Wade Murphy

From: Grace Stranch <gracestranch@harpethriver.org>
Sent: Thursday, June 30, 2022 8:20 PM
To: Wade Murphy; Vojin Janjic
Cc: Dorie Bolze; Jim Redwine; Sean Ramey
Subject: [EXTERNAL] Harpeth Conservancy comments for TN0028827
Attachments: Harpeth Conservancy and Partner Comments on the 2022 Franklin permit .pdf

Dear Messrs. Janjic and Murphy:

Please find attached Harpeth Conservancy and Partners' comments and request for a public hearing on the NPDES Permit **TN0028827** for the City of Franklin.

Best,

Grace Stranch

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June 30, 2022

Mr. Vojin Janjic
Mr. Wade Murphy
Tennessee Department of Environment & Conservation
Division of Water Resources
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243

Subject: Comments on 2022 Draft NPDES Permit TN0028827 ("Franklin STP")

Request for Public Hearing

Dear Messrs. Janjic and Murphy:

Harpeth Conservancy ("HC") thanks you for the opportunity to submit comments on the 2022 Draft NPDES Permit TN0028827, Public Notice Number: MMXXII-022 (the "Draft Permit").

HC would also like to request that a public hearing on the Draft Permit be held as expeditiously as possible.

Executive Summary

HC must comment on the Draft Permit because the Tennessee Department of Environment & Conservation ("TDEC") has not complied with the federal Clean Water Act[1] ("CWA") or the Tennessee Water Quality Control Act[2] ("TNWQCA") despite five (5) years' time for TDEC and the City of Franklin ("Franklin") to improve water quality in the Harpeth River.

HC does acknowledge and appreciates Franklin's efforts to improve its discharges. However, even at these improved discharge levels, the river continues to be impaired. The Draft Permit elides this fundamental fact of continued impairment, and TDEC needs to have the Draft Permit catch up to or address this fundamental fact.

Many of HC's comments for the June 1, 2017 (the "2017 Permit") are still relevant to this Draft permit, including the following:

1. The Draft Permit Impermissibly Allows Franklin to Discharge Far More Than Existing Discharge Levels, at which the River is Already Impaired for Nutrient Pollution;

2. The Draft Permit Inexplicably Fails to Require Franklin to Employ the Nutrient Reduction Capabilities of its new 16 MGD Sewer Plant, including Those in the 2016 Settlement Agreement;

[1] 33 USC § 1251 *et seq*.
[2] Tennessee Code Annotated ("TCA") § 69-3-101 *et seq*.

3. TDEC Has Yet to Complete the Harpeth River TMDL Seven (7) (!) Years Later;

4. The CWA and TNWQCA Require TDEC to Set a Water Quality Based Effluent Limit ("WQBEL") to Levels Required to Restore the Harpeth River, but the Draft Permit Improperly Fails to Do So;

5. Permit Discharge Limits Can Easily Be Calculated, and Many Parties' Calculations Agree and Must Be Used;

6. The Permit Must Establish Proper Discharge Limits in Compliance with TDEC's Own Rules;

7. TDEC Inexplicably Terminates Monitoring Requirements After Three (3) Years;

8. TDEC Further Undermines the New TMDL Before It Can Even be Finalized by Failing to Provide for it in the Reopener Clause;

9. The Draft Permit Continues to Ignore Applicable Antidegradation Requirements;

10. The Draft Permit Ignores Continued Algal-producing Conditions in the Harpeth River, as well as New Concern and Regulatory Initiatives to Reduce Nutrient Pollution; and

11. Franklin's core Sewer Overflow Response Plan Components Need to be Added to the Draft Permit and Can be Used as a Template for TDEC to Use for Sewer Plant Permits Statewide.

Indeed, HC incorporates by reference here the comments it and others made on the 2017 Permit, and related materials, including the following, all of which are in TDEC's possession[3]:

1) Comments letter by HC dated November 21, 2016;

2) Assessment of the Nitrogen and Phosphorus Pollutant Provisions in the Draft NPDES Permit for the Franklin Water Reclamation Facility (City of Franklin, Tennessee) by JoAnn Burkholder, Ph.D., 21 November 2016;

3) Letter dated December 7, 2016, by JoAnn Burkholder, Ph.D. to James M. Redwine, re: conditions in the State Scenic Harpeth River in Davidson County;

4) Review of the 16 MGD TDEC, September 20, 2016, Draft Permit for the Proposed Modification of the City of Franklin, TN, Wastewater Treatment and Reuse Facility (FRANKLIN STP), Memorandum dated November 21, 2022, to Dorie Bolze and Jim Redwine, Harpeth River Watershed Association, from Dr. Clifford W. Randall, Emeritus Professor, Environmental Engineering Program, Virginia Tech University;

5) Report dated May 15, 2015, Evaluation Of The Harpeth River Water Quality Restoration And Protection Efforts: 1999 – 2015, Prepared for: Southern Environmental Law Center (SELC), by: Clifford W. Randall, PHD, DIST.M.ASCE, HON.M.AAEES, Water Pollution Control Consultant, The Emeritus C.P. Lunsford Professor of Environmental Engineering, Virginia Tech University;

[3] If TDEC needs additional copies of any of these, we will supply them on request.

6) Letter dated November 21, 2016, from Dana Wright, Water Policy Director, Tennessee Clean Water Network, and HC and others, to Mr. Vojin Janjic;

7) Appeal by HC of 2017 Permit, dated June 30, 2017;

8) Final Report, Impacts of Trophic State on the Composition of Algae Assemblages of the Harpeth River in Middle Tennessee, Jefferson G. Lebkuecher, Biology Department, Austin Peay State University, 2017; and

9) Molly R. Grimmett & Jefferson G. Lebkuecher (2017): Composition of algae assemblages in middle Tennessee streams and correlations of composition to trophic state, Journal of Freshwater Ecology, DOI: 10.1080/02705060.2017.1314228; http://dx.doi.org/10.1080/02705060.2017.1314228

1. The Draft Permit Impermissibly Allows Franklin to Discharge Far More Than Existing Discharge Levels, at which the River is Already Impaired for Nutrient Pollution.

The fundamental defect in the Draft Permit is that it allows the overloading of the already impaired Harpeth River. This is the same fundamental issue as with the 2017 Permit. The Draft Permit is thus a wasted opportunity to improve the health of the river as TDEC is legally required to do.

As noted in our prior comments, the Harpeth River is impaired by nutrient pollution, and has been for many years. Yet, the Draft Permit continues to allow the same amount of phosphorus to be discharged into the river, 63,693 pounds per year.[4]

To "justify" the levels of pollution allowed, the Draft Permit relies on several discredited authorities and techniques.

First, the Draft Permit continues to rely on the outdated 2004 TMDL to set important permit limits.[5] The 2004 TMDL has been widely criticized, however.[6]

The Draft Permit continues another of the significant flaws of the 2017 Permit – deliberate misuse[7] of the EPA Technical Support Document for Water-Quality Based Toxics Control (the "Toxics Guidance").[8] TDEC uses the Toxics Guidance to keep the operator – the City of Franklin – from being in violation – from, in effect, having to do its best to reduce pollution levels in a river already impaired for the applicable parameters. The Toxics Guidance was not intended to be used to allow more pollution as in the Draft Permit. Rather, it states that it is to be used to set limits that are "toxicologically protective."[9] Most importantly, the Toxics Guidance notes that:

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[4] E.g., Draft Permit § 1.1.1, page 5.
[5] See, e.g., Draft Permit § 6.1.1, page R-10; § 6.6, page R-15; § 8.6, page R-35.
[6] See HC's prior comments as well as the "Recommendations for the 2018 Waste Assimilative Capacity Study of the Harpeth River for Establishing Defensible Wasteload Allocations (WLAs)," by Michael Corn, P.E., AquAeTer, January 31, 2018 (also in TDEC's possession).
[7] Draft Permit §6.6, pages R-16-17.
[8] https://www3.epa.gov/npdes/pubs/owm0264.pdf.
[9] Toxics Guidance, at pps, 99, 101, for example.

> In effect then, the limits must "force" treatment plant performance, which, after considering acceptable effluent variability, will only have a low statistical probability of exceeding the WLA and will achieve the desired loadings.[10]

Under these circumstances, TDEC and Franklin are not allowed simply to prevent the river's condition from "worsening"[11] or allowed to "hold the line" on existing pollution levels. The CWA and the TNWQCA require TDEC to restore the river so it can meet water quality standards and be removed from the State's 303(d) list.

2. The Draft Permit Inexplicably Fails to Require Franklin to Employ the Nutrient Reduction Capabilities of its New 16 MGD Sewer Plant, including Those Required in the 2016 Settlement Agreement

The Draft Permit, without justification or explanation, fails to require Franklin to achieve the pollution reductions that its new 16 MGD sewer plant is capable of. TDEC also does not require Franklin to employ systems it is already building or achieve the results of which those systems are capable, including those required in the "2016 Settlement Agreement."[12]

Franklin is building its sewer plant with public funds, including $100+ million in loans from Tennessee's State Clean Water Revolving Loan Fund.[13] This new plant includes biological nutrient reduction capabilities as well as the chemical phosphorus capabilities required in the 2016 Settlement Agreement,[14] as the Draft Permit itself acknowledges:

> The biological treatment system, consisting of three oxidation ditches, will be modified to include a fermentation zone for more efficient nutrient removal and an alum feed system will be added for chemical phosphorus removal capabilities.[15]

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[10] *Id*., at 97.*See also* the prior comment letter by TCWN and others.
[11] Draft Permit § 8.6, page R-31.
[12] Settlement Agreement dated May 10, 2016, by and between Franklin and HRWA, in *Harpeth River Watershed Association v. City of Franklin,* No. 3: 14-cv- 1743 (M.D. Tenn.) (the "2016 Settlement Agreement").
[13] *See, e.g.*,https://www.franklintn.gov/home/showpublisheddocument/30536/637001011998570000.
[14] The Settlement Agreement, paragraph 6, provides as follows:

> 6. Because the Harpeth River is listed by TDEC on the Section 303(d) list as impaired for Total Phosphorus and a water quality-based effluent will therefore be required for this parameter in the Permit, and given the City's commitment to reduce its nutrient discharge as reflected in its design for the STP's expansion, the City agrees to within ninety (90) days of the date of this agreement to hire CDM Smith to conduct an optimization study consistent with the studies previously conducted by TDEC in conjunction with The Water Planet company. In addition, the City agrees to prioritize the installation of chemical phosphorus removal during the construction phase of the facility's expansion. The City further agrees to request a joint meeting with TDEC and the parties on or before June 15, 2016, to discuss an appropriate interim effluent limit for Total Phosphorus and limits for Total Nitrogen and Total Phosphorus in the new permit *(e.g.,* maintaining concentration, mass or reducing them tied to the 16 MGD design flow increase), unless a new Draft NPDES permit is issued within this timeframe. The City agrees not to oppose a re-opener clause in the NPDES permit should the TMDL be finalized and approved prior to the end of the NPDES Permit term and require a different loading allocation for the City. (Emphasis added.)

[15] Draft Permit, Rationale, §1, page R-1.

Even though the taxpayers of the State and of Franklin itself are paying for these systems, TDEC has not required that they achieve the results of which they are capable. Instead, TDEC continues to fall back and rely on an approach utilized to not penalize plants learning to optimize operations.[16] This approach, which TDEC has used to encourage sewer plants to optimize to reduce nutrients, is not applicable to Franklin's new 16 MGD sewer plant that is expressly designed to remove as much nutrient load as needed. Indeed, regulatory agencies such as TDEC are required to impose discharge limits first on point sources such as the Franklin STP and cannot blame other potential sources of pollution[17] or rely on the potential for other reductions to meet water quality standards.[18]

Additionally, there is no requirement that Franklin continue previous optimization efforts. These are now described as merely voluntary measures.[19]

Rather than fulfill its statutory obligation to restore the Harpeth River, by allowing Franklin to pollute far more than it is currently discharging, it appears that TDEC is attempting to illegally and prematurely reserve for the City capacity to pollute from its planned South "Clean Water Facility" to expand its discharge capacity to 24 MGD. Such an attempt is in effect an attempt to issue a future permit without compliance with all the legal requirements therefor.

3. TDEC Has Yet to Complete the Harpeth River TMDL Seven (7) (!) Years Later

TDEC announced that a new Total Maximum Daily Loan ("TMDL") was required and would be undertaken in July 2015.[20] Unfortunately, seven years later, TDEC is nowhere near completing the TMDL. No load allocations, wasteload allocations, or any other of the required or recommended elements[21] of a TMDL are even mentioned in the Draft Permit. The ONLY reference to the TMDL announced in 2015 is the following statement:

> Action level for total phosphorus has been developed in the absence of a TMDL for nutrients on the Harpeth River.[22]

As noted below, reference to the current TMDL is dropped even from the Draft Permit's reopener clause.

The Harpeth TMDL is particularly important as it is the first TMDL in the State of Tennessee to utilize a Water Quality Analysis Simulation Program (WASP) developed and calibrated by the U.S. Environmental Protection Agency (EPA) Region 4 for the Harpeth River. The WASP model allows the user to calculate

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[16] *See., e.g.,* Draft Permit § 8.6, page R-31 (preventing the river's condition from "worsening").

[17] The TNWQCA provides that "[u]nder no circumstances shall the commissioner issue a permit for an activity that would cause a condition of pollution either by itself or in combination with others." TCA § 69-3-108(g)(2).

[18] *See, e.g.*, Mark A. Ryan, Editor, THE CLEAN WATER ACT HANDBOOK (3rdEDITION) (American Bar Ass'n, 2011), Ch. 11 citing EPA, GUIDANCE FOR WATER QUALITY–BASED DECISIONS: THE TMDL PROCESS, ch.1 at 2, ch.2 at 8, ch.3 at 5 (Apr. 1991) (collecting authorities); 33 USC § 1311(b)(1)(C); TN Comp. R. & Regs, Rule §0400-40-05-.07 (1)(a). Further, the Draft Permit cannot ignore the potential for PFAS contamination of soils resulting from land application of treated biosolids.

[19] Draft Permit § 6.6, page R-18.

[20] https://harpethconservancy.org/uncategorized/state-tdec-hrwa-and-city-of-franklin-announce-tighter-water-withdrawal-permit-on-harpeth/.

[21] *See, e.g.*, Government Accountability Office, CLEAN WATER ACT Changes Needed If Key EPA Program Is to Help Fulfill the Nation's Water Quality Goals (December 2013), https://www.gao.gov/products/gao-14-80.

[22] Draft Permit, § 1.1.3, page 13.

water quality and flow conditions in every stream segment in the watershed based on observed data that was periodically collected between 2012 and 2019. This model can be immensely helpful to identify temporal and spatial trends in pollution loads and what pollution level is acceptable to satisfy state water quality criteria. Once the Harpeth TMDL focused on nutrients and low dissolved oxygen is complete, the WASP model and methodology can be translated to other rivers and streams in TN for TMDL development. Completion of the Harpeth TMDL must be a heightened priority for TDEC and all stakeholders within the next two years in order to establish "best practices" for a nutrient based TMDL especially in light of the sewer expansion proposals currently underway in Franklin and the Water Authority of Dickson County. The WASP model was provided to TDEC and other stakeholders in Spring 2021, over a year later, there has been little progress to identify load limits for the Harpeth River.[23]

4. The CWA and TNWQCA Require TDEC to Set a Water Quality Based Effluent Limit ("WQBEL") to Levels Required to Restore the Harpeth River, but the Draft Permit Improperly Fails to Do So

The federal Clean Water Act is designed to clean up the nation's waters, with the goal of removing waters, such as the Harpeth River, from the State's 303 (d) list of impaired waters. To do this, the State envisions a series of more stringent discharge limits until the waterbody in question meets water quality standards and it can be removed from the 303(d) list. At a minimum, all dischargers must employ technology-based effluent limits ("TBELs").[24] If these are insufficient, then water quality-based effluent limits ("WQBELs") must be imposed.[25] This can be done through a TMDL,[26] but regulators cannot wait for a TMDL to be completed. Permits are required to include "any more stringent limitation, including those necessary to meet water quality standards."[27]

The law does not allow TDEC to put off setting a water quality-based effluent limit into the permit based on the fact that it is preparing a TMDL. *Upper Blackstone Water Pollution Abatement District v. U.S. EPA,* 690 F.3d 9, n 8. (1st Cir. 2012); *City of Taunton Dept. of Public Works*, 17 EAB (Env. Appeals Board 5/3/2016); *City of Taunton v. United States Environmental Protection Agency*, 895 F.3d 120 (1st Cir. 2018) (cert denied Feb 19, 2019); *American Paper Institute v. U.S. EPA*, 996 F.2d 346, 350 (D.C. Cir. 1993*); Prairie Rivers Network v. Illinois Pollution Control Board*, 2016 IL App (1st) 150971; *Ala. Dept. of Env. Mgt. v. Ala. Rivers Alliance, Inc.,* 14 So. 3d 853 (Ala. Civ. App. 2007); 40 CFR § 122.44(d); *In re City of Lowell*, 18 E.A.D. 115 (E.P.A. June 29, 2020); *In re Springfield Water & Sewer Comm'n*, 18 E.A.D. 430 (E.P.A. May 27, 2021).

This is Tennessee law as well, as established by TDEC's own rules, for example:

> **0400-40-05-.07 TERMS AND CONDITIONS OF PERMITS.**

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[23] The Draft Permit also cites the Tennessee Nutrient Reduction Framework (https://www.tn.gov/content/dam/tn/environment/water/tmdl-program/wr-ws_tennessee-draft-nutrient-reduction-framework_030315.pdf) (Draft Permit, Rationale, page R-15), but does not note that Framework, is still a "draft" and also has not been finalized in the seven (7) years since it was first formulated in March 2015.
[24] 33 USC § 1311.
[25] 33 USC §§ 1311(b)(1(C), 1312(a), 1313(e)(3)(A), 40 CFR § 122.44(d).
[26] See 33 USC § 1313(d)(1)(C), 40 CFR § 130.7(c)(1).
[27] 33 USC § 1311(b)(1)(C).

> (1) When a permit is granted it shall be subject to the provisions of T.C.A. §§ 69-3-101 et seq., these regulations, and any special terms or conditions the Commissioner determines are necessary to fulfill the purposes or enforce the provisions of that section.
>
> (a) … If more stringent effluent limitations are necessary to implement applicable water quality standards, to avoid conflict with an approved area-wide waste treatment management plan, or to comply with other state or federal laws or regulations, then they should be imposed in the permit.[28]

Yet, TDEC continues to ignore the CWA and its own rules to allow Franklin to continue to pollute the Harpeth River by setting a discharge limit far in excess of not only current discharge levels but also what the river can tolerate as established by TDEC's continued designation of the river as impaired for nutrients.

5. Permit Discharge Limits Can Easily Be Calculated, and Many Parties' Calculations Agree and Must Be Used

It is possible to calculate now what a WQBEL for the Franklin STP should be. Indeed, Dr. JoAnn Burkholder did so five (5) years ago. HC's review and updating of her calculations show that they remain valid. Indeed, HC's review shows remarkable consistency not only between its and Dr. Burkholder's calculations, but also those of TDEC. In short, failure to impose a WQBEL consistent with this consensus of experts would be arbitrary, capricious, and an abuse of discretion.

To review, Dr. Burkholder observed in 2016 as follows:

> The numeric translators developed by TDEC should be reduced to reflect reference conditions. It is obvious that the "reference" streams selected by TDEC are not science-based and do not reflect reference or minimally impacted conditions, because their nutrient concentrations do not differ from concentrations in the other streams of subecoregions 71h and 71i, especially TN. Based on this assessment, the reference conditions used for numeric translators of the narrative criterion should be 170 µg TP/L (similar to TDEC's numeric translator of 180 µg TP/L), and 610 µg TN/L (much lower than TDEC's value of 920 µg/L). [29]

HC's Dr. Ryan Jackwood updated the following information about the Franklin STP and Harpeth River Nutrient Loading:

- Monthly average TP effluent load for Franklin STP between March 2018 and April 2022 are approximately 63.0 lbs/day (see chart below). This date range was used to capture the effluent loads that occurred after treatment optimization for the removal of TP. The average TP load is almost three-times lower than the permit limit of 174.5 lbs/day (derived from annual load limit of 63,693 lbs/year). It is important to note that the annual limit of 63,693 lbs/year (on a rolling annual average) is the same limit from the previous permit under the "old" STP with the assumption that the "new" WRF will have the capability to reduce TP concentration and essentially maintain the current TP load.

[28] TN Comp. R. & Regs, Rule §0400-40-05-.07 (1)(a).
[29] Dr. Burkholder's dated November 21, 2016 (item 2 above), page 21.

Thus, the TP permit limit should reflect this improved capability for treatment. For example, if the "new" plant under the Draft Permit limit averaged two-times more TP load then is currently happening with the "old" plant, the monthly average load would be 126 lbs/day (45,990 lbs/year), which is still well below the Draft Permit limit BUT would result in higher TP loads in the Harpeth River (already impaired for nutrients).

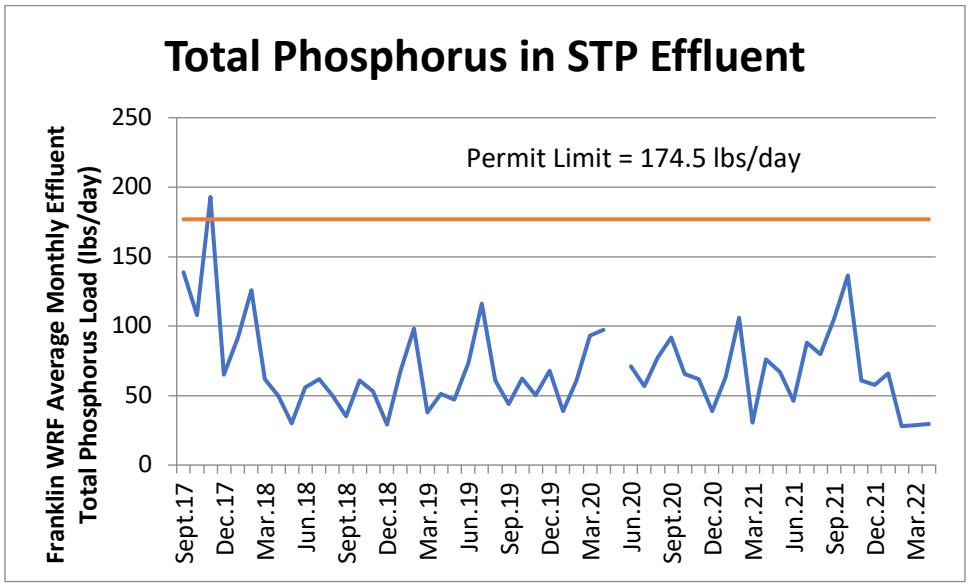


Figure: Average monthly effluent of total phosphorus from the Franklin STP reported as lbs/day. Data from Franklin STP Monthly Operating Reports (MORs)

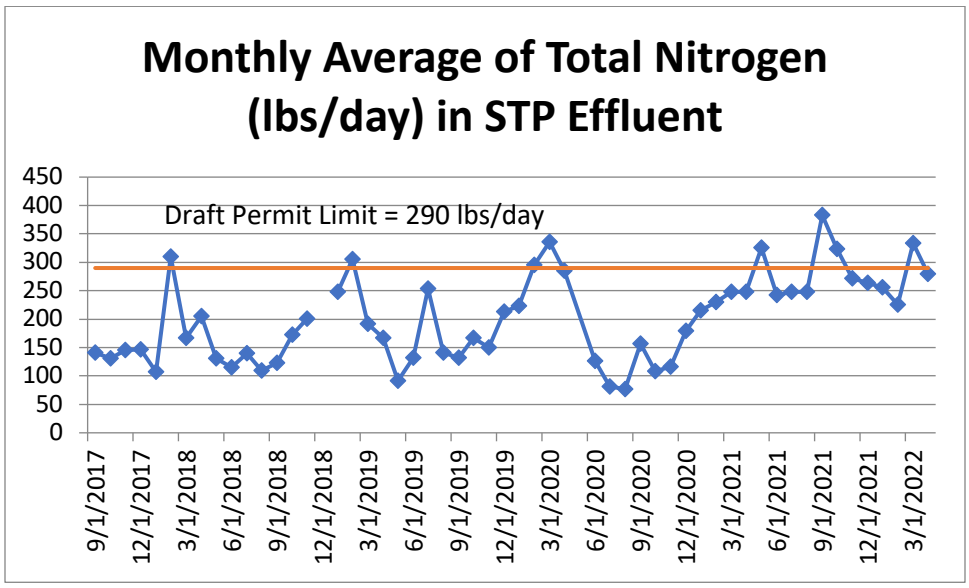


Figure: Average monthly effluent of total nitrogen from the Franklin STP reported as lbs/day. Data from Franklin STP Monthly Operating Reports (MORs)

- Critical periods of concern for the Harpeth River occur when flow is low, and the Franklin STP is contributing a disproportional amount of TP to the river. For example, during low flow conditions assuming an average TP concentration in the river for the days with lowest 10% of flow (This equals 0.49 mg TP/L; Dr. Burkholder's calculations yielded a very similar result of 0.494 mg TP/L).
- 7Q10 = 1.848 MGD (2.861 cfs) – TDEC revised for Draft Permit (Appendix V). This statistic is based on April 2014 through March 2021 after the removal of the lowhead dam per the permit rationale. This is almost 3.5 times higher than 0.54 MGD that has been the 7Q10 applied to several versions of the permit. The use of the USGS SW Stat tool will vary the output. Since the 7Q10 is a regulatory driver and affects management decisions and calculations in the TMDL effort, it will be valuable to determine the most appropriate data set to use to set the 7Q10 with the TMDL technical group. It could be that the data set TDEC has used in the draft permit is most appropriate, but it is a significant change from the prior value for the 7Q10 statistic.

The effluent and loading values from March 2018 to April 2022 for the Franklin STP can be calculated using the City's own monthly operating report ("MOR") dataset, as follows:

First, Dr. Jackwood has re-calculated the 95th percentiles of the following values, without prejudice to HC's objections to TDEC's misuse of those values:

- TP Load in Effluent = 83.091 lbs/day Annual Rolling Average (only includes July 2018 to April 2022)

Dr. Jackwood then updated Dr. Burkholder's calculation of a WQBEL as follows:

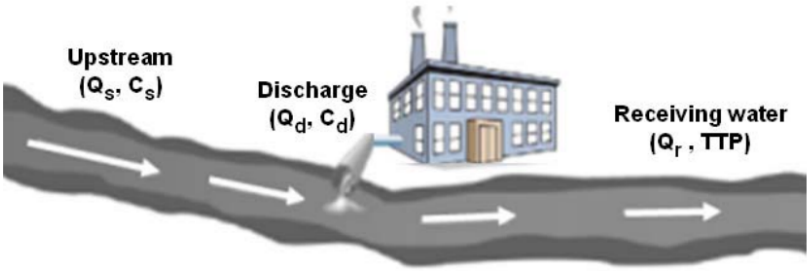


Figure 6. Diagram showing the parameters used to calculate TP and NOx WQBELs for the Franklin WRF. Modified from Hair and Currey (2015b). This approach assumes rapid, complete mixing, thus avoiding a need for steady state modeling or inclusion of dilution or mixing zones. The state of Wisconsin also uses this approach for calculating TP WQBELs (see s. NR 106.06(4)(b) Wisc. Admin. Code).

Qs = 7Q10 flow rate = 1.848 (from Draft Permit and is different from prior permits)

Cs = Harpeth River TP or TN concentration (data from WASP model)

Qd = Proposed flow from Franklin STP = 12 mgd or 16 mgd

Cd = Calculated concentration from Franklin STP to achieve Target TP in Harpeth

Qr = Downstream flow in Harpeth = Qs + Qd

TTP/N = Target TP/N concentration in Harpeth downstream of FRANKLIN STP

12 MGD: Cd = 0.132 mg TP/L to achieve 0.180 mg TP/L– *Note that this concentration is determined by TDEC ecoregion report for nutrient criteria development.*[30]

16 MGD: Cd = 0.144 mg TP/L to achieve 0.180 mg TP/L– *Note that this concentration is determined by TDEC ecoregion report for nutrient criteria development.*

- Science-based WQBELs for TP and TN should be developed for setting the final permit levels for these pollutants, based on target concentrations in the receiving river water of 180 µg TP/L (0.180 mg/L) and 640 µg TN/L. This analysis suggests that the WQBEL for TP in the summer season should be 130-140 µg TP/L (0.13 to 0.14 mg/L), and the WQBEL for TN should be 1000 µg TN/L (1.00 mg/L). Based on the available information on river water quality and Franklin STP design, these WQBELs for TP and TN can be achieved through BNR technology already available or planned to be available at the FRANKLIN STP.

Numeric targets for TP concentration and TN concentration in the Harpeth in the section at the Franklin STP discharge based on Water Quality Analysis Simulation Program (WASP) model:

A "current conditions" and "natural" model were developed and calibrated by the EPA. Based on 75th and 90th percentiles for the different models, target concentrations were be calculated, as follows:

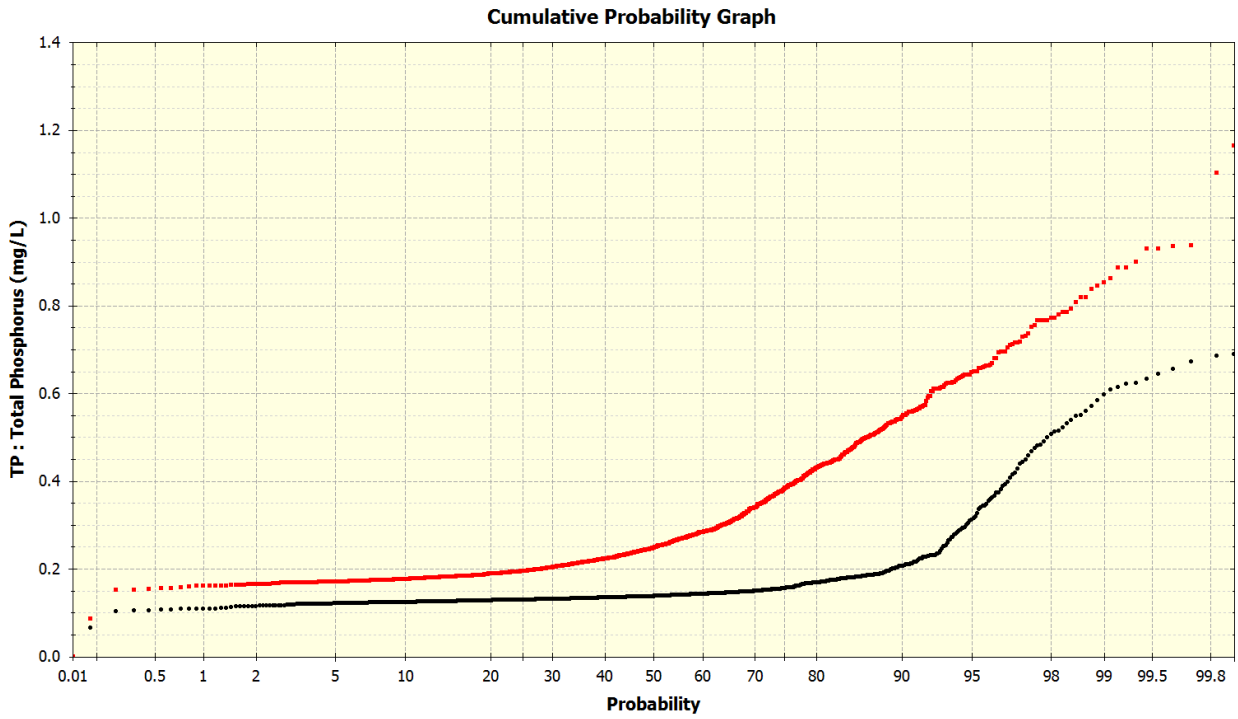
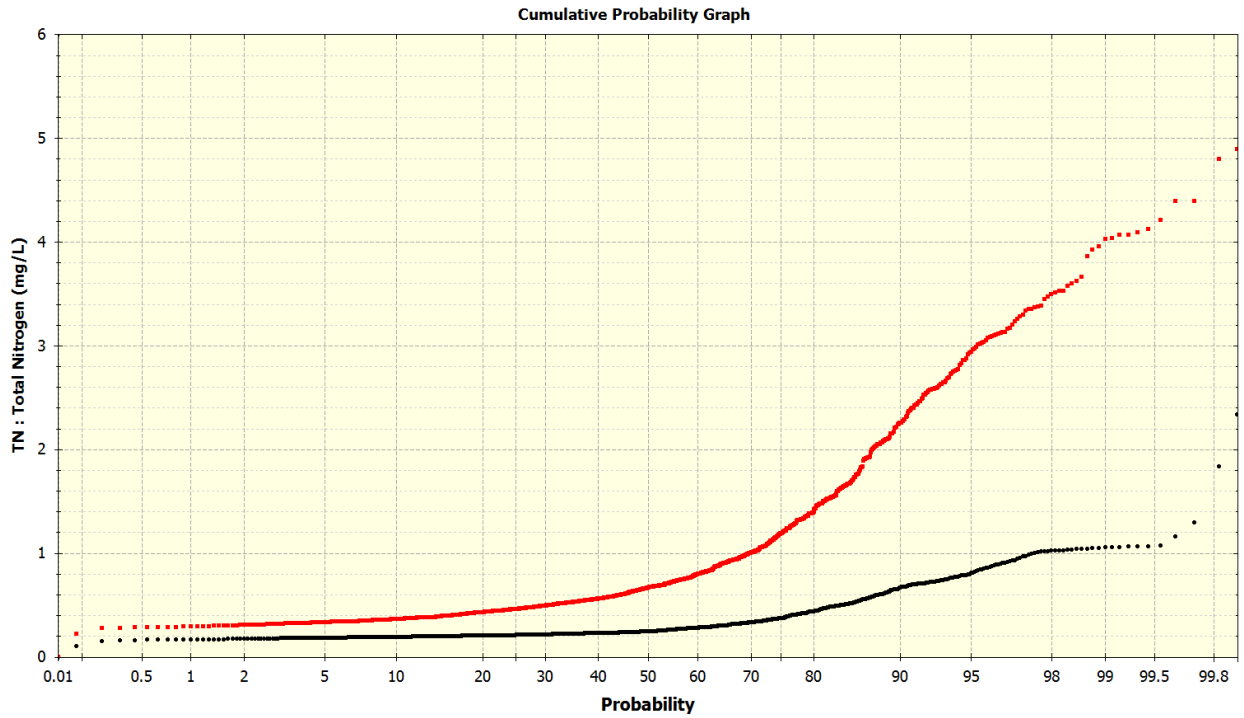


Figure: Red line = Current conditions in Harpeth River – **90 percentile = 0.546 mg TP/l; 75 percentile = 0.380 mg TP/l**

[30]TDEC, "Development of Regionally-Based Interpretations of Tennessee's Narrative Nutrient Criterion." (2001), https://www.tn.gov/content/dam/tn/environment/water/documents/nutrient_final.pdf.

Black line = "Natural" conditions in Harpeth River (i.e. reference conditions) – **90 percentile = 0.207 mg TP/l; 75 percentile = 0.380 mg TP/l**



Red line = Current conditions in Harpeth River – **90 percentile = 2.25 mg TN/l; 75 percentile = 1.20 mg TN/l**

Black line = "Natural" conditions in Harpeth River (i.e. reference conditions) – **90 percentile = 0.67 mg TN/l; 75 percentile = 0.37 mg TN/l**

The "natural" model was built by EPA in the WASP model to represent reference conditions for the Harpeth and can be utilized to quantify target TP or TN concentration desired for the Harpeth River. *0.176 mg TP/L and 0.207 mg TP/L calculated from the "natural" model are the 75th and 90th percentile concentrations from this reference model and are virtually identical to the 0.180 mg TP/L numeric target independently calculated by TDEC for the state numeric translator using reference stream data and not the WASP model*.

In short, there is a remarkable concurrence between the values yielded by the various parties' calculations. TDEC can and must utilize this consensus between its own and various experts to set a WQBEL for the Franklin STP NOW.

6. The Permit Must Establish Proper Discharge Limits in Compliance with TDEC's Own Rules

The Draft Permit must establish the proper discharge limits in compliance with TDEC's own rules as a weekly average, which it does not currently.

TDEC's Rule 0400-40-05-.06 (3) provides that:

> For each application, the Commissioner shall prepare a rationale that includes or considers as appropriate:
>
> (e) A quantitative and qualitative description of the discharge described in the application which includes at least the following:
>
> …
>
> 3. The average and maximum daily discharge in pounds per day and concentrations in units of mass per volume of any pollutants which are present in significant quantities or which are subject to limitations or prohibition under described provisions of T.C.A. §§ 69-3-101 et seq. or this rule; ….

Rule 0400-40-05-.08 (1) provides that the Draft Permit must express its limits, not in the annual maximum it currently uses, but as a weekly average limitation:

> (m) <u>For continuous discharges</u>, all permit effluent limitations, standards, and prohibitions shall be expressed as maximum daily, <u>weekly average (for POTWs only)</u> and monthly average, unless impracticable.

Rule 0400-40-05-.02 (94) defines the terms in Rule 0400-40-05-.08 (1) as follows:

> The "weekly average concentration", a limitation on the discharge concentration in units of mass per volume of any pollutant, is the arithmetic mean of all the concentrations measured in a calendar week.

Rule 0400-40-05-.08 (1) also provides that:

> (o) Any permit limitations, standards, or prohibitions based on production shall be based upon a reasonable measure of actual production.

The reason for weekly average limits is well known: Discharges of higher amounts of nutrients like phosphorus, particularly during warm summer months, can fuel the growth of harmful algal blooms even if discharge amounts are later reduced. <u>TDEC must therefore control discharges of nutrient pollution as weekly averages, and not as total annual amounts, as the Draft Permit currently does.</u>

Based on sections 5 and 6 above, the Draft Permit should be modified as follows:

- Removal of the use of the rolling annual average
- Conform the TN and TP limits. For example it is inconsistent to have TN with 290 lbs/day as an annual average and TP as 63,693 lbs/year on an annual rolling average.
- Monitoring frequency needs to go to 5 days a week
  This is valuable for the plant operator and enables much more data for the permit limits
- The limits below for 12 MGD "hold the line" or not let conditions "worsen" on current loads of phosphorus and nitrogen as the current 12 MGD sewer plant optimized operations.
- With the new 16 MGD plant coming online, after a year of operations at the former limits, the new limits are reduced since the new plant is designed to remove nutrients to very low levels (see Dr. Randall report and CDM Smith design report). The load reduction is based on comparing the current monthly average load of 62 lbs/day the current STP has been doing since

Feb 2018 to the possible WQBEL of 19.2 lbs/day (0.144 mg/L) for this section of the river (see above). The same process was used for TN.

- Remove the option that the 16 MGD effluent numeric limitations would be effective "on January 1 of the year in which the annual average effluent flow discharged to the Harpeth River from the preceding calendar year exceeds 12 MGD." There is no need for this option when the new 16 MGD sewer plant is designed to remove nutrients to extremely low levels.

Current statistics for the effluent flow and TN and TP concentrations and loads can be found below. This information is utilized in the following tables for proposed TP and TN limits for 12 and 16 mgd facilities.

Current Statistics for the Franklin STP between March 2018 and April 2022 Calculated using Data in their Monthly Operation Reports

Statistic	Value	Units	Notes
Average TP Effluent Load	62.7	lbs/day	All sampling days within timeframe
Monthly Average TP Effluent Load	62.0	lbs/day	Only monthly averages
Average TP Concentration in Effluent	0.826	mg/L	All sampling days within timeframe
Average Effluent Flow	9.72	mgd	All sampling days within timeframe
Average TN Concentration in Effluent	2.56	mg/L	All sampling days within timeframe
Monthly Average TP Effluent Load	201	lbs/day	Only monthly averages
Average TN Effluent Load	205.9	lbs/day	All sampling days within timeframe
95th Percentile Calculations			
95% of TP Load in Effluent	83.1	lbs/day	Annual Rolling Average (only includes July 2018 to April 2022)
95% of TN Load in Effluent	275	lbs/day	Annual Rolling Average (only includes July 2018 to April 2022)

12 MGD

	Daily Maximum	Weekly Average	Monthly Average
Total Phosphorus	1.3 mg/l	0.83 mg/l	0.62 mg/l
		83 lb/day	62 lbs/day
Total Nitrogen	4.3 mg/l	2.75 mg/l	2.0 mg/l
		275 lbs/day	201 lbs/day

Notes:
TP Daily maximum is the action level that triggered optimization in 2017 permit
TP Weekly Average mass is 95th percentile of rolling annual averages reported
Monthly Average mass is average of reported data from MORS since optimization started (Feb 2018)
Weekly and Monthly Average concentrations derived from the mass.

16 MGD:
Application cover letter says new STP will be substantially complete July 2022 and online close to Oct. 2022.
These would apply one year from substantial completion of new sewer plant-- July 2023 per draft

	Daily Maximum	Weekly Average	Monthly Average
Total Phosphorus	0.83 mg/l	0.46 mg/l	0.3 mg/l
		62 lbs/day	40.6 lbs/day
Total Nitrogen	2.56 mg/l	1.5 mg/l	1.3 mg/l
		201 lbs/day	168 lbs/day

Notes:
Daily maximum is average TP concentration of MORs from Feb 2018 to March 2022
Weekly Average is based on the current monthly average for 12 MGD plant
Monthly Average is based on reducing by 50% the difference from 62 (current monthly average) to 19.2 lbs TP/day or 134 lbs TN/day (possible WQBELs)
Weekly and Monthly Average concentrations derived from the mass.

7. TDEC Inexplicably Terminates Monitoring Requirements After Three (3) Years

The Draft Permit requires in-stream monitoring for only three (3) years, in 2023, 2024, and 2025, pursuant to Section 3.6 of the Draft Permit. The Draft Permit offers no justification for cutting off instream monitoring in year 3 of a permit with a five (5) year term especially considering TDEC has been requiring instream monitoring of some form in the prior permitting dating back at least 15 years. This in-stream monitoring data is critical to the TMDL work both in terms of building data for analysis, but also for monitoring to see if implementation approaches that are established by the TMDL are achieving the goals. It is important for not just this permit, but for the other sewer plant dischargers on the Harpeth and Jones Creek to have in-stream monitoring requirements.

The termination of monitoring requirements impacts the formulation of a plan to implement the TMDL, the compliance of an implementation plan, as well as the TMDL itself and improvements in water quality in general.

The Draft Permit at the beginning of this section 3.6 should also state that the in-stream monitoring will be adjusted based on input from the TMDL working group.

8. TDEC Further Undermines the New TMDL Before It Can Even be Finalized by Failing to Provide for it in the Reopener Clause

2017 Permit provides:

> **1.7. REOPENER CLAUSE**
>
> This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 307(a)(2) and 405(d)(2)(D) of the Clean Water Act, as amended, if the effluent standard, limitation or sludge disposal requirement so issued or approved:

a. Contains different conditions or is otherwise more stringent than any condition in the permit; or

b. Controls any pollutant or disposal method not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

In addition, the permit may be reopened and modified to incorporate changes necessary to accommodate watershed planning requirements associated with TMDL development and any wasteload allocation(s) assigned to the facility in a new TMDL.(Emphasis added.)

The Draft Permit's Reopener Clause (Section 1.5) contains no reference whatsoever to the TMDL. Section 1.5 now provides:

1.5. REOPENER CLAUSE

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 307(a)(2), and 405(d)(2)(D) of the Clean Water Act, as amended, if the effluent standard, limitation, or sludge disposal requirement so issued or approved:

a) Contains different conditions or is otherwise more stringent than any condition in the permit; or

b) Controls any pollutant or disposal method not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

The removal of the TMDL language raises concern about TDEC's commitment to the TMDL, its implementation, and the hopeful resulting improvements in water quality.

9. The Draft Permit Continues to Ignore Applicable Antidegradation Requirements

TDEC and Franklin continue to rely in the Draft Permit on similar attempts to avoid antidegradation requirements as in the Final Permit. For example, section 4 of the Draft Permit provides that:

4. NEW PERMIT LIMITATIONS AND COMPLIANCE SCHEDULE SUMMARY

Important Note: The terms and conditions of this permit have their basis in the antidegradation provisions of state water quality standards, Rule 0400-40-03-.06. Franklin submitted supplemental application information in the form of a memo dated December 8, 2014, committing to continue meeting the load limits in the 12 MGD permit rather than to supply an antidegradation demonstration including a social and economic justification for any increase in pollutant loadings up to 16 MGD.

As noted in our comments of November 21, 2016, failure to comply with antidegradation requirements was improper then, and therefore continues to be inappropriate. We further note that Dr. Burkholder's

comments of December 7, 2016, among others, establish impacts from the Franklin STP on the State Scenic River in Davidson County.[31]As such, there are specific requirements in TDEC's own rules that it has not required Franklin to comply with, as, for example:

> At the time of permit renewal, previously authorized discharges, including upstream discharges, which presently degrade Exceptional Tennessee Waters above a de minimis level, will be subject to a review of updated analysis of alternatives information provided by the applicant, but not to a determination of economic/social necessity. Public participation for these existing discharges will be provided in conjunction with permitting activities.[32]

10. The Draft Permit Ignores Continued Algal-producing Conditions in the Harpeth River, as well as New Concerns and Regulatory Initiatives to Reduce Nutrient Pollution

The reports by Drs. Lebkuecher, Burkholder, Randall and others, as well as TDEC's designation of the river as impaired by nutrient pollution, establish that there are continued algal-producing conditions in the Harpeth River. TDEC is therefore statutorily obligated to attempt to ameliorate those conditions. It is not enough simply to rest on not worsening the condition of the river.[33] Failure to do so would not only violate TDEC's statutory obligations but also the recognition by all levels of government that nutrient pollution is getting worse and must be addressed.[34]

Excessive algal growth is driven by nutrient (N and P) availability, warm temperatures, and sunlight. When these three criteria are met, algae can grow rapidly into blooms capable of choking out emergent plant life, resulting in low dissolved oxygen, fish kills, and causing undesirable odors and aesthetics. While many algae species are an integral component of the food web and provide a food source for many macroorganisms, too much growth or biomass can still cause harmful and problematic conditions. An even greater concern is the presence of cyanobacteria in the Harpeth River (identified by Lebkuecher) that are capable of producing harmful toxin (identified in the Harpeth watershed by Harpeth Conservancy) – regularly reported in national media as a cause of death for household pets and animals that ingest toxin from rivers, lakes, and ponds across the country. Cyanobacteria tend to thrive in warmer conditions than other, non-toxin producing algae, and thus warmer temperatures coupled with more nutrient availability will exacerbate the current conditions. We can easily look towards Lake Erie, Lake Victoria, Ohio River, and many other bodies of water that were not inundated with cyanobacteria decades ago but are now struggling to manage the issue. Tennessee and TDEC have an

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[31]*See* TN Comp. R. & Regs, Rule 0400-40-03-.03(3)(k): "Additionally, the quality of downstream waters shall not be detrimentally affected."

[32]TN Comp. R. & Regs, Rule§ 0400-40-03-.06(4)(c)(1).

[33] Draft Permit § 8.6, page R-31.

[34] See, e.g., Government Accountability Office, Agencies Should Take More Actions to Manage Risks from Harmful Algal Blooms and Hypoxia (June 2022) https://www.gao.gov/assets/gao-22-104449.pdf; USEPA, Accelerating Nutrient Pollution Reductions in the Nation's Waters(April 5, 2022) https://www.epa.gov/nutrient-policy-data/2022-epa-nutrient-reduction-memorandum. See also https://www.ncelenviro.org/issue/nutrient-pollution/. HC is further concerned with TDEC's statement in Section 6.6 of the Rationale of the Draft Permit that:

> The division interprets the primary goal to be for water to support a macro-invertebrate community comparable to biological communities found in eco-region reference streams which are not subject to impacts by society activities such as farming, urban runoff and point source discharges.

See HC's comments on the 2022 303(d) list regarding changes in criteria proposed by City of Murfreesboro, also in TDEC's possession.

opportunity to set stricter nutrient limits to ameliorate this approaching issue while management strategies and cost are still reasonable and practical.

11. TDEC Sewer Overflow Response Plan Components Need to be Added to the Draft Permit and Can be Used as a Template for TDEC to Use for Sewer Plant Permits Statewide.

As we also raised with the draft of the 2017 Permit, TDEC should have standard permit language for SORPs across the state that provides public information on a sewer overflow in a timely fashion. One of the components of our 2016 Settlement Agreement with Franklin required the development of a more detailed SORP.[35] Below is a table from the SORP that would provide core components that should be incorporated into the Draft Permit as well as others across the state. The Franklin SORP is similar to those contained in consent decrees with Knoxville and Nashville, and we believe that Franklin utilized another city's SORP as a model that we provided input to as well. In short, a number of models for such provisions are available for TDEC's review and use. This includes having a web page where sewer overflow reports are compiled for the public to find easily with reports uploaded within a few days of submittal to TDEC.

Scenario	Event	Action	Duration
1	Blockage related to overflows greater than 1,000 gallons (estimated) into nearby waterbodies	Temporary signs along the waterbody 1,000 yards upstream and downstream of the affected area at intervals of 200 yards or at public access points	Signs remain in place 48 hours after cleanup is completed
2	Blockages in residential or high-traffic area (e.g. school or public park)	Place door hangers (or other forms of notifications) on impacted homes or businesses	Immediate
3	Severe weather issues resulting in widespread issues (e.g. flooding)	Issue news release warning of potential hazards from flooding, stormwater runoff, and overflows occurring	Immediate
4	All other blockages	Post temporary signs and establish control zone	Signs and control zones to remain in place until cleanup is complete

Conclusion

Nutrient pollution in the Harpeth River continues. The river is on the State's 303(d) list as impaired by nutrient pollution. TDEC is obligated to use the issuance of the Draft Permit to reduce contamination levels in the river, to meet the State's water quality standards, as required by both the Clean Water Act and the Tennessee Water Quality Control Act. The Draft Permit falls short of these requirements. Even though the river is impaired at discharge levels far less than the Draft Permit allows, the Draft Permit

[35] https://www.franklintn.gov/home/showpublisheddocument/30294/636935066474430000

does not attempt to reduce current pollution levels. TDEC can utilize several mechanisms to achieve required pollution levels, including through the TMDL or through a WQBEL. The TMDL is nowhere near completed (7) years after it was announced. TDEC has had credible science sufficient to set a WQBEL for at least five (5) years. TDEC needs to perform its statutory duty of mandating discharge levels sufficient to restore the river and remove it from the 303 (d) list.

TDEC – and Franklin – should take this opportunity and use the Draft Permit to clean up the Harpeth River because failure to do so might imperil future economic growth in the area. TDEC cannot issue further permits that cause measurable degradation of the applicable parameter because the Harpeth River is impaired for nutrient pollution.[36]

Therefore, Harpeth Conservancy must respectfully request TDEC substantially revise or completely redraft the Draft Permit in compliance with long-standing statutory requirements. HC has put substantial effort into the TMDL and we are willing to devote similar time to working with TDEC and Franklin to negotiate a permit that complies with all applicable requirements. We look forward to hearing from TDEC and Franklin on their willingness to engage in such discussions.

Sincerely yours,

Harpeth Conservancy

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By: /s/ Axel Ringe
Water Quality Chair

[36] TDEC's rules provide that when a water is impaired by a particular pollutant (it has an "unavailable parameter") new or increased discharges are NOT allowed if measurable degradation would result: "In waters with unavailable parameters, new or increased discharges that would cause measurable degradation of the parameter that is unavailable shall not be authorized…. "TN Comp. R. & Regs., Rule § 0400-40-03-.06(2)(a). Note also that general antidegradation and anti-backsliding rules must also be complied with. "TN Comp. R. & Regs., Rule § 0400-40-03-.06 and Rule § 0400-40-05-.08(1)(j).

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