

July 29, 2005

Ms. Yvonne Bolton, Acting Chief  
Bureau of Water Management  
Connecticut Department of Environmental Protection  
79 Elm Street  
Hartford, CT 06106

Dear Ms. Bolton:

Thank you for your submittal of the final **A Total Maximum Daily Load Analysis for the Mattabesset River Regional Basin** for indicator bacteria (*Escherichia coli*). Nineteen of the waterbodies within the Basin were included on Connecticut's 2004 303(d) list as priority waters for TMDL development. The Mattabesset River, John Hall Brook and the Coginchaug River each have a TMDL submitted for an additional segment that was not on the 303(d) List. Impairments in these three waterbody segments were identified after submission of the 2004 303(d) List. TMDLs were calculated for these three segments based on this new data. Consequently a total of twenty-one TMDLs were submitted for approval.

The U.S. Environmental Protection Agency (EPA) hereby approves Connecticut's TMDL dated June 1, 2005 and received by EPA on June 9, 2005. 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.

This is the second TMDL prepared using CT's cumulative distribution function method. The methodology is detailed in Appendix B of the TMDL, *Development of TMDLs for Indicator Bacteria Using the Cumulative Distribution Function Method*. This approach to calculating the TMDL does not alter CT's standing policy to conduct representative ambient monitoring and comparison to Water Quality Standards (WQS) criteria as the final test for determining compliance with WQS. This TMDL is the first of the watershed TMDLs submitted since the one approved for Long Island Sound in 2001. I am pleased that Connecticut has adopted this new approach for smaller urban watersheds impaired by nonpoint source pollution. My staff

and I are pleased with our working relationship and progress in the TMDL program.

If you have any questions regarding this approval, please contact Steve Silva at (617) 918-1561 or have your staff contact Mary Garren at (617) 918-1322. Thank you very much.

Sincerely,

Linda M. Murphy, Director  
Office of Ecosystem Protection

Attachment

cc with Attachment:

Betsey Wingfield, CT DEP

Lee Dunbar, CT DEP

Mary Kozlak, CT DEP

Steve Silva, EPA

Lynne Hamjian, EPA

Mary Garren, EPA

## EPA NEW ENGLAND'S TMDL REVIEW

**TMDL:** A Total Maximum Daily Load Analysis for the Mattabeset River Regional Basin

CT Waterbody Segments on the State of Connecticut 2004 List of Connecticut Water Bodies Not Meeting Water Quality Standards (303(d) of the Federal Clean Water Act):

### **Mattabeset River Regional Basin Waterbody Name (Segment ID)**

#### Mattabeset River Subregional Basin

Mattabeset River (CT 4600-00\_01, CT 4600-00\_02, CT 4600-00\_03, CT 4600-00\_04, and CT 4600-00\_06),

John Hall Brook (CT 4600-01\_01, CT 4600-01\_02),

Little Brook (CT 4600-07\_01),

Spruce Brook (CT 4600-13\_01),

Coles Brook (CT 4600-23\_01),

Miner Brook (CT 4600-26\_01)

Willow Brook, Cromwell (CT 4600-27\_01)

#### Belcher Brook Subregional Basin

Belcher Brook (CT 4601-00\_01)

#### Willow Brook Subregional Basin

Willow Brook, New Britain (CT 4602-00\_01)

#### Webster Brook Subregional Basin

Webster Brook (CT 4603-00\_01)

#### Sawmill Brook Subregional Basin

Sawmill Brook (CT 4604-00\_01)

#### Coginchaug River Subregional Basin

Coginchaug River (CT 4607-00\_02, CT 4607-00\_03, CT 4607-00\_04, CT 4607-00\_05, and CT 4607-00\_06)

**STATUS:** Final

**IMPAIRMENT/POLLUTANT:** Impairment of primary contact recreation due to indicator bacteria. The Total Daily Maximum Loads (TMDL) are proposed for indicator bacteria - *Escherichia coli*.

### **BACKGROUND:**

The Connecticut Department of Environmental Protection (CTDEP) submitted to EPA New England the final Mattabeset River Regional Basin TMDL Analysis for indicator bacteria with a

transmittal letter dated June 2, 2005 and received by EPA on June 9, 2005. EPA New England concurs with the content of TMDL analysis.

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 40 CFR Part 130.

**REVIEWER:** Mary Garren (617-918-1322) 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.*

### **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 that 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.*

#### **Assessment:**

The waters within subregional basins of the Mattabeset River Regional Basin are the subject of this TMDL analysis. Each is impaired for contact recreational use due to the presence of elevated levels of indicator bacteria (*E. coli*). The eighteen segments within the Regional Basin were identified as impaired on the State of Connecticut 2004 List of Connecticut Water Bodies Not Meeting Water Quality Standards (2004 303(d) List) (page 1, main document). Segments of the Mattabeset River, John Hall Brook and Coginchaug River, CT4600-00\_01, CT4600-01\_01 and CT4607-00\_03 respectively, were not listed on the 2004 303(d) List. Subsequent data identified exceedances of the indicator bacteria criteria in these three waters, therefore TMDLs have been developed for them. CTDEP prioritized the Mattabeset River Regional Basin for immediate TMDL development due to past sampling results (page 2, main document). There are no individually-permitted point source discharges into any of these surface waters (Table 2, main document). All of the communities within the watersheds are MS4 urban communities subject to the Phase II Stormwater General Permit (page 1, main document). Potential sources of bacteria are identified for each waterbody (Table 2, main document). Urban runoff, illicit discharges,

storm sewers, failed collection or septic systems are common sources in each watershed. Agriculture and farming are influences in two of the sub-basins.

The first page in Appendices A-2 through A-7 of the TMDL document provides detailed identifying information on each subregional basin and waterbody segment. The Mattabeset Regional Basin lies within the major watershed of the Connecticut River. The designated use that is being impaired is identified as contact recreation in all of the waters. There are, however, no designated swimming or non-designated swimming areas in these waters. The criteria/indicators for areas not designated as public bathing areas are presented on page 14 of CTDEP's 2004 guidance document, Connecticut Consolidated Assessment and Listing Methodology (CALM). The waters of the Mattabeset River Regional Basin have two criteria to meet in order to fully support their contact recreational designated uses. Sanitary surveys of the water must indicate that no significant source of fecal contamination is present and data obtained by CTDEP and/or USGS must show no exceedances of the indicator bacteria criteria. The applicable season for the TMDL is the recreational season, May 1<sup>st</sup> to September 30<sup>th</sup>. The designated use of contact recreation is not impaired during the cold months when enteric bacteria die off due to the temperatures and potential human exposure is greatly reduced (page 3, Appendix B). Surface water classifications for each of impacted waters are listed as they were defined by the CTDEP Water Quality Standards (WQS), effective December 17, 2002 (page 5, main document). Towns and cities located within the watershed are Southington, Newington, Rocky Hill, Meridan, Cromwell, Berlin, Middletown, New Britain, Plainville, Middlefield, Guilford, Durham, Wallingford, Madison and North Branford (Appendices A-2 through A-7). The appendices list the linear mileage of each waterbody and the square mileage of the individual sub-drainage basin. Land use categories are presented for each watershed. The each watershed is broken down into appropriate land use categories, e.g. forested, urban/developed, open space, water/wetland and agriculture.

EPA concludes that the TMDL report sufficiently describes the pollutants of concern, pollutant sources, and priority rankings waters of the Mattabeset River Subregional Basin.

## **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 anti-degradation policy. Such information is necessary for EPA's review of the load and wasteload allocations that 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.*

### **Assessment:**

Appendix B of the TMDL is entitled "Development of TMDLs for Indicator Bacteria using the Cumulative Distribution Function Method." This Appendix details the entire methodology for this TMDL analysis. Water Quality Criteria supporting "all other recreational use" (excluding swimming) are applicable to all three waters. The geometric mean density of indicator bacteria

must be less than 126 colonies/100 ml and the single sample maximum is limited to 576 colonies/100 ml to comply with CT's bacteria criteria (pages 2 and 3, Appendix B).

CTDEP began discussions with EPA New England in January 2004 on a proposed method for bacteria TMDLs in urban watersheds with recreational use impairments. "Development of TMDLs for Indicator Bacteria using the Cumulative Distribution Function Method" (Appendix B) was written with input from EPA New England. CTDEP requested comment from colleagues within and outside New England during development of this methodology. This approach is limited to waters in urban watersheds identified as having impaired recreational use due to the presence of excess indicator bacteria (*E. coli*). A TMDL for waters that include a designated bathing area is not appropriate using this methodology. Representative ambient water quality monitoring data taken on a minimum of 21 sampling dates between May 1–September 31 is a requirement for use of this method. Indicator bacteria density and precipitation data are necessary. Decisions regarding to listing or delisting of a waterbody pursuant to Section 303(d) of the Clean Water Act will not be made based on this methodology. CTDEP will continue to make an assessment as to whether a waterbody is supporting its designated use according to its 2004 CALM (page 1, Appendix B).

This TMDL analysis proposes using a cumulative distribution function method to determine the reduction in the density of bacteria needed to allow the waterbody to meet its water quality criteria. CT's Water Quality Criteria for Bacterial Indicators (geometric mean 126 col/100 ml and single sample maximum 576 colonies/100 ml of *E. coli*) are presented statistically as a distribution with a geometric mean of 126 colonies/100 ml and a log standard deviation of 0.4. Appendix B (page 2-3) contains a detailed explanation of this cumulative frequency distribution curve, or criteria curve as it is called. The cumulative frequency distribution curve expressing the water quality criteria is shown graphically in Figure 1 (Appendix B). Analytical data from the waterbody is also plotted on the same graph (Figure 2, Appendix B) to form a second cumulative relative frequency curve. The average reduction in *E. coli* needed to move the data points from the sample data curve to the criteria curve determines the necessary average percent reduction of indicator bacteria. This percentage of needed reduction becomes the TMDL. Connecticut's anti-degradation policy (Appendix E of the State's 2002 WQS) is referenced (page 10, main document) in the context that this and any future modification of the TMDL must be consistent with that policy.

EPA concludes that the TMDL report sufficiently describes the applicable water quality standards and numeric water quality targets.

### **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 that 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.

**Assessment:**

The TMDLs are calculated using the detailed methodology in Appendix B of the document. The TMDLs are average percent reductions of indicator bacteria (E. coli) needed to meet the applicable Water Quality Standard. The numeric water quality targets are therefore the average percent reductions of indicator bacteria. The TMDLs (Table 4, main document) are:

| <u>Waterbody</u>          | <u>Segment ID Number</u> | <u>TMDL - Avg. % Reduction needed in indicator bacteria</u> |
|---------------------------|--------------------------|---|
| Mattabesset River         | CT 4600-00_01            | 62%   |
| Mattabesset River         | CT 4600-00_02            | 82%   |
| Mattabesset River         | CT 4600-00_03            | 74%   |
| Mattabesset River         | CT 4600-00_04            | 58%   |
| Mattabesset River         | CT 4600-00_06            | 62%   |
| John Hall Brook           | CT 4600-01_01            | 21%   |
| John Hall Brook           | CT 4600-01_02            | 8%  |
| Little Brook              | CT 4600-07_01            | 86%   |
| Spruce Brook              | CT 4600-13_01            | 59%   |
| Coles Brook               | CT 4600-23_01            | 87%   |
| Miner Brook               | CT 4600-26_01            | 58%   |
| Willow Brook, Cromwell    | CT 4600-27_01            | 86%   |
| Belcher Brook             | CT 4601-00_01            | 80%   |
| Willow Brook, New Britain | CT 4602-00_01            | 86%   |
| Webster Brook             | CT 4603-00_01            | 77%   |
| Sawmill Brook             | CT 4604-00_01            | 82%   |
| Coginchaug River          | CT 4607-00_02            | 68%   |
| Coginchaug River          | CT 4607-00_03            | 79%   |
| Coginchaug River          | CT 4607-00_04            | 69%   |
| Coginchaug River          | CT 4607-00_05            | 62%   |
| Coginchaug River          | CT 4607-00_06            | 84%   |

Appendix A-1 explains the lower TMDLs for both segments of John Hall Brook. These two segments are located in the less urban and less developed area of the Mattabesset River Regional Basin. The same is true for three segment of the Coginchaug River (CT 4607-00\_04, CT 4607-00\_05 and CT 4607-00\_06). The reductions identified for the three Coginchaug segments are significantly higher, however, than those smaller percent reductions needed in John

Hall Brook. CTDEP explains that, while the Coginchaug segments are also located in less developed areas, nonpoint sources that include agriculture and wildlife are much more of an influence. Consequently the three Coginchaug River segments need greater reductions.

All the TMDLs, with one exception, are based upon ambient water quality monitoring data obtained on 21 sampling dates within the recreational season (tabular data tables in Appendices A-2 through A-7). Connecticut DEP's cumulative distribution function method for TMDL development calls for 21 samples (page 1, Appendix B). The TMDL for one segment (CT4600-00\_04) of the Mattabesset River was based upon 20 total samples (Appendix A-2). This is a deviation from CTDEP's method requirement. The TMDL for that segment is one of twelve TMDLs for the Mattabesset River Subregional Basin and one of five for the Mattabesset River. Difficulties in sampling or analysis can lead to a problem an individual water quality sample. The absence of one sample among many within the subregional basin is not significant enough to warrant disapproval of the TMDL for that segment. The percent reductions upstream and downstream of segment CT4600-00\_04 are slightly higher and provide a margin of safety that the reduction will be sufficient within segment CT4600-00\_04.

Critical conditions for these watersheds are identified (page 5 and Table 1, Appendix B). Dry weather flows from stormwater collection systems, illegal storm-sewer connections, combined sewer overflows (CSOs) would contribute to critical conditions. Critical conditions could also be influenced by inadequate disinfection of NPDES discharges, improper wildlife and pet waste management and poorly functioning septic systems. The management goal for these potential sources is elimination or adequate control as appropriate.

EPA concludes that the TMDL report sufficiently determines the loading capacity and links water quality and pollutant sources

#### 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.*

#### **Assessment:**

Load Allocations (LAs) for the three water bodies are summarized in Table 4 (main document) and calculated in the appendices (A-2 through A-7). Using the cumulative distribution function method, the percent reduction needed to achieve Water Quality Criteria during dry weather is assigned to the LA (page 5, Appendix B). "Dry" data is collected at any time when precipitation is less than 0.1" per 24 hours, 0.25" per 48 hours, or 2.0" per 96 hours (footnote in the tabular

data tables in Appendices A-2 through A-7). The LAs for the Mattabesset River Regional Basin indicate that illegal sanitary discharges to the storm sewer are a factor in specific areas (Appendix A-1). Poorly functioning septic systems, agricultural activities, and wildlife also contribute to the LA. The LA is based on the average bacteria loading reduction needed in nonpoint sources to comply with the criteria. The nonpoint source Load Allocations (Table 4, main document) are:

| <u>Waterbody</u>          | <u>Segment ID Number</u> | <u>Load Allocation</u><br><u>Avg. % Reduction</u> | <u># of Samples</u><br><u>used for LA</u> |
|---------------------------|--------------------------|---|---|
| Mattabesset River         | CT 4600-00_01            | 57%   | 15  |
| Mattabesset River         | CT 4600-00_02            | 79%   | 15  |
| Mattabesset River         | CT 4600-00_03            | 73%   | 14  |
| Mattabesset River         | CT 4600-00_04            | 56%   | 14  |
| Mattabesset River         | CT 4600-00_06            | 57%   | 15  |
| John Hall Brook           | CT 4600-01_01            | 14%   | 15  |
| John Hall Brook           | CT 4600-01_02            | 6%  | 14  |
| Little Brook              | CT 4600-07_01            | 86%   | 16  |
| Spruce Brook              | CT 4600-13_01            | 52%   | 16  |
| Coles Brook               | CT 4600-23_01            | 86%   | 15  |
| Miner Brook               | CT 4600-26_01            | 55%   | 15  |
| Willow Brook, Cromwell    | CT 4600-27_01            | 84%   | 16  |
| Belcher Brook             | CT 4601-00_01            | 80%   | 16  |
| Willow Brook, New Britain | CT 4602-00_01            | 85%   | 15  |
| Webster Brook             | CT 4603-00_01            | 75%   | 15  |
| Sawmill Brook             | CT 4604-00_01            | 80%   | 16  |
| Coginchaug River          | CT 4607-00_02            | 67%   | 15  |
| Coginchaug River          | CT 4607-00_03            | 79%   | 18  |
| Coginchaug River          | CT 4607-00_04            | 67%   | 15  |
| Coginchaug River          | CT 4607-00_05            | 60%   | 18  |
| Coginchaug River          | CT 4607-00_06            | 83%   | 15  |

EPA concludes that the TMDL report sufficiently addresses the calculation of a load allocation.

## 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.

**Assessment:**

Waste Load Allocations (WLAs) for the water bodies are summarized in Table 4 (main document) and calculated in the appendices (A-2 through A-7). Using the cumulative distribution function method, the percent reduction needed to achieve Water Quality Criteria during wet weather is assigned to the WLA. “Wet” data is collected when precipitation is greater than 0.1” per 24 hours, 0.25” per 48 hours, or 2.0” per 96 hours. The WLA is based on the average bacteria loading reduction needed in point source stormwater loadings to comply with the criteria (pages 4 and 5, Appendix B). The regulated stormwater Waste Load Allocations (Table 4, main document) are:

| <u>Waterbody</u>          | <u>Segment ID Number</u> | <u>Waste Load Allocation</u><br><u>Avg. % Reduction</u> | <u># of Samples</u><br><u>used for WLA</u> |
|---------------------------|--------------------------|---|--|
| Mattabesset River         | CT 4600-00_01            | 73%   | 6  |
| Mattabesset River         | CT 4600-00_02            | 89%   | 6  |
| Mattabesset River         | CT 4600-00_03            | 77%   | 7  |
| Mattabesset River         | CT 4600-00_04            | 64%   | 6  |
| Mattabesset River         | CT 4600-00_06            | 72%   | 6  |
| John Hall Brook           | CT 4600-01_01            | 39%   | 6  |
| John Hall Brook           | CT 4600-01_02            | 13%   | 7  |
| Little Brook              | CT 4600-07_01            | 88%   | 6  |
| Spruce Brook              | CT 4600-13_01            | 78%   | 6  |
| Coles Brook               | CT 4600-23_01            | 89%   | 6  |
| Miner Brook               | CT 4600-26_01            | 65%   | 6  |
| Willow Brook, Cromwell    | CT 4600-27_01            | 90%   | 6  |
| Belcher Brook             | CT 4601-00_01            | 82%   | 6  |
| Willow Brook, New Britain | CT 4602-00_01            | 91%   | 6  |
| Webster Brook             | CT 4603-00_01            | 82%   | 6  |
| Sawmill Brook             | CT 4604-00_01            | 88%   | 6  |
| Coginchaug River          | CT 4607-00_02            | 72%   | 6  |
| Coginchaug River          | CT 4607-00_03            | 78%   | 9  |
| Coginchaug River          | CT 4607-00_04            | 73%   | 6  |
| Coginchaug River          | CT 4607-00_05            | 66%   | 9  |
| Coginchaug River          | CT 4607-00_06            | 87%   | 6  |

All waters in the Mattabesset River Regional Basin are located in MS4 urban communities subject to the Phase II Stormwater General Permit (page 1, main document). CSOs are being phased out in MS4 communities and permitted point source discharges not located in any of these watersheds. The WLAs in these urban communities can be assessed using only wet weather data because of the absence of CSOs and permitted point sources.

EPA concludes that the TMDL report sufficiently addresses the calculation of a wasteload allocation.

## 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.*

### **Assessment:**

An implicit Margin of Safety (MOS) is relied upon in the TMDL report (Table 4 and page 6, main document). EPA's indicator bacteria criteria, adopted by CT and used in this TMDL analysis, were developed from data taken at high use bathing beaches. Waters within the Mattabeset River Regional Basin are urban waters designated for non-swimming contact recreation. Reliance upon data from swimming beaches to assess the data from these CT waters is a conservative comparison.

Appendix B (page 6) offers additional factors contributing to a MOS that are inherent to the cumulative distribution function method. Sample results from waters with lower level of bacteria as compared to bacteria criteria are assigned a percent reduction equal to zero. A negative value would suggest that the water could assimilate additional bacteria and still meet the criteria. Assigning a zero percent reduction is more conservative. Another factor is that compliance with CT's MS4 Permit requires elimination of high loading sources (illegal connections, dry weather storm sewer overflows, etc). This permit, separate from the TMDL, will greatly reduce bacteria loading to these waters and contribute the MOS. Best Management Practices (BMPs), whether implemented for wet or dry weather sources, will also add to the MOS. BMPs designed to target a particular weather condition, most often contribute to load reductions during all conditions.

EPA concludes that the TMDL report sufficiently addresses the need for a Margin of Safety.

## 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)).*

### **Assessment:**

The TMDL relies upon samples obtained during the summer recreational season (May 1-September 30). Bacteria densities are highest during warm months in waters impacted only by nonpoint sources. Data taken during the recreational season represents "worst-case" conditions.

Restricting data to samples taken during the warm months is therefore conservative and an acceptable approach to considering seasonal variation (page 7, main document).

EPA concludes that the TMDL report sufficiently considers season variation.

## 8. Monitoring Plan for TMDLs Developed Under the Phased Approach

*EPA's 1991 document, Guidance for Water Quality-Based Decisions: The TMDL Process (EPA 440/4-91-001) recommends a monitoring plan when a TMDL is developed under the phased approach. The guidance recommends that a TMDL developed under the phased approach also should provide assurances that nonpoint source controls will achieve expected load reductions. The phased approach is appropriate when a TMDL involves both point and nonpoint sources and the point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. EPA's guidance provides that a TMDL developed under the phased approach should include a monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of water quality standards.*

### **Assessment:**

A comprehensive monitoring plan for improvements in water quality is presented for Mattabeset River Regional Basin (pages 8-10, main document). The TMDL presents recommendations for how communities can implement successful water quality monitoring programs. Analytical parameters and methods required by the MS4 Permit are listed in the TMDL (page 10, main document). Stormwater monitoring has been a requirement for MS4 communities since 2004 (page 9, main document). The required monitoring is scheduled to take place during stormwater runoff events. Municipalities have the option, however, to request that CTDEP approve an alternate sampling plan of equivalent or greater scope. A fixed station ambient water quality monitoring program is recommended to most effectively assess BMP implementation (page 9, main document).

CTDEP commits to investing funding sources for local communities and to providing educational and technical assistance (page 10, main document). The cumulative distribution function method is not a tool that will be used to assess use attainment status of the water as it relates to listing or delisting of a waterbody on the 303(d) List (page 1, Appendix B).

EPA concludes that the TMDL report provides sufficient detail in 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.*

**Assessment:**

CTDEP presents a plan for how these TMDLs will be effectively implemented (pages 7 and 8, main document). Effective nonpoint source watershed management and NPDES Stormwater Management Plans are highlighted as the primary mechanisms by which nonpoint and point sources of *E. coli* will be reduced. DEP's watershed coordinator will provide technical and educational assistance for nonpoint source management, as well as help investigate funding sources for local communities. Stormwater Management Plans required by Connecticut's NPDES MS4 Permit will address minimum control measures and BMPs appropriate to regulated stormwater management. Municipalities are required by Section 6 (K) of the MS4 permit to amend their Stormwater Management Plans within four months to implement the TMDL (page 8, main document). References to specific EPA and CTDEP guidance documents on BMP implementation are suggested to assist the municipalities.

EPA acknowledges that the TMDL report includes an implementation plan. EPA does not approve this component of any TMDL submission.

**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."*

**Assessment:**

The waters of the Mattabesset River Regional Watershed are impaired solely by stormwater discharges and nonpoint sources. Urban point sources of stormwater were not given a less stringent wasteload allocation (WLA) based on an assumption that nonpoint source load reductions (LA) would occur, so a reasonable assurance is not required. However, CTDEP addresses reasonable assurances that point and NPS reductions will occur by providing the following information.

Nonpoint source loading from unregulated sources are partitioned into the LA for these TMDLs (page 4, Appendix B). The TMDL report states that DEP's watershed coordinator will provide assistance to local municipalities and stakeholders as part of the DEP's nonpoint source program. BMPs that address nonpoint sources are highlighted for consideration within local watershed management plans (page 8, main document). Suggested BMPs for the Mattabesset River

Regional Watershed are nuisance wildlife control plans, pet waste ordinances, septic system testing and maintenance, and farm animal waste management systems.

Connecticut's MS4 Permit provides assurance that reductions in *E. coli* loading will occur in urban point sources of stormwater through the implementation of the NPDES Program. These point sources are reflected in the TMDL analysis within the WLA. The MS4 permit requires that communities identify minimum control measures in a Stormwater Management Plan that is submitted to CTDEP. The control measures must include identification of appropriate BMPs and a schedule for implementation before January 8, 2009 (pages 7 and 8, main document). The MS4 permit is a legally enforceable mechanism by which CTDEP can mandate, if necessary, that communities reduce stormwater point sources (page 10, main document).

EPA concludes that the TMDL report offers reasonable assurances that the TMDLs will be implemented.

## 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.*

### **Assessment:**

Interested parties and communities were notified of the public comment period by a published Notice of Intent to Adopt A Total Daily Maximum Load Analysis for the Mattabesset River Regional Basin located in the Connecticut Counties of Hartford, Middlesex, and New Haven. The notice was published in the Hartford Courant on April 18, 2005. One comment was received during the one-month comment period that closed on May 18, 2005. In an Email dated May 17, 2005, one commenter requested that the document be edited to correct the names of two organizations. CTDEP revised the document to correct the language. Copies of the comment, the response to the comment, the public notice and the mailing list were submitted along with the TMDL. CTDEP recognizes that participation by the public is a necessity when resolving water quality impairments in the State (page 2, main document).

EPA concludes that CTDEP involved the public during the development of the TMDL for the Mattabesset River Regional Basin, has provided adequate opportunities for the public to comment on the TMDL, and was responsive to the public comments. EPA concludes that the TMDL report documents a sufficient public participation process.

## 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.*

### **Assessment:**

The letter of submission accompanying the final Mattabeset River Regional Basin TMDL document is dated June 2, 2005. The letter specifies that the TMDL report was established as final on June 1, 2005. CTDEP clearly states that the Final TMDL report has been submitted to EPA for approval in accordance with Section 303(d) of the Clean Water Act. The submittal letter along with the attached public notice provide all the required identifying information for Mattabeset River Regional Basin.

EPA concludes that the TMDL submittal letter provides all the necessary information.

## 13. **Other Comments:**

Appendix A provides all the identifying information and data relied upon to develop the TMDL for each waterbody. The data tables and graphs depict how the cumulative distribution function method (Appendix B) was applied for each of the 21 segments of rivers and brooks in the Mattabeset River Regional Basin.

### Data for entry into EPA's National TMDL Tracking System

|                |  |
|----------------|--|
| TMDL Name      | <p>A Total Maximum Daily Load Analysis for the Mattabeset River Regional Basin</p> <p>Mattabeset River (CT 4600-00_01, CT 4600-00_02, CT 4600-00_03, CT 4600-00_04, and CT 4600-00_06)<br/>         John Hall Brook (CT 4600-01_01, CT 4600-01_02)<br/>         Little Brook (CT 4600-07_01)<br/>         Spruce Brook (CT 4600-13_01)<br/>         Coles Brook (CT 4600-23_01)<br/>         Miner Brook (CT4600-26_01)<br/>         Willow Brook, Cromwell (CT 4600-27_01)<br/>         Belcher Brook (CT 4601-00_01)<br/>         Willow Brook, New Britain (CT 4602-00_01)<br/>         Webster Brook (CT 4603-00_01)<br/>         Sawmill Brook (CT 4604-00_01)<br/>         Coginchaug River (CT 4607-00_02, CT 4607-00_03, CT 4607-00_04, CT 4607-00_05, and CT 4607-00_06)</p>  |
| Lead State     | CT   |
| TMDL Status    | Final  |
| Pollutant ID   | <i>E. coli</i> (227)   |
| TMDL End Point | <p><b>Waterbody – Segment ID number – Average percent reduction in <i>E.coli</i></b></p> <p>Mattabeset River CT 4600-00_01: 62%<br/>         Mattabeset River CT 4600-00_02: 82%<br/>         Mattabeset River CT 4600-00_03: 74%<br/>         Mattabeset River CT 4600-00_04: 58%<br/>         Mattabeset River CT 4600-00_06: 62%<br/>         John Hall Brook CT 4600-01_01: 21%<br/>         John Hall Brook CT 4600-01_02: 8%<br/>         Little Brook CT 4600-07_01: 86%<br/>         Spruce Brook CT 4600-13_01: 59%<br/>         Coles Brook CT 4600-23_01: 87%<br/>         Miner Brook CT 4600-26_01: 58%<br/>         Willow Brook, Cromwell CT 4600-27_01: 86%<br/>         Belcher Brook CT 4601-00_01: 80%<br/>         Willow Brook, New Britain CT 4602-00_01: 86%<br/>         Webster Brook CT 4603-00_01: 77%<br/>         Sawmill Brook CT 4604-00_01: 82%<br/>         Coginchaug River CT 4607-00_02: 68%</p> |

|                       |  |
|-----------------------|--|
|                       | Coginchaug River CT 4607-00_03: 79%<br>Coginchaug River CT 4607-00_04: 69%<br>Coginchaug River CT 4607-00_05: 62%<br>Coginchaug River CT 4607-00_06: 84% |
| TMDL Type             | Nonpoint Source  |
| List ID (from system) |  |
| Impairment ID         | Contact Recreation   |
| Cycle (list date)     | 2004   |
| Date (approval)       | July 29, 2005  |
| EPA developed         | No   |