8%
Atmospheric Deposition	212,134	22%
FF	167,712	17%
STF	42,399	4%
LW	23,840	2%
WWTF	26,697	3%
Sinking Streams	73,240	8%
Sinking Lakes	42,709	4%
Total	959,413	100%

**REVISED Table 3. Estimated nitrogen load to groundwater by source in the BMAP area**