



THE INSTITUTE FOR
**WATER AND ENVIRONMENTAL
RESILIENCE**
STETSON UNIVERSITY

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Watershed Planning and Coordination Section
Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection
Mail Station #3555
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Via email: Moira.Homann@dep.state.fl.us.

Re: Gemini Springs BMAP

Dear Ms. Homann:

We are in receipt of the revised Draft Basin Management Action Plan (“BMAP”) for Gemini Springs as required by the Florida Springs and Aquifer Protection Act, Fla. Stat. § 373.801 (2018) (“Springs Act”), and we are pleased to have the opportunity to provide comments.

Restoration of Florida’s springs is a focus area for the Institute for Water and Environmental Resilience at Stetson University. Faculty and students have participated as interested stakeholders in rule development for minimum flows and levels (“MFL”), total maximum daily loads (“TMDLs”), and the BMAP for Gemini Springs. On April 18, 2017, the Institute hosted a stakeholder forum on campus, heard presentations, and reviewed data on impairments to water quality from SJRWMD and other stakeholders. Our workshop was well attended by local governments, community groups, and other stakeholders interested in the restoration of Gemini Springs. Accordingly, we request that you acknowledge our participation as a stakeholder in Table A-1.

We are also appreciative that Secretary Noah Valenstein and Division Director Tom Frick met with us and other stakeholders on campus to discuss our concerns regarding Gemini Springs among others. To that end, we specifically appreciate improvements DEP made to the draft based on our discussion in our meetings. We believe that we all share a goal of restoration of Gemini Springs.

Gemini Springs is one of six Outstanding Florida Springs designated by the Florida Legislature as part of the Springs Act. § 373.801. The springs and adjacent lands were acquired by Volusia County, with funding from the Florida Communities Trust Program for conservation and public

recreation, in 1994. Since then, Volusia County has managed the area as a popular county park. Swimming at the springs was halted in 2002 due to high levels of *fecal coliform*, and since then the spring has been deemed impaired under the Clean Water Act due to high levels of nutrients. Since adoption of the Springs Act, a MFL was adopted by the SJRWMD and TMDLs were adopted by DEP. The BMAP is a culmination of that effort as required by the Act.

Upon review of the draft BMAP for Gemini Springs, we have concluded that it does not meet the requirements of Florida Law as set forth in Fla. Stat. § 373.801 and § 403.067(7). In our opinion, the BMAP does not identify sufficient management strategies, nor a financially feasible plan or set of projects, which will reduce nutrient loading to Gemini Springs and achieve the water quality TMDL restoration target for the monthly average of nitrate-nitrite of 0.35 mg/L. Our concerns with the draft BMAP can be summarized as follows:

Compliance with the law. The Springs Act lays out specific requirements for what must be included in springs BMAPs – for example, “a list of all specific projects and programs identified to implement a nutrient total maximum daily load”, including a priority ranking, a cost estimate, and a nutrient load reduction target for each. We find these requirements to be lacking in the draft BMAP.

Failure to deal with septic tanks. While the BMAP shows septic tanks to be the largest single source of nitrogen to the spring, there are not specific projects listed to reduce pollution from septic tanks in order to achieve TMDL.

Overly optimistic assumptions. Nitrogen-reducing benefits from many listed projects, particularly those critical to meeting the 20-year targets, appear to be significantly exaggerated.

Nitrogen Source Information Loading Tool. NSILTs are being used to estimate the amount of nitrogen which various sources are contributing to groundwater but are not being used to calculate how much nitrogen must actually be reduced at the land surface. As a result, estimates of the amount of nitrogen that must be reduced to reach the 20-year goals are significantly underestimated.

As noted above, we have participated in and commented on both the MFL and TMDL actions which preceded the development of the BMAP. While we were critical of the decision to authorize reductions in flow to Gemini Springs, we did indicate our support for the TMDL of 0.35 mg/L of nitrate-nitrite. While we expressed concern about the large extent of the defined springshed, we do think the boundaries of the PFA are on target. We also concur in the estimates for the number of OSTDS in the PFA and concur that approximately half of the nitrate inputs in the PFA are from septic tanks. Due to our long involvement in Blue Springs, we think the science supports an assumption that there is very little flow, if any, within the aquifer beneath the St. Johns River. We know of no scientific data to support any understanding of connections to Gemini Springs from the aquifer south of the St. Johns River, and further we are not aware of any science as to the travel time between those areas and the spring vent.

Failure to Comply with Springs Act

The draft BMAP does not identify sufficient management strategies because the plan significantly understates the amount of nitrogen reduction necessary to meet the TMDL. Fla. Stat. § 403.067(7) requires a BMAP to include “the appropriate management strategies...to achieve total maximum daily loads.” Table 3 shows—without any supporting reference—the estimated nitrogen load to groundwater by source in the BMAP area to be 53,219 lb-N/yr (“lbs”). Draft Gemini Springs Basin Management Action Plan, 23 (FDEP May 2018) (hereinafter “Gemini BMAP”). Language in Sec. 2.1.3 includes various assumptions including average nitrogen attenuation factors which, while curiously examined in Appendix E, are not satisfactorily explained. *Id.* at 23–25, 67–68. Table 4 shows the total reduction required to meet the TMDL as follows:

Total load at spring vent	20,496 lbs
TMDL Load	6,226 lbs
Reduction Required	14,270 lbs

In calculating loads at the spring vent, DEP fails to acknowledge or explain the approximately 61% reduction in nitrogen that occurs from the groundwater to the spring vent. By failing to take into account this reduction in its management strategy, DEP erroneously assumes a 1:1 ratio between credits to the groundwater and credits to the spring vent. In doing so, it drastically understates the reduction required. Accordingly, the appropriate management strategy should be to calculate the required load reduction at the surface, including the average attenuation factor, in order to achieve the intended result of the TMDL.

In our attempt to understand these average attenuation factors, we found the analysis by Dr. Xueqing Gao, PhD of Florida Department of Health to be the most comprehensible explanation. “Better Understanding the Impact of Onsite Sewage System on Quality of Florida Groundwater and Springs,” Bureau of Environmental Health, Presentation at Karst Symposium, Florida State University (November 3, 2017), <http://earth.eoas.fsu.edu/~mye/2017KarstSymposium/Gao.pdf>.

First, estimate by comparing spring vent load with spring vent TMDL (TMDL/SVL).
Next, estimate by comparing NSILT loads with spring vent TMDL (TMDL/NSILT).
Lastly, compare spring vent load with spring vent TMDL, and apply percentage to NSILT loads.

<i>TMDL/SVL</i>	$6226/20,496=30\%$
<i>TMDL/NSILT</i>	$6226/53,219 =11\%$
<i>(TMDL/SVL) x NSILT load</i>	$53,219 \times 30\%= 15,965 \text{ lbs-N/yr}$
Required Reduction	$53,219 - 15,965 = 37,254 \text{ lbs-N/yr}$

Total load within BMAP area	53,219 lbs
Required Reduction	37,254 lbs
TMDL Load at Spring Vent	6,226 lbs

Thus, while the BMAP is premised on a required reduction of 14,270 lbs, the plan should be based on a required reduction of nearly three times that amount to meet the designated TMDL. Clearly, a significantly larger amount of nitrogen must be reduced at the surface to translate into achieving TMDL load at the spring vent. Because the BMAP significantly understates the amount of nitrogen reduction required to reach the TMDL, it does not meet § 403.067(7)'s requirement to identify sufficient management strategies.

The draft BMAP is also deficient in that it does not meet the minimum requirements for development of projects and programs to implement TMDLs. Fla. Stat. § 373.807(1)(b) sets forth the requirements for a BMAP for an OFS as follows:

- (b) A basin management action plan for an Outstanding Florida Spring shall be adopted within 2 years after its initiation and must include, at a minimum:
1. A list of all specific projects and programs identified to implement a nutrient total maximum daily load;
 2. A list of all specific projects identified in any incorporated onsite sewage treatment and disposal system remediation plan, if applicable;
 3. A priority rank for each listed project;
 4. For each listed project, a planning level cost estimate and the estimated date of completion;
 5. The source and amount of financial assistance to be made available by the department, a water management district, or other entity for each listed project;
 6. An estimate of each listed project's nutrient load reduction;
 7. Identification of each point source or category of nonpoint sources, including, but not limited to, urban turf fertilizer, sports turf fertilizer, agricultural fertilizer, onsite sewage treatment and disposal systems, wastewater treatment facilities, animal wastes, and stormwater facilities. An estimated allocation of the pollutant load must be provided for each point source or category of nonpoint sources; and
 8. An implementation plan designed with a target to achieve the nutrient total maximum daily load no more than 20 years after the adoption of a basin management action plan.

The proposed BMAP includes the items listed in 1,2, and 7, but is deficient as to items 3,4,5,6 and 8. The draft BMAP does not provide a priority rank for each listed project, but instead it categorizes projects as either "low," "medium," or "high" priority based solely on whether the projects have begun or not. Gemini BMAP at 27. Further, the BMAP does not list the planning level cost estimate and estimated date of completion for each listed project. Five of all six planned projects contain only a placeholder for cost, and three of all seven projects that are either underway or planned have no estimated date of completion. *Id.* at 49–53. The BMAP also fails to identify the source and amount of financial assistance of projects. Only two of the thirty-nine listed projects have both the source and amount of funding listed, while all thirty-seven others have a placeholder in one or both categories. *Id.* Additionally, the BMAP fails to estimate each listed project's nutrient load reduction accurately because it assumes a 1:1 ratio between reduction of nitrogen at the aquifer and at the vent, as demonstrated above.

Most importantly, the draft BMAP does not identify sufficient projects to reduce nutrient loading in order to achieve TMDL. The BMAP lists projects which it indicates would reduce nutrient loading from between 17,020 to 22,631 lbs. *Id.* at 28. This is far less than the 37,254 lbs required to achieve TMDL.

Deficiencies in OSTDS Remediation Plan.

The management strategy posited for OSTDS in Sec. 2.4 is also deficient because it fails to sufficiently address existing septic tanks in the PFA by relying too heavily on conversion—rather than replacement—of these systems. A fair reading of the draft BMAP leads one to the conclusion that the TMDL cannot be achieved for Gemini Springs without a significant focus on OSTDS or septic tanks.

Based on our own research, we agree with DEP’s establishment of the Priority Focus Area within the springshed, and we also agree with their estimation that 49% of the Nitrogen load within the PFA is from septic tanks. *Id.* at 16–17, 58. We accept the DOH estimate of 2334 OSTDS within the PFA. *Id.* at 28. Based on our own research there are over 500 OSTDS in the immediate vicinity of Gemini Springs, and they are on fairly small lots which are served by private wells rather than public water supply. Many of these lots in the “Vistas” Subdivision in Debarry are 75 x 150 feet, or approximately ¼ acre in size. The TMDL for Gemini Springs cannot be achieved without policies and projects aimed at these existing septic tanks.

We applaud the initiative of Volusia County Utilities and the City of Debarry to propose a project which will convert 1200 septic tanks to Advanced Wastewater Treatment (“AWT”), reducing nutrient loads by 2788 lbs. *Id.* at 49. Nevertheless, we think a more aggressive strategy is necessary to achieve TMDL levels. If one assumes the data in the BMAP to be correct as to the number of septic tanks in the BMAP area and their per capita contribution of nutrients, we think the BMAP will require significant septic to sewer replacement to achieve TMDL.

Number of OSTDS in PFA:	2334
Per Capita nutrient load of septic tank:	9.01
Number of people per septic tank:	2.01
Total nutrient load of 2334 septic tanks in PFA:	42,268 lbs

We do not believe TMDL levels can be achieved without a plan that addresses connection of most of these septic tanks to advanced wastewater treatment. Attached to these comments is a GIS map which shows Gemini Springs, existing septic tanks, and existing wastewater treatment lines.

The BMAP places most of its emphasis on conversion of existing OSTDS to enhanced treatment septic tanks over a 20 year period. Using the data provided in the BMAP and applying the estimate of 65% reduction by enhanced treatment septic tanks, *Id.* at 30, the nutrient reduction is insufficient to achieve TMDL levels.

Number of OSTDS in PFA:	2334
Total nutrient load of 2334 septic tanks in PFA:	42,268 lbs
65% reduction in load by conversion to enhanced treatment septic tanks:	27,810 lbs
Nutrient Load remaining:	14,793 lbs

The OSTDS Remediation Plan is very clear that after July 1, 2018, new septic tanks are prohibited on lots of less than one acre within the PFA unless an enhanced treatment OSTDS is used. *Id.* at 55. The policy, however, should also include a statement that no new septic tanks will be permitted if a wastewater treatment line is “available”, as required by law. Fla. Stat. § 381.0065.

Further, the Remediation Plan is vague as to when the requirement for conversion of existing OSTDS to enhanced treatment septic tanks will take place. Per § D.1.2, “[the remediation policy] begins following completion of the [1] master wastewater treatment feasibility plans, [2] rulemaking, and [3] funding milestones included in Sections D.3 and D.4, but no later than five years after BMAP adoption.” Gemini BMAP at 56.

First, there appears to be no requirement for a wastewater treatment feasibility plan. § D.1 merely states that local governments are encouraged to develop wastewater master plans. *Id.* at 55. In our meeting with Tom Frick, it was even suggested that DEP could provide grant funds to local governments to incentivize the 20-year master plans. In any event, there is no guarantee that this development will occur whatsoever, and there is no expressed incentive or requirement to make it occur before five years.

Next, there is no explanation of what kind of “rulemaking” is required. The BMAP will be adopted by rule, but § D.1 seems to imply that additional rulemaking, by perhaps DOH, may be required. *Id.* at 56. Without further explanation, we are left to conclude that the “rulemaking” pertains to current revisions to [64E-6.009](#) F.A.C. Alternative Systems and [64E-6.012](#) F.A.C. Standards for the Construction, Operation, and Maintenance of Aerobic Treatment Units. This rulemaking is required in order to permit enhanced septic systems.

Lastly, there are no “funding milestones” identified in §§ D.3 and D.4, so we do not exactly understand what this phrase pertains to. *Id.* at 58–63. Taken as a whole, we see no reason why the requirement for enhanced OSTDS cannot take place immediately, or at least upon the adoption of the DOH rules, which appears imminent.

The OSTDS remediation plan is also deficient with regard to Fla. Stat. § 373.807(3)’s requirement to “... identify cost effective and financially feasible projects necessary to reduce the nutrient impacts...and [those projects] shall be completed and adopted as part of the basin management action plan required by the first 5 year milestone....”

The proposed BMAP does not identify an effective and financially feasible list of projects necessary to reduce nutrients from OSTDS, but instead lists only one specific project to reduce N loading from existing OSTDS. Gemini BMAP at 28. Accordingly, this policy should be amended to make clear that upon adoption of the BMAP and the proposed DOH rule on Alternative Systems, DOH will not issue permits for septic tanks on less than one acre within the PFA unless an alternative system is proposed or if wastewater treatment is available. Further, we call upon DEP, Volusia County, and the City of DeBary to work together to identify sources of funding for replacement of septic tanks within the PFA with AWT.

Overly Optimistic Assumptions.

Some of the conclusions within the BMAP are based on assumptions that appear overly optimistic. One assumption is that spring flow will remain constant. The proposed BMAP's TMDL is based on flow data from 2011 to 2017, and it thus appears to assume Gemini Springs flow rates will remain at these levels. *Id.* at 26. This cannot be assumed. The flow rate for Gemini Springs has already declined enough to drop the spring from a second magnitude spring to a third magnitude spring. Further, the approved MFL for Gemini Springs will allow a 15% reduction in flow. We expect that the above assumption will negatively affect restoration of the springs.

Another faulty assumption is the mistaken belief that environmental improvement projects in Seminole County will translate into reductions in loading at Gemini Spring. Our understanding is that there is little, if any, transport under the St. Johns River through the UFA. The PFA analysis essentially recognizes this fact by indicating the high levels of connectivity in the area within three miles of the spring. *Id.* at 17. Accordingly, we see very little value to Gemini Springs for WWTF or stormwater improvements in Sanford or Seminole County. Indeed, we see no reason to fully count 2875 lbs of credits for wastewater treatment plants that are not within the PFA. *Id.* at 38. At the very least, these credits should be reduced based on the low recharge rate in this area, as stated in Sec. E.1 of the BMAP. *Id.* at 64.

For these reasons we believe that the draft BMAP for Gemini Springs will not lead to its restoration. We hope that the department can take another look at the draft BMAP prior to the statutory deadline and include policies and steps that will make restoration a more likely outcome.

Very truly yours,

A handwritten signature in blue ink, appearing to read "Clay Henderson", is placed on a light gray rectangular background.

Clay Henderson
Executive Director
Institute for Water and Environmental Resilience

