

August 21, 2014

Craig Hesterlee
U.S. Environmental Protection Agency, Region 4
Pollution Control and Implementation Branch
61 Forsyth Street, S.W.
Atlanta, Georgia 30303

Re: Draft NPDES Permit No. TN0028827 (Franklin STP)

Dear Mr. Hesterlee,

In May 2013, the Director of EPA Region 4's Water Protection Division ("EPA") wrote to the Tennessee Department of Environment and Conservation ("TDEC") and invoked 40 C.F.R. § 123.44(d)(2) and Section IV.B.4 of the Memorandum of Agreement between EPA and the State of Tennessee, requesting a full opportunity to review NPDES Permit No. TN0028827, which is held by the City of Franklin's Sewage Treatment Plant ("Franklin STP"). We have represented the Harpeth River Watershed Association on various issues related to this permit; to facilitate EPA's review, this letter summarizes three provisions of this draft NPDES permit that we believe merit EPA comment, the permittee's stated position with respect to these provisions, and some relevant history regarding similar permit provisions in the current permit.

I. BACKGROUND

As you know, the segment of the Harpeth River into which the Franklin STP discharges is currently listed as impaired for its classified uses because of "low dissolved oxygen" and "phosphorus." The sources of these impairments are identified as "Municipal Point Source" and "Discharges from MS4 [Municipal Separate Storm Sewer System] area." *Final Version Year 2012 303(d) List*, Tenn. Dept. Env't & Conservation, at 37 (Jan. 2014).

More than a decade ago, in 2002, Tennessee's § 303(d) list described the segment of the Harpeth River where the Franklin STP discharges as impaired for "Organic Enrichment/Low DO [Dissolved Oxygen]." This segment was subsequently listed as impaired due to phosphate (2004 and 2006) and phosphorus (2010 and 2012), rather than "organic enrichment." Significantly, perhaps because the segment was listed as impaired for organic enrichment rather than phosphorus when the TMDL was being established, its analysis focused on nitrogen as the limiting nutrient. The TMDL did not establish any wasteload allocations for phosphorus in the lower Harpeth River, which is both where the Franklin STP discharges and where it is listed as impaired for phosphorus due to municipal point sources. In addition, the 2004 TMDL set only *annual* loads for nitrogen and dissolved oxygen.

II. NUTRIENT MANAGEMENT PLAN

Draft NPDES Permit No. TN0028827 includes a requirement for the permittee to develop and implement a “nutrient management plan” to reduce the total nitrogen and total phosphorus it discharges into the Harpeth River. (Draft Permit § 3.8; Attachment 2). The permittee has submitted comments challenging this requirement:

“The City is requesting that the [Nutrient Management Plan] requirement be **dropped completely** from the permit. The permittee is meeting the required permit limits for nutrients, and sees no rationale for a NMP.” *11/13/2013 Franklin Attachment* at p. 8 (emphasis added).

“[T]he City . . . sees **no water quality benefit** from this requirement” *11/13/2013 Franklin Attachment* at p. 14 (emphasis added).

In addition, the permittee has questioned the state regulatory agency’s authority to impose this permit requirement as part of the state’s implementation of the Clean Water Act:

“The [Nutrient Management Plan] permit requirements are not set forth in federal or State regulation. As such, there is no preamble discussion or other guidance reflecting what is intended. As the NPDES permit already has numeric effluent limits for total nitrogen and total phosphorus, the [**Nutrient Management Plan**] **requirements are beyond the scope of the CWA and, as such, not federally enforceable.**”

(2014-03-13 Franklin Response, p. 16). As recently as July 2014, the permittee sent another letter to TDEC asking that TDEC “remove any additional [nutrient management plan] requirement.” (2014-07-14 Letter from Franklin to TDEC). This recent letter discusses many measures undertaken by the City (not the Franklin STP); however beneficial these projects may be, none appear to satisfy the draft permit’s requirements or reduce the nutrients discharged from the STP in ways relevant to the nutrient management plan permit requirement.

Specifically, according to TDEC’s draft permit provision, a nutrient management plan “**shall** address the permittee’s progress and upcoming programs regarding additional nutrient controls (as focused on reductions in discharged total nitrogen and total phosphorus to the Harpeth River)” and that the nutrient management plan “**at a minimum shall** address the following elements to maximize **wastewater nutrients removal:**”

- Develop a list of potentially applicable nutrient control mechanisms for additional total nitrogen and total phosphorus removal. This evaluation must include investigational options/requirements, and timing/schedule/performance considerations.
- Evaluation of Franklin STP historical wastewater characteristics, e.g. variations in strength and mass loadings, especially treatment plant performance during the summer season (May through October).

- Results from literature and discussions with others, including municipalities, consultants will be evaluated in developing/implementing the Franklin STP enhanced nutrients control program.
- Treatability/testing results from bench, pilot and/or the full-scale Franklin STP regarding improved summer season nutrient control, e.g., operation at alternative food: microorganism ratios or sludge ages, alternative/supplementary basin(s)/facilities usage/temporary pumping, chemicals addition, and supplementary monitoring.
- Identification of increased Franklin STP treatment system monitoring to provide for enhanced nutrient control, e.g., multi-point dissolved oxygen monitoring points to ensure satisfactory operating conditions in anoxic zones, biological nitrification/denitrification regions, and multi-point pH/alkalinity monitoring/supplementing.
- Ongoing correlations of Franklin STP operational/treatment data to provide for an increased wastewater nutrients understanding, control methods/options, and cost effectiveness. The permittee shall also investigate as possible the relationship between its discharged nutrient loadings and potential instream impacts, e.g., based on diurnal variations in dissolved oxygen concentration and pH. This assessment needs to address flow and temperature also.
- Define treated effluent TSS characteristics in terms of insoluble total organic nitrogen and phosphorus contents, variability and additional control options.

The permittee's current NPDES permit contains a similar requirement, with which the permittee has failed to comply since 2010. *See* (2010 NPDES Permit, Attachment 2) ("Nutrient Management Plan (NMP)/Reporting"). The Nutrient Management Plan requirement was imposed in the 2010 permit—and presumably was re-proposed for inclusion in the current permit—because, as TDEC noted in the 2010 rationale, the Harpeth River's designated use for fish and aquatic life is not being fully supported and the permittee's discharge contains contaminants that contribute to the impairment. More specifically, the Harpeth River is impaired for dissolved oxygen and phosphorus and the permittee's discharge contains contaminants associated with the decreased receiving stream dissolved oxygen and phosphorus. That is, TDEC included permit terms requiring the permittee to develop a Nutrient Management Plan and requiring "investigational/increased wastewater control provisions to improve the instream water quality" because "it needs to get additional treatment plant effluent characterization data/instream information, and correspondingly have the permittee investigate/implement wastewater treatment plant operational performance enhancements." *Franklin NPDES Permit (Rationale)*, Page R-2, § R4(e)); Page R-13, § R7.21 (2010).

As it did during the comment period for the draft NPDES permit at issue, prior to issuance of the currently effective permit in 2010, this permittee objected to the Nutrient Management Plan provision and asked that the requirement be deferred, stating that it would

incorporate some of the terms of the Nutrient Management Plan in its Integrated Water Resources Plan (“IWRP”). See Addendum to Rationale, Page AD-8 (2010).

In July 2011 (and again in July 2014 after approximately three years of silence), the permittee “submit[ed] [to TDEC] that the Integrated Water Resources Plan [“IWRP”] is inclusive of the requirements of the Nutrient Management Plan,” which was to be implemented “in the coming years.” (07/31/2011 Email from the permittee to TDEC). In 2011, TDEC did not agree that the IWRP complied with the nutrient management plan. TDEC never agreed in writing to proposed changes to Permit § 3.8 or Attachment 2. The permit was never amended or modified to remove the duty to develop and implement a Nutrient Management Plan according to Permit § 3.8 and Attachment 2.

The “Scope of Work, Schedule, and Cost Proposal” for the permittee’s IWRP framed its purpose as screening “alternatives for capital improvements and resource management opportunities [‘such as water conservation, water recycling, *etc.*’] across the spectrum of water-related utilities [e.g. ‘stormwater, water supply, wastewater, and water reuse’],” and described its goal as “present[ing] a long-term program to meet water resource needs for the next 20 years by identifying the alternatives, their recommended timing, effects, and estimated costs” (p. 12).

As evidenced by the IWRP’s alternative plans for capital improvement, the IWRP was neither a plan to reduce nutrient discharge without major capital expenditures or otherwise reduce nutrient loading from the STP into the Harpeth River. The IWRP was supposed to look at long-term water planning alternatives. Moreover, summary charts included within the IWRP that compare alternative potential future plans all show *increased* discharges of nutrients like Total Nitrogen.

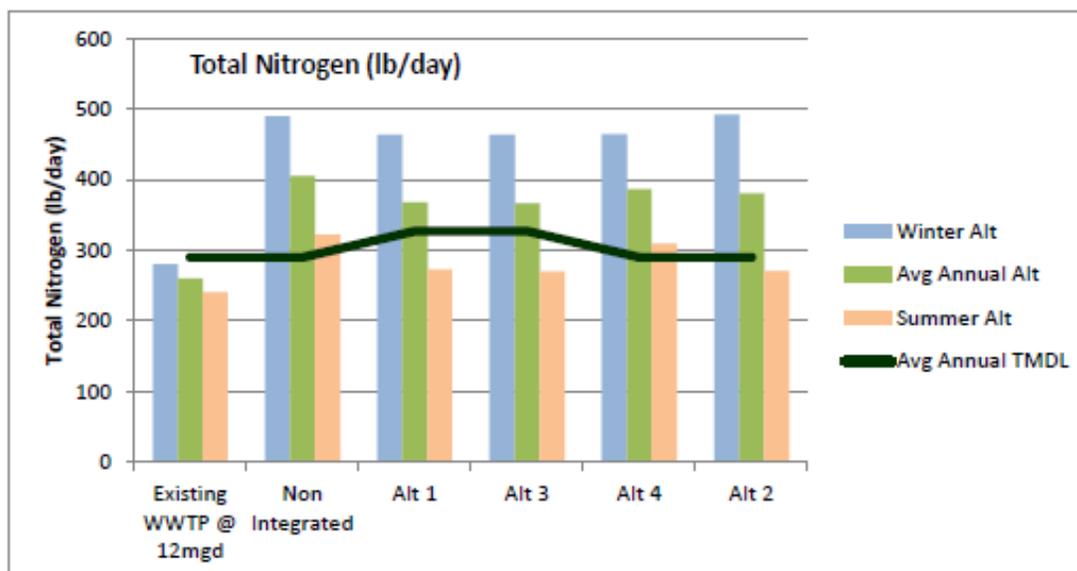


Figure 4-16
 IWRP Loads Compared Against TMDL Limits for Nitrogen

City of Franklin, Tennessee Integrated Water Resources Plan, Draft Report, p. 4-22 (p. 60 of 96) (CDM Smith July 2012). We are not aware of any examination in the IWRP about ways to

reduce phosphorus at the current plant pending hypothetical plant expansion/improvements or any specific design elements to reduce phosphorus. Like the chart for Total Nitrogen, above, the IWRP contains several graphs that indicate that the permittee's potential alternatives will also *increase* the amount of Biochemical Oxygen Demand and Ammonia discharged into the Harpeth River.

We believe it is important that EPA confirm in writing to TDEC that the "Nutrient Management Plan" permit requirement is both authorized by the Clean Water Act and a necessary element for this NPDES permit, given the state of the river into which the Franklin STP discharges.

III. CONTINUOUS INSTREAM MONITORING

Draft NPDES Permit No. TN0028827 contains a requirement that the permittee conduct receiving stream investigations, including continuous diurnal monitoring using instream sondes. (Draft Permit § 3.7; Attachment 1). The permittee commented on the proposed instream monitoring requirements in the draft NPDES permit as follows:

"The City is requesting that the Division **drop this requirement . . .**" Comments attached to Letter from City to TDEC re: draft permit (June 13, 2013), p. 7 (emphasis added).

These [monitoring] requirements would require the City to spend significant resources to achieve objectives that appear to be research related, opposed to supporting efforts to comply with established water quality standards. Additional **research into the Harpeth River should not be a permit condition.**" Letter from City to TDEC re: draft permit (June 13, 2014) (emphasis added).

Notably, the current NPDES permit contains similar receiving stream monitoring and reporting requirements. *Franklin NPDES Permit* § 3.7, Attachment 1 (2010). From 2010 until the present, however, the permittee has not been conducting these investigations and has not collected any continuous instream data.¹ Because the permittee did not gather this much needed continuous instream data for the last four years—data that would have enabled the state to set appropriate permit limits in the draft NPDES permit under review—it is even more important that the new NPDES permit contain these requirements. Adequate data must be gathered for both the permit limits and the necessary TMDLs.

Interestingly, during the draft permit comment period in 2010, the permittee also requested that the receiving stream monitoring and reporting provisions contained in Attachment 1 be deleted ("particularly those related to the diurnal investigations and the implementation of advanced methods for improving receiving stream water quality"). *See* Addendum to Rationale, Page AD-7 (2010). If these permit terms are not included in the next NPDES permit for the Franklin STP, or if TDEC believes its authority to impose these permit conditions may be

¹ Prior to 2013, the permittee also failed to take appropriate grab samples, as required by § 3.7 and Attachment 1.

successfully challenged, neither this NPDES permit nor the next iteration in five years will be sufficiently protective to comply with the Clean Water Act.

IV. PHOSPHORUS EFFLUENT LIMIT

Draft NPDES Permit No. TN0028827 proposes a phosphorus limit of 3.0 mg/l as a monthly average concentration during summer months. The permittee will only be required to measure this parameter twice per month. In November 2013, the permittee submitted the following comments to TDEC challenging this limitation on its operations:

“[T]he City does recognize that there is an EPA approved TMDL for the Harpeth River that provides a wasteload allocation for nitrogen There is however, **no specified wasteload allocation which serves as the basis for limiting total phosphorus** in the receiving stream.” *Attachment to Letter from City of Franklin to TDEC re: Draft NPDES Permit TN0028827*, p. 3 (Nov. 13, 2013) (hereafter “*11/13/2013 Franklin Attachment*”) (emphasis added).

[T]he City does **not believe there is a basis for applying phosphorus limits** until some other management strategy supersedes the current EPA approved TMDL.” *11/13/2013 Franklin Attachment* at p. 4 (emphasis added).

“[T]he City would like to request that the Division consider **eliminating the use of concentration based limits** [for total nitrogen and total phosphorus] as the mass limits are more appropriate, and are sufficient, to address the goals of the Total Maximum Daily Load.” *11/13/2013 Franklin Attachment* at p. 3(emphasis added).

“The City would like to request that this **annual mass load limit for total phosphorus be eliminated** from the permit, or provide a water-quality based analysis (such as the TMDL) that provides a basis for this limit [145 lb/yr].” *11/13/2013 Franklin Attachment* at p. 4 (emphasis added).

“[T]he City requests that the **requirement for 3.0 mg/L total phosphorus be dropped from the permit**. The City is not aware of any water quality criteria or regulatory basis that support a concentration based phosphorus limit in the permit. . . . [T]he Division has not established water quality criteria for phosphorus and as the Division has noted in the permit Rationale, that there is no phosphorus wasteload allocation established in the TMDL.” *11/13/2013 Franklin Attachment* at p. 13 (emphasis added).

Five years ago, the permittee made similar arguments: in 2009, during the NPDES permit renewal process, TDEC proposed reducing the permittee’s Total Phosphorus limit to 3.0 mg/l (monthly average concentration), but—as reflected in the permit rationale addendum—the permittee responded that the limit should be raised to 5.0 mg/l and that “one of the targeted goals to be included in the [plant-specific] Nutrient Management Plan and the [the permittee’s city-specific] IWMP [“Integrated Water Management Plan”] is to achieve a total phosphorus concentration limit of not more than 3 mg/l.” (pp. 55-56). According to the permit rationale, TDEC agreed to raise the limit to 5.0 mg/l, specifically citing the Nutrient Management Plan and

its lower phosphorus target goal as reasons for keeping the phosphorus limit at the higher level during the current permit cycle. *Id.* at p. 56.

When setting water-quality based permit limits, a state must consider whether a given point source discharge “causes, has the reasonable potential to cause, or contributes to” an exceedance of the narrative or numeric criteria for various pollutants set forth in state water quality standards. 40 C.F.R. § 122.44(d)(1)(ii). The Harpeth River is impaired for phosphorus in the relevant section. Tennessee’s water quality standard for nutrients, including phosphorus, mandates: “The waters shall not contain nutrients in concentrations that stimulate aquatic plant and/or algae growth to the extent that aquatic habitat is substantially reduced and/or the biological integrity fails to meet regional goals. Additionally, the quality of downstream waters shall not be detrimentally affected.” Tenn. Comp. R. & Regs. 0400-40-03-.03(k). “Interpretation of this provision may be made using the document *Development of Regionally-based Interpretations of Tennessee’s Narrative Nutrient Criterion* and/or other scientifically defensible methods.” *Id.* Even small amounts of excess phosphorus can have a significant impact on water quality, because a pound of phosphorus stimulates the growth of more than 106 pounds of algae whereas one pound of nitrogen will stimulate the growth of only 16 pounds.

Since 2001, the *Development of Regionally-based Interpretations of Tennessee’s Narrative Nutrient Criterion* has recommended numeric interpretations of the narrative water quality standard for nutrients for each of Tennessee’s “ecoregions” (*i.e.*, areas with similar ecosystems and types, qualities, and quantities of environmental resources). The Franklin STP is located in an area designated Level IV Ecoregion 71h, in which the recommended numeric interpretation of the narrative criterion for Total Phosphorus is 0.18 milligrams per liter (“mg/l”). Tennessee’s water quality standards also allow for “scientifically defensible methods” to interpret the narrative standard for nutrients, and ten years ago, EPA’s scientifically defensible method for the appropriate numeric interpretation of Tennessee’s narrative criteria for Total Phosphorus in Ecoregion 71h was 0.060 mg/l. *Harpeth TMDL*, p. 20.

Because TDEC accepted the permittee’s arguments during the last permit cycle and kept 5.0 mg/l as the limit on total phosphorus discharged during the summer, we respectfully request that EPA comment on this permit to rebut the permittee’s positions that there is no basis for applying any phosphorus limits (let alone necessarily stricter limits) and that concentration based limits for phosphorus should be eliminated. Sewage treatment plants in Tennessee, in Region 4, and around the country have been able to reduce their phosphorus discharge by levels of magnitude below the limit challenged by this permittee. The phosphorus levels in this NPDES permit should be set at levels that will neither contribute to nor have the reasonable potential to contribute to the Harpeth River’s impairment.

V. ORGANIC ENRICHMENT/LOW DISSOLVED OXYGEN TMDL

As you can see from the excerpted materials referenced in this letter, the City of Franklin and its Sewage Treatment Plant continue to rely on the 2004 TMDL (“Organic Enrichment/Low Dissolved Oxygen”) to challenge more protective and appropriate limits for some of the key pollutants in its discharge. Written comments from EPA to TDEC describing the need for a new

and updated TMDL for the relevant pollutants would ensure that the current TMDL is not frozen as the sole point of references for Harpeth River point source permit limits.

It is particularly important for EPA to share its view of the TMDL with TDEC because several conditions and assumptions have changed since the TMDL was finalized in 2004. These changes have been summarized by the Harpeth River Watershed Association (“HRWA”) in its comments to TDEC in 2012 and 2013, but include the removal of a lowhead dam and the discovery of seeps from Egyptian Lacquer Manufacturing Company. *See* 2013-06-27 Letter from HRWA to TDEC (“The key EPA staff involved in that work noted during the conference call discussion that with the removal of the lowhead dam a key condition that affected their modeling work is gone. The staff also noted that the ten years of dissolved oxygen data in the Harpeth that has been gathered by various entities and compiled by HRWA shows that a key assumption that the upper river system would reach water quality standards in a few years from when the TMDL was done in 2004 is no longer a valid assumption.”); 2012-09 HRWA Memo (“Comprehensive Water Quality Monitoring Plan”); 2013-02-10 Letter from HRWA to TDEC (“[T]he TMDL appears to have set the loads on the river too high. This is based on the fact that the river’s DO levels are consistently below standards and the largest point source discharger (the city of Franklin’s sewer plant) is not using more than half of the pollutant load allocated to them from the TMDL. In other words, during the summer the Harpeth does not meet state DO standards and the sewer plant is only discharging, on average, half of its permitted TDML load.”). HRWA has also collected water quality data showing a dissolved oxygen “sag” downstream of the Franklin STP. Finally, the 2014 Draft § 303(d) List added several new segments on the main Harpeth River downstream of the Franklin STP. It is my understanding that HRWA plans to submit comments on the 2014 Draft §303(d) List, because there are data showing total nitrogen concentrations at or above the ecoregional data level.

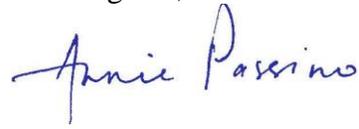
The draft permit states that certain discharge requirements were defined pursuant to “EPA’s” TMDL and that “some updating may be warranted.” (Rationale, Page R-4). *See also* (Rationale, Page R-9, R-10, R-11). Because TDEC characterizes it as EPA’s TMDL, and because the TMDL does not set wasteload allocations for phosphorus in relevant and significant segments, it would benefit TDEC to have EPA confirm that new TMDLs for nitrogen and phosphorus (if not other pollutants) are warranted.

VI. CONCLUSION

If EPA were to submit written comments to TDEC, we believe it would provide needed support for TDEC’s authority to impose conditions like instream monitoring and nutrient reduction plans in NPDES permits. It would also give a measure of certainty to the relevant parties that EPA’s national and regional goals related to reducing nutrient loading are important goals and that permittees’ operational plans and investments should assume that stricter limits are in their future.

Please let me know if I can answer any questions about the subjects referenced in this letter. If the materials I have referenced are not in the administrative record for some reason, I would be happy to provide you with copies.

Kind regards,



Anne E. Passino