UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

January 25, 2022

Graham Stevens, Chief
Bureau of Water Protection and Land Reuse
Connecticut Department of Energy & Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Sent via electronic mail

Dear Mr. Stevens:

Thank you for the final submission of the **Connecticut Statewide Lake Nutrient Total Maximum Daily Load Core Document and Appendix 1: Bantam Lake Watershed.** The Core Document details an approach to nutrient TMDLs for lakes and impoundments throughout the State. Bantam Lake is the first application of this TMDL to a specific watershed. Additional watershed appendices can be submitted for TMDL approval under the Core Document.

The U.S. Environmental Protection Agency (EPA) hereby approves Connecticut's TMDL submission. The TMDL package was submitted to EPA via Email on December 28, 2021. Comments on the documents were received by CTDEEP during the public participation process, and the State's responses to them were addressed in the accompanying response to comments submission. EPA has determined that this TMDL meets the requirements of Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations (40 CFR Part 130). Attached is a copy of our approval documentation.

I would like to thank you and your staff for the dedication of the Core Document to our colleague Toby Stover who passed away during the project. It was a very kind gesture. My staff and I look forward to continued cooperation with the CT DEEP in exercising our shared responsibility of implementing the requirements under Section 303(d) of the CWA. If you have any questions regarding this approval, please contact Jackie LeClair at (617) 617-918-1549 or have your staff contact Mary Garren at (617) 918-1322.

Sincerely,

/s/

Ken Moraff, Director
Water Division

cc with attachment:
Traci Iott, CT DEEP
Chris Bellucci, CT DEEP
Jacqueline LeClair, EPA
Mel Coté, EPA

EPA NEW ENGLAND'S TMDL REVIEW

DATE: January 25, 2022

TMDL: *Connecticut Statewide Lake Nutrient TMDL Core Document and Appendix 1: Bantam Lake Watershed*

STATUS: Final

IMPAIRMENT/POLLUTANT: recreational and aquatic life use impairments caused by nutrients and associated pollutants

Two Total Daily Maximum Loads (TMDLs) are being approved for the one waterbody segment of Bantam Lake (CT6705-00-3-L3_01) located in the towns of Morris and Litchfield in the State of Connecticut. The two Total Daily Maximum Loads (TMDLs) are established in terms of concentrations and daily loads for total phosphorus (TP) and total nitrogen (TN). These TMDLs are being established to address the recreational impairment of Bantam Lake due to nutrients and related parameters: algae, chlorophyll-*a*.

BACKGROUND: The Connecticut Department of Energy and Environmental Protection (CT DEEP) released a draft *Connecticut Statewide Lake Nutrient TMDL Core Document* and an appendix detailing TMDLs for Bantam Lake to the public and EPA New England on July 16, 2021. A public comment period was held by CT DEEP from July 19, 2021 to August 19, 2021. The Core Document details an approach to nutrient TMDLs for lakes and impoundments throughout the State. Bantam Lake is the first application of this TMDL approach to a specific watershed. Additional watershed appendices will be submitted in the future for TMDL approval under the Core Document. CT DEEP submitted to EPA New England the final *Statewide Lake Nutrient TMDL Core Document and Appendix 1: Bantam Lake Watershed TMDL* and *Bantam Lake Watershed-based Plan Addendum* with a transmittal letter dated December 23, 2021. The submission package was received by EPA via electronic mail on December 28, 2021. In addition to these documents, the submittal included, either attached or by reference, the following documents:

- Public Notice of three draft documents, the Statewide Lake Nutrient TMDL Core Document, the Bantam Lake Watershed TMDL and the Bantam Lake Watershed-based Plan for public review and comment, CT DEEP, July 13, 2021
- Review and Response to Comments Received on Bantam Lake Watershed Project Documents, Final Report, CTDEEP, December 13, 2021
- Regulations of Connecticut State Agencies, Title 22a. Environmental Protection. Connecticut Water Quality Standards, § § 22a-426-1 – 22a-426-9. Revised 2015-11-21 https://portal.ct.gov/-/media/DEEP/water/water_quality_standards/wqsfinaladopted22511pdf.pdf
- State of Connecticut 2020 Integrated Water Quality Report, CT DEEP, Final, September 2020 https://portal.ct.gov/DEEP/Water/Water-Quality/Water-Quality-305b-Report-to-Congress

The following supporting documents were available to the public on CT DEEP's website at: https://portal.ct.gov/DEEP/Water/Watershed-Management/Bantam-Lake-Watershed-Projects

- DRAFT Statewide Lake Nutrient TMDL Core Document
- DRAFT Bantam Lake TMDL Appendix
- DRAFT Bantam Lake Watershed-based Plan Addendum
- Statewide Lake Nutrient TMDL Quality Assurance Project Plan (QAPP)
- Bantam Lake Factsheet
- Bantam Lake Modeling Report
- Bantam Lake Final QAPP
- Bantam Lake Public Meeting Core Document Presentation, July 29,2021
- Bantam Lake Public Meeting Watershed-based Plan Presentation, July 29,2021
- Bantam Lake Webinar Summary, May 7, 2020
- CT DEEP Meeting Presentation, May 13, 2020
- Bantam Lake Watershed Base Map
- Bantam Lake Watershed Land Use Map
- QAPP for Field Assessments and Analyses

The following review explains how the TMDL submission meets the statutory and regulatory requirements of TMDLs in accordance with § 303(d) of the Clean Water Act and EPA's implementing regulations in 40 CFR Part 130.

REVIEWER: Mary Garren (617-918-1322), e-mail: garren.mary@epa.gov

REVIEW ELEMENTS OF TMDLs

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. § 130 describe the statutory and regulatory requirements for approvable TMDLs. The following information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and EPA regulations, and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation.

Introduction

The *Statewide Lake Nutrient TMDL Core Document* (hereafter referred to as the "Core Document") is the main TMDL document with the segment-specific information and analyses included in Appendices. The TMDL was designed to support reduction of nutrients and associated pollutants to reduce risks to public health and aquatic life. Excess nutrients enter surface waters from a variety of sources. These can include soil erosion caused by human activities, overapplication of fertilizers, polluted stormwater runoff, improperly disposed domestic animal waste, and inadequately treated wastewater. Excess nutrients such as phosphorus and nitrogen can, under certain conditions, lead to rapid growth of algae and cyanobacteria and cause Harmful Algal Blooms (HABs). HABs pose a risk to human and pet health due to the possible presence of neurotoxins, hepatotoxins, and irritants that can have serious health impacts. People and their pets can be exposed via ingestion, inhalation, and contact with recreational waters and consumption of fish from impacted waters. Macroinvertebrate and fish communities are impacted by HABs as the ecological balance of the lake is upset, altering food sources and aquatic habitat. Fish kills can result from dissolved

oxygen depletion associated with HABs. The Core Document details CT DEEP's approach to establishing lake and impoundment nutrient TMDLs across the state.

Lake and impoundment-specific nutrient TMDLs are detailed in appendices to the Core Document. Appendix 1: Bantam Lake Watershed (hereafter referred to as the "Bantam Appendix") as well as the companion Bantam Lake Watershed-based Plan (hereafter referred to as the "Bantam WBP"), present the first waterbody-specific TMDLs submitted under the umbrella of the Core Document. CT DEEP will submit additional appendices in the future with the intention of adding more waterbody segments to the Statewide Lake Nutrient TMDL. The Statewide Lake Nutrient TMDL was constructed to allow for this approach.

CT DEEP has submitted two waterbody segment/impairments for Bantam Lake to be added for coverage under the Statewide Lake TMDL. The State has provided public notice for review of the Core Document, Bantam Appendix, and the Bantam WBP. The Bantam Appendix provides detailed waterbody-specific information on the impaired lake and the TMDLs as was planned under the Core Document. CT DEEP has submitted the Statewide Lake Nutrient TMDL and two Bantam Lake TMDLs for EPA approval.

The Bantam Appendix therefore presents information related to one waterbody-specific segment being added under the Statewide Lake Nutrient TMDL; all other sections of the Statewide Lake Nutrient TMDL are incorporated by reference and remain applicable to the Appendix.

1. Description of Waterbody, Pollutant of Concern, Pollutant Sources and Priority Ranking

The TMDL analytical document must identify the waterbody as it appears on the State/Tribe's 303(d) list, the pollutant of concern and the priority ranking of the waterbody. The TMDL submittal must include a description of the point and nonpoint sources of the pollutant of concern, including the magnitude and location of the sources. Where it is possible to separate natural background from nonpoint sources, a description of the natural background must be provided, including the magnitude and location of the source(s). Such information is necessary for EPA's review of the load and wasteload allocations which are required by regulation. The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as: (1) the assumed distribution of land use in the watershed; (2) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources; (3) present and future growth trends, if taken into consideration in preparing the TMDL; and, (4) explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments, or chlorophyll a and phosphorus loadings for excess algae.

A. Description of Waterbody, Priority Ranking, and Background Information

The Bantam Appendix addresses one lake segment (CT6705-00-3-L3_01) impaired for nutrients, chlorophyll-a, and algae that was included on Connecticut's 2020 303(d) list and listed as a priority for TMDL development. Bantam Lake is located in the towns of Morris and Litchfield, CT. Bantam Lake has a water quality classification of AA, is not meeting nutrient water quality standards as defined in CT Water Quality Standards Regulations and is failing to meet its designated use for recreation.

The Bantam Appendix identifies the impaired water segment, including waterbody's name, location, assessment unit identifier, classification, and size. Details on the designated uses of the

segment are presented. Site-specific maps and data are provided in the Appendix. Connecticut's 2020 303(d) list indicated a priority date for development of TMDLs for Bantam Lake by 2022.

B. Pollutant of Concern

The Bantam Lake waterbody segment is impaired for recreational use based upon nutrient data and indicators, specifically TP, TN, chlorophyll-a, and secchi depth. TMDLs are being approved for TP and TN to address the impairment of Bantam Lake by algae, chlorophyll-a, and nutrients.

C. Pollutant Sources

Nutrient impairments and HABs in lakes and impoundments arise from both point and nonpoint sources. Potential point sources of nutrient pollution include unauthorized point sources of untreated wastewater, regulated wastewater pollution control facilities, combined sewer overflows, and stormwater from regulated point sources. Potential non-point sources of nutrient pollution include polluted runoff, septic systems, erosion, fertilizers, agriculture, pets, and wildlife. Actual segment-specific sources of nutrient pollution are identified in the Bantam Appendix and the accompanying Bantam WBP.

Assessment: EPA New England concludes that the Bantam Appendix, as supplemented by the Core Document and the accompanying Bantam WBP, meets the requirements for describing the TMDL waterbody segment, pollutant of concern, and priority ranking, and identifying and characterizing sources of impairment.

In addition, EPA notes that this TMDL Core Document may apply to lakes and impoundments found to be impaired by nutrients and associated pollutants in the future, provided that DEEP's intent to add more impaired waters to the TMDL is made clear, the public has an opportunity to provide comments, and EPA approves the proposed additional TMDLs. In appropriate circumstances in the future, CT DEEP may submit additional TMDLs to EPA for specific waterbodies to be added for coverage under the Core Document. The State will need to either provide public notice for review of the additional TMDLs alone, or as part of the public notice process associated with the biannual review of the State's Section 303(d) list in its *Integrated Water Quality Report* (as explained in Section 4.3 of the Core Document). Within the Integrated Report and in its public notice requesting review and comment, DEEP will need to clearly state its intent to list the newly assessed waterbodies as impaired and to apply the appropriate waterbody-specific nutrient TMDLs. The State will not need to resubmit the approved Core document at such times. Rather, it should reference the document and update certain waterbody-specific information contained in this original Core document in the introductory materials of its submission. DEEP should also provide the same type of detailed information on the additional impaired waterbodies and their TMDLs as are contained in the appendices that accompany this original submission.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable State/Tribe water quality standard, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the antidegradation policy. Such information is necessary for EPA's review of the load and wasteload allocations which are required by regulation. A numeric water quality target for the TMDL (a quantitative value used to measure whether or not the applicable water quality standard is attained) must be identified. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, usually site specific, must be developed from a narrative criterion and a description of the process used to derive the target must be included in the submittal.

Chapter 2 of the Core Document details the state's water quality standards as they relate to surface waters and, in particular, nutrients in lakes or impoundments. Water quality criteria for lake nutrients in Connecticut are narrative nutrient criteria applicable to all freshwater surface waters regardless of their surface water classification. The TMDL must be established as a translation of the narrative criteria which reads, "The loading of nutrients, principally phosphorus and nitrogen, to any surface waterbody shall not exceed that which supports maintenance or attainment of designated uses." The state must translate the narrative nutrient criteria into waterbody-specific numeric water quality targets that will protect designated uses of the waterbody based on its surface water classification. The numeric water quality target for that waterbody must also comply with the state's antidegradation policy. The numeric water quality targets applicable to an individual waterbody segment are found in the segment specific table in the corresponding waterbody-specific appendix to the Core Document.

Water quality classification and water quality standards of all surface waters of the State of Connecticut have been established pursuant to Connecticut General Statutes Section 22a-426. According to Connecticut's water classification program, freshwater surface waters are classified as AA, A, or B. Bantam Lake is classified as a Class AA water, which is the state's highest level of water quality. Class AA surface waters are "designated as a source of existing or proposed drinking water supply; habitat for fish and other aquatic life and wildlife; recreation; industrial and agricultural water supply; and shall have excellent aesthetic value."

Section 2.4 of the Core Document summarizes the weight of evidence approach taken by CT DEEP to assess the current and the natural trophic state of the lake or impoundment. Comparing these two trophic states allows CT DEEP to determine the degree to which the waterbody has been altered due to anthropogenic inputs. The natural trophic state of the waterbody is then key to setting the numeric water quality target of the waterbody. The numeric water quality target is used to determine the nutrient load reduction needed for the waterbody to comply with Connecticut's WQS and to define the TMDL.

Sections 6.1 and 6.2 of the Bantam Appendix detail how the natural and current trophic states of Bantam Lake were determined. The weight of evidence approach was employed using multiple lines of evidence to determine the natural trophic state of the lake that would comply with Connecticut WQS. Bantam Lake was modeled using the Lake Loading Response Model (LLRM) and the BATHTUB model under both fully-forested and current conditions. The modeled in-lake concentrations of TP and TN were compared to determine the anthropogenic influence of nutrient loading on the lake. The natural trophic level of the lake was also assessed using the Taylor Approach, the Hollister Model, and the New England Lake and Pond Study Model. A paleolimnological study of Bantam Lake was also available and sediment core data from this study provided another line of evidence for assessing the lake's natural trophic condition. CT DEEP determined that the trophic condition for Bantam Lake that would be consistent with Connecticut WQS would be the mid-range of mesotrophic conditions. This corresponds to in-situ water quality levels of TP at 20 ug/l and TN at 400 ug/l.

Assessment: EPA New England concludes that CT DEEP has properly described and interpreted the applicable water quality standards to set the numeric water quality targets and appropriate load reductions. The Core Document details how CT DEEP is translating narrative nutrient criteria into waterbody-specific numeric nutrient water quality targets. The Bantam Appendix details how that translation was made for Bantam Lake. CT DEEP is directly applying the numeric target from accepted water quality models to derive the TMDL target with the goal

of reducing the TP and TN concentrations to reflect natural conditions. This is a reasonable approach and is consistent with Connecticut WQS.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

As described in EPA guidance, a TMDL identifies the loading capacity of a waterbody for a particular pollutant. EPA regulations define loading capacity as the greatest amount of loading that a water can receive without violating water quality standards (40 C.F.R. § 130.2(f)). The loadings are required to be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. § 130.2(i)). The TMDL submittal must identify the waterbody's loading capacity for the applicable pollutant and describe the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In most instances, this method will be a water quality model. Supporting documentation for the TMDL analysis must also be contained in the submittal, including the basis for assumptions, strengths and weaknesses in the analytical process, results from water quality modeling, etc. Such information is necessary for EPA's review of the load and wasteload allocations which are required by regulation.

In many circumstances, a critical condition must be described and related to physical conditions in the waterbody as part of the analysis of loading capacity (40 C.F.R. § 130.7(c)(1)). The critical condition can be thought of as the "worst case" scenario of environmental conditions in the waterbody in which the loading expressed in the TMDL for the pollutant of concern will continue to meet water quality standards. Critical conditions are the combination of environmental factors (e.g., flow, temperature, etc.) that results in attaining and maintaining the water quality criterion and has an acceptably low frequency of occurrence. Critical conditions are important because they describe the factors that combine to cause a violation of water quality standards and will help in identifying the actions that may have to be undertaken to meet water quality standards.

Connecticut's lake and impoundment nutrient TMDLs express water quality targets designed to attain the designated uses of the waterbody based upon the specific surface water classification assigned to that waterbody and to meet Connecticut's WQS. The State's approach to determining the loading capacity of a waterbody and establishing TMDLs is presented in Chapter 4 of the Core Document. The water quality models employed by CT DEEP to set the loading capacity are the LLRM, used to determine nutrient loading from the watershed to the lake, and the BATHTUB model, used to determine the relationship between nutrient loading and in-lake nutrient concentrations. Details on the use of data and water quality models in determining the loading capacity for waterbodies addressed under the Core Document are found in the Generic Secondary Data Quality Assurance Project Plan (QAPP) for the Connecticut (CT) Statewide Lake Nutrient Total Maximum Daily Load (TMDL).

The lake and impoundment nutrient TMDLs are crafted to be protective during the growing season of April to October when plant and algal growth are at their peak in New England. This is the critical time period when water quality can fail to meet its designated uses as the result of anthropogenic nutrient loading. The loading capacity is an annual load in kg/yr that is protective of critical seasonal water quality. An estimate of the daily loading target, while less meaningful for nutrients, is the loading capacity divided by 365.

The Bantam Appendix quantifies the loads that each nutrient source is contributing to Bantam Lake and assigns load reductions in order to achieve the target TP and TN concentrations that will result in the lake attaining water quality standards. Section 6.0 of the Bantam Appendix explains that a 403.2 kg/yr (25%) reduction in TP loading to Bantam Lake is expected to achieve the goal of an in-lake TP concentration of 20 ug/l. A 6,481.0 kg/yr (24.2%) reduction in TN is expected to achieve the needed in-lake TN concentration of 400 ug/l. These reductions correspond to annual loads for Bantam Lake of 1,211.1 kg/yr (3.32 kg/d) TP and 20,326 kg/yr (6.37 kg/d) TN. The reductions resulting from these TMDLs are needed to restore Bantam Lake to its natural trophic state in the mid-range of mesotrophic conditions.

Assessment: EPA New England concludes that CT DEEP has clearly established in the Core Document how appropriate TP and TN loads of pollution will be identified and allocated within a watershed. The resulting loading capacity calculated using a set of recognized water quality models with observed nutrient concentration data will appropriately be set at a level necessary to attain and maintain applicable WQS. The resulting TMDL for Bantam Lake is based on a reasonable approach for establishing the relationship between pollutant loading and water quality.

4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity allocated to existing and future nonpoint sources and to natural background (40 C.F.R. § 130.2(g)). Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. § 130.2(g)). Where it is possible to separate natural background from nonpoint sources, load allocations should be described separately for background and for nonpoint sources.

If the TMDL concludes that there are no nonpoint sources and/or natural background, or the TMDL recommends a zero load allocation, the LA must be expressed as zero. If the TMDL recommends a zero LA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero LA implies an allocation only to point sources will result in attainment of the applicable water quality standard, and all nonpoint and background sources will be removed.

The Load Allocation (LA) relates to existing and future nonpoint sources, natural background, and stormwater runoff not subject to permitting under the National Pollutant Discharge Elimination System (NPDES) requirements for Municipal Separate Storm Sewer Systems (MS4). The nonpoint sources of nutrients include diffuse overland stormwater runoff, internal loading from the waterbody, groundwater seepage, septic systems, waterfowl, and atmospheric deposition (Core Document, Section 4.2.3). The LAs for nonpoint sources of TN and TP are waterbody-specific and presented in the watershed-specific appendices.

The LAs for nonpoint sources of TP and TN in the Bantam Lake watershed are 513.2 kg/yr TP and 615.6 kg/yr TN (total watershed load from nonpoint sources that Bantam Lake can assimilate and still meet water quality standards). This corresponds to reductions in current nonpoint source loads to Bantam Lake of 30.0% TP and 91.7% TN. (Bantam Appendix, Table 13)

Assessment: EPA New England concludes that CT DEEP has clearly established in the Core Document how appropriate TP and TN loads from nonpoint sources of pollution will be identified and allocated within a watershed and how reasonable reductions for the identified sources will be assigned. The LA for Bantam Lake was assigned in the Bantam Appendix using the approach set out in the Core Document.

5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to existing and future point sources (40 C.F.R. § 130.2(h)). If no point sources are present or if the TMDL recommends a zero WLA for point sources, the WLA must be expressed as zero. If the TMDL recommends a zero WLA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero WLA implies an allocation only to nonpoint sources and background will result in attainment of the applicable water quality standard, and all point sources will be removed.

In preparing the wasteload allocations, it is not necessary that each individual point source be assigned a portion of the allocation of pollutant loading capacity. When the source is a minor discharger of the pollutant of concern or if the source is contained within an aggregated general permit, an aggregated WLA can be assigned to the group of facilities. But it is necessary to allocate the loading capacity among individual point sources as necessary to meet the water quality standard.

The TMDL submittal should also discuss whether a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. In such cases, the State/Tribe will need to demonstrate reasonable assurance that the nonpoint source reductions will occur within a reasonable time.

The Waste Load Allocation (WLA) accounts for all sources within the watershed that are attributed to existing and future point sources of nutrient pollution. Point sources are subject to permitting under NPDES as discharges from individual, municipal, or industrial water pollution control facilities or from regulated MS4s. The WLAs for point sources of TN and TP are waterbody-specific and presented in the watershed-specific appendices.

The WLAs for point sources of TP and TN in the Bantam Lake watershed are 22.5 kg/yr TP and 335.7 kg/yr TN (total load from point sources that Bantam Lake can assimilate and still meet water quality standards). There are no MS4 areas in this watershed and only one NPDES-regulated point source. For this reason, the entire WLA is assigned to the Woodridge Lake Water Pollution Control Facility. This corresponds to reductions in current point source loads from the Woodridge Lake facility to Bantam Lake of 91.5% TP and 66.1% TN. Additional treatment at the source will be necessary to meet this WLA. (Bantam Appendix, Table 13)

Assessment: EPA New England concludes that CT DEEP has clearly established in the Core Document how appropriate TP and TN loads from point sources of pollution will be identified and allocated within a watershed and how reasonable reductions for the identified sources will be assigned. The WLA for Bantam Lake was assigned in the Bantam Appendix using the approach established in the Core Document.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA § 303(d)(1)(C), 40 C.F.R. § 130.7(c)(1)). EPA guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

The TMDL provides a numerical or explicit MOS reserved as a portion of the total loading capacity. This loading set-aside is included in the TMDL to account for any uncertainty in model inputs and/or assumptions. The MOS in this TMDL was developed using the probabilistic statistical method of quantifying uncertainty for lake phosphorus TMDLs in Walker (2001). Model standard error and risk level inform the selection of the numeric MOS based upon the strength of the calibrated models and the data set used. CT DEEP also presents a discussion of additional factors taken into account in the assessment of uncertainty in the TMDL. (Core Document, Section 4.2.3)

There was a strong correlation between the observed water quality data used to calibrate the LLRM and the BATHTUB models for Bantam Lake and the levels of nutrients predicted by these models. The MOS in the Bantam Lake TMDL is established as 5% of the total load based upon the probabilistic statistical method in Walker (2001). This explicit MOS of 60.6 kg/yr TP

and 1,016.3 kg/yr TN provides 75% certainty that water quality targets and the TMDL will be achieved. (Bantam Appendix, page 32 and Table 13)

Assessment: EPA New England concludes that an adequate margin of safety is provided by the explicit MOS derived from a statistical analysis of uncertainty.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The method chosen for including seasonal variations in the TMDL must be described (CWA § 303(d)(1)(C), 40 C.F.R. § 130.7(c)(1)).

CT DEEP considered seasonal variations, annual variability, and critical periods for nutrient impairment when modeling Bantam Lake and developing the TMDLs. When future appendices deal with impounded lakes, the impact of water level regulation is acknowledged as a necessary consideration as well.

The TMDL addresses seasonal variation because the required reductions in TP and TN were calculated for the conditions during the critical summer season from April to October, when occurrence of nuisance and harmful algal blooms, low dissolved oxygen, and high chlorophyll-a concentrations are most likely to occur. Conservative assumptions were made during the modeling analysis of Bantam Lake using the LLRM and BATHTUB models. The selection of water quality targets was based upon a weight of evidence evaluation. The TMDL nutrient targets were determined in such a way as to provide assurance that water quality standards will be met during the summer critical period. Therefore, the TMDL allocation protects designated uses during the entire year.

Assessment: EPA New England concludes that the TMDL is protective of water quality under all conditions during all seasons throughout the year.

8. Monitoring Plan

EPA's 1991 document, Guidance for Water Quality-Based Decisions: The TMDL Process (EPA 440/4-91-001), and EPA's 2006 guidance, Clarification Regarding "Phased" Total Maximum Daily Loads, recommend a monitoring plan when a TMDL is developed using the phased approach. The guidance indicates that a State may use the phased approach for situations where TMDLs need to be developed despite significant data uncertainty and where the State expects that the loading capacity and allocation scheme will be revised in the near future. EPA's guidance provides that a TMDL developed under the phased approach should include, in addition to the other TMDL elements, a monitoring plan that describes the additional data to be collected, and a scheduled timeframe for revision of the TMDL.

The TMDLs are not phased TMDLs requiring a monitoring plan. CT DEEP does include specific recommendations for monitoring conducted by local lake associations or other groups (Core Document, Sections 4.4 and 5.2.9. and the Bantam Appendix, Section 8.0).

CT DEEP will continue to monitor the water quality of the State's lakes and impoundments through its probabilistic monitoring program. Nutrient impaired lakes are monitored by the CT DEEP Water Monitoring Program through targeted monitoring and sampling trips.

Assessment: EPA New England concludes that the anticipated monitoring by and in cooperation with CT DEEP is sufficient to evaluate the adequacy of the TMDL and attainment of water

quality standards, although this is not a required element for approval of the TMDL. EPA is taking no action on the monitoring plan.

9. Implementation Plans

On August 8, 1997, Bob Perciasepe (EPA Assistant Administrator for the Office of Water) issued a memorandum, "New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs)," that directs Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired solely or primarily by nonpoint sources. To this end, the memorandum asks that Regions assist States/Tribes in developing implementation plans that include reasonable assurances that the nonpoint source load allocations established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. The memorandum also includes a discussion of renewed focus on the public participation process and recognition of other relevant watershed management processes used in the TMDL process. Although implementation plans are not approved by EPA, they help establish the basis for EPA's approval of TMDLs.

The Statewide Lake Nutrient TMDL Core Document provides detailed information on watershed-based plans, implementation guidance, and best management practices to address the various sources of nutrients in a watershed (Core Document, Sections 5 and 6). It also includes an overall description of the implementation process, and information about the stormwater management program. Maps, waterbody-specific data summary tables, and other information specific to each watershed are presented in Appendices to inform stakeholders on the location of known impairments in their lake's watershed. The Bantam Appendix is also greatly expanded upon by the Bantam WBP.

Assessment: Although implementation plans are not a required element for TMDL approval, CT DEEP has included implementation guidance and identified many resources to aid implementation. EPA New England is taking no action on the implementation plan.

10. Reasonable Assurances

EPA guidance calls for reasonable assurances when TMDLs are developed for waters impaired by both point and nonpoint sources. In a water impaired by both point and nonpoint sources, where a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur, reasonable assurance that the nonpoint source reductions will happen must be explained in order for the TMDL to be approvable. This information is necessary for EPA to determine that the load and wasteload allocations will achieve water quality standards.

In a water impaired solely by nonpoint sources, reasonable assurances that load reductions will be achieved are not required in order for a TMDL to be approvable. However, for such nonpoint source-only waters, States/Tribes are strongly encouraged to provide reasonable assurances regarding achievement of load allocations in the implementation plans described in section 9, above. As described in the August 8, 1997 Perciasepe memorandum, such reasonable assurances should be included in State/Tribe implementation plans and "may be non-regulatory, regulatory, or incentive-based, consistent with applicable laws and programs."

The TMDL targets for point sources in these lake nutrient TMDLs are not less stringent based on any assumed nonpoint source reductions. CT DEEP explains that a combination of regulatory and non-regulatory program support in Connecticut will provide reasonable assurances that both point and non-point allocations will be achieved, including regulatory enforcement, technical assistance, availability of financial incentives, and state and federal programs for pollution control.

Assessment: Although not required for this TMDL approval, because CT DEEP did not increase WLAs based on expected LA reductions, CT DEEP has nevertheless described a number of

programs that provide reasonable assurance that WQS will be met. EPA New England is taking no action on reasonable assurance.

11. Public Participation

EPA policy is that there must be full and meaningful public participation in the TMDL development process. Each State/Tribe must, therefore, provide for public participation consistent with its own continuing planning process and public participation requirements (40 C.F.R. § 130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval must describe the State/Tribe's public participation process, including a summary of significant comments and the State/Tribe's responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. § 130.7(d)(2)).

Inadequate public participation could be a basis for disapproving a TMDL; however, where EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

On July 19, 2021, a public notice was released announcing the availability of three draft documents for public review – the Core Document, the Bantam Appendix, and the Bantam WBP. Notice was posted on the CT DEEP website. Notices were placed in eight newspapers throughout Connecticut, with focused coverage in the Bantam Lake watershed. Emails were sent to a list of interested agencies, towns, and stakeholders. The documents were available on three CT DEEP webpages. A public informational meeting was held online due to the COVID virus pandemic on July 29, 2021. The public comment period ran until August 19, 2021. Comments were received from eight parties and responded to by CT DEEP. In response to the comments received, CT DEEP agreed to provide additional information in the final TMDL documents, answered questions posed by the public, and explained how some suggestions made were beyond the scope of a TMDL. CT DEEP also followed up on comments by the Housatonic Valley Association and the Connecticut Department of Public Health with personal communications prior to submission of the final documents to EPA.

Assessment: EPA New England concludes that CT DEEP has provided sufficient opportunities for the public to comment on the TMDL and has provided reasonable responses to the public comments.

12. Submittal Letter

A submittal letter should be included with the TMDL analytical document and should specify whether the TMDL is being submitted for a technical review or is a final submittal. Each final TMDL submitted to EPA must be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final submittal, should contain such information as the name and location of the waterbody, the pollutant(s) of concern, and the priority ranking of the waterbody.

On December 28, 2021, EPA New England received CT DEEP's submission of the *Connecticut Statewide Lake Nutrient TMDL Core Document* and *Appendix 1: Bantam Lake Watershed*. The submission package contained all the elements necessary to approve the TMDLs.

Assessment*:*
CT DEEP's letter dated December 23, 2021, states that the TMDL is being formally submitted for EPA review and approval.

	Data for entry in EPA's National TMDL Tracking System								
TMDL/Plan Name *			Connecticut Statewide Lake Nutrient TMDL Core Document and Appendix 1: Bantam Lake Watershed						
Number of TMDLs/plans*			2 TMDLs						
Type of TMDLs* (pollutants)			Total Nitrogen and Total Phosphorus						
Number of listed causes/parameters (from 303(d) list)			3						
Lead State			CT						
TMDL Status			Final						
	Individual TMDLs listed below								
Action ID#	Segment name	Segment ID #	TMDL, Protection Plan, OR Alternative*	Pollutant name(s)	Impairment PARAMETERS/Cause(s) name	Pollutant endpoint	Unlisted ?	CT DEEP Point Source & ID#	Listed for anything else?
R1_CT_2022_01	Bantam Lake	CT6705-00-3-L3_01	TMDL	Total Nitrogen, Total Phosphorus	Algae, Chlorophyll-A, Nutrients	TP, 20 ug/l and TN, 400 ug/l	N	SP0000179 GSI000776 GSI001276 GSI000875 GSI000034 GSI000811 GSSD000002 UI0000307 LCF-074-001 GPL000107 GSM DEEP-WPED-GP-22	Y
TMDL Type (NPS, Point source, both?)			both						
Establishment Date (approval)*			January 25, 2022						
Completion (final submission) Date			December 28, 2021						
Public Notice Date			July 19, 2021						
EPA Developed			No						
Towns affected* (in alphabetical order)			Goshen, Litchfield, Morris, and Torrington, CT						

*Abbreviations:
TMDL = TMDL, Protection Plan = PP, Alternative Restoration Plan = ARP