

**Response to Public Comments  
On the  
Long Island Sound Draft  
Total Maximum Daily Load Analysis  
To Achieve Water Quality Standards  
for Dissolved Oxygen in  
Long Island Sound**

December 2000



Prepared by  
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Arthur J. Rocque, Jr., Commissioner

# **RESPONSE TO PUBLIC COMMENTS ON THE DRAFT TOTAL MAXIMUM DAILY LOAD ANALYSIS TO ACHIEVE WATER QUALITY STANDARDS FOR DISSOLVED OXYGEN IN LONG ISLAND SOUND**

## ***Introduction***

Connecticut and New York issued a public notice on November 17, 1999 soliciting comments on the Long Island Sound Total Maximum Daily Load (TMDL) for dissolved oxygen (DO) in Long Island Sound (LIS). The TMDL formalizes plans to address hypoxia in LIS, specifying nitrogen control goals over the next 15 years. Nitrogen is the primary pollutant causing low DO, or hypoxia, in the bottom waters of the Sound.

The TMDL proposes a phased approach to hypoxia management to meet existing water quality standards for oxygen in both Connecticut and New York. The TMDL emphasizes nitrogen control in its Phase III strategy, calling for a 58.5% reduction below baseline levels by the year 2014. Sewage treatment plants are a major source of the nitrogen enrichment and public comments on the wasteload allocation (WLA) for nitrogen were solicited in the fall of 2000. The Connecticut Department of Environmental Protection's (CTDEP) response to comments has also been completed and is a companion report to this document (*See "Response to Public Comments on the Draft Nitrogen Wasteload Allocation for Point Source Discharges in Connecticut"*).

## ***Public Informational Meetings***

A series of public informational meetings on the TMDL were held in both Connecticut and New York to present the proposed plan and to answer questions on the TMDL. The meetings were for informational purposes only and no formal comments were taken at the meetings, unless submitted in writing. All comments on the TMDL included in this report were formally submitted in writing. In Connecticut, afternoon and evening sessions were held at three locations for a total of six meetings. The meetings were held in Hartford on December 7, 1999, in Groton on December 8 and in Norwalk on December 14. In addition, background information on the TMDL was available in fact sheets distributed at the meetings and mailed to municipal chief elected officials, public works directors, sewage treatment plant managers or water pollution control authorities, regional planning organizations, and state and federal legislators. CTDEP also had the TMDL and fact sheets available on our website (<http://dep.state.ct.us>) along with the schedule for the public meetings. A total of approximately 45 people attended the six informational meetings in Connecticut.

## ***Comment Period Extension***

The original public notice was published in several newspapers throughout Connecticut and sent to officials and organizations as noted above. The public notice was issued on November 17, 1999 and the comment period was held open until January 3, 2000. Eight

requests were received to extend the comment period by 30 to 60 days. To accommodate those requests, a second public notice was published on or about December 27, 2000 in the same newspapers that carried the original notice extending the comment period through January 28, 2000.

***Comments Received on the TMDL***

Twenty-one comment letters were received by CTDEP by the January 28, 2000 deadline. The comments were organized into thirty categories and 170 individual comments that are addressed in the following pages. The submissions are listed in the table below along with the abbreviation or town name used to identify individual comments in the response section of this report.

Submitted by:	Signed by:	Date Submitted:	Identification:
City of Bristol Water Pollution Control Facility 111 North Main Street Bristol, CT 06010	Robert C. Rostkowski Chemist/Lab Supervisor	December 7, 1999	Bristol
Coastal Conservation Association Connecticut P.O. Box 290224 Wethersfield, CT 06129-0224	Richard J. Weisberg Member, Board of Directors, and Member, State Fisheries Commission	December 22, 1999	CCA-CT
Connecticut Conference of Municipalities 900 Chapel St., 9 <sup>th</sup> Floor New Haven, CT 06510-2807	Gian-Carl Casa	December 20, 1999	CCM
Connecticut Fund for the Environment 1032 Chapel St., 3 <sup>rd</sup> Floor New Haven, CT 06510	Curtis P. Johnson Staff Attorney Dana Young Consulting Attorney	January 21, 2000	CFE
Connecticut Department of Environmental Protection 79 Elm Street Hartford, CT 06106-5127	Thomas M. Morrissey Director	January 28, 2000	CTDEP
Connecticut Water Pollution Abatement Association P.O. Box 765 Vernon, CT 06066-0765	Carl G. Almquist President	January 28, 2000	CWPAA
Connecticut Water Pollution Abatement Association P.O. Box 765 Vernon, CT 06066-0765	Carl G. Almquist President	December 9, 1999	CWPAA
Connecticut Water Pollution Abatement Association P.O. Box 765 Vernon, CT 06066-0765	Robert J. Dusza, Jr. Chairman	January 28, 2000	CWPAA
Cytec Industries, Inc. P.O. Box 425 South Cherry Street Wallingford, CT 06492	Daniel F. Sullivan Site Manager	January 28, 2000	Cytec
Robert Fromer Environmental Consultant P.O. Box 697 New London, CT 06320	Robert Fromer M.S.E.E., P.E., P.C., R.E.P.	Via E-mail, undated	Fromer
Massachusetts Department of Environmental Protection One Winter Street Boston, MA 02108	Glenn Haas Director	January 28, 2000	MADEP
The Mattabassett District 245 Main Street Cromwell, CT 06416-2302	James W. Kern Plant Superintendent	January 28, 2000	Mattabassett District

The Metropolitan District 555 Main Street P.O. Box 800 Hartford, CT 06142-0800	Sally K. Nyren Environmental Analyst	January 28, 2000	MDC
City of New London Department of Public Utilities 120 Broad Street New London, CT 06320	W. Thomas Bowen Contract Administrator	August 23, 1999	New London
Norwalk Department of Public Works 125 East Avenue P.O. Box 5125 Norwalk, CT 06856-5125	Martin S. Overton	January 10, 2000	Norwalk
Redding Conservation Commission P.O. Box 1028 Redding, CT 06875-1028	David R. Pattee Chairman	December 29, 1999	Redding Conservation Commission
Save the Sound 185 Magee Avenue Stamford, CT 06902	John Atkin President	January 26, 2000	Save the Sound
Soundkeeper P.O. Box 4058 Norwalk, CT 06855	Terry Backer Soundkeeper	January 28, 2000	Soundkeeper
Stamford WPCA One Harborview Avenue Stamford, CT 06902	Jeanette A. Brown Executive Director	January 10, 2000	Stamford
City of Torrington 140 Main Street Torrington, CT 06790-5245	Mary Jane Gryniuk Mayor	January 28, 2000	Torrington
Vermont Department of Environmental Conservation 103 South Main Street Building 1, South Waterbury, VT 05671-0401	Canute Dalmasse Commissioner	January 28, 2000	VTDEC

### ***Abbreviations***

In addition to the abbreviations used in the above table to identify comment sources, the following abbreviations and acronyms are used in the response section.

BMP	Best Management Practice
BNR	Biological Nitrogen (or Nutrient) Removal
C	Carbon
CCMP	Comprehensive Conservation and Management Plan (of the LISS)
CFR	Code of Federal Regulations
CNPCP	Coastal Nonpoint Pollution Control Program (6217 Program)
CPP	Continuous Planning Process
CSO	Combined Sewer Overflow
CT	Connecticut
CTDEP	Connecticut Department of Environmental Protection
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DO	Dissolved Oxygen
EPA	Environmental Protection Agency (U.S.)
FACA	Federal Advisory Committee Act
LA	Load Allocation
LIS	Long Island Sound

LISS	Long Island Sound Study
MGD	Million Gallons per Day
MOS	Margin of Safety
MZ	Management Zone
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	NonPoint Source
NRDC	Natural Resources Defense Council
NY	New York
NYC	New York City
NYSDEC	New York State Department of Environmental Conservation
ODB	Offshore Dumping Ban
POTW	Publicly-Owned Treatment Works
QAPP	Quality Assurance Project Plan
SPDES	State Pollutant Discharge Elimination System
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TOC	Total Organic Carbon
USGS	United States Geological Survey
WERF	Water Environment Research Foundation
WLA	WasteLoad Allocation
WPCF	Water Pollution Control Facility
WQS	Water Quality Standards
WWTF	WasteWater Treatment Facility
WWTP	WasteWater Treatment Plant

### ***Response to Comments***

Below are the 170 comments in 30 categories received by CTDEP on the TMDL. The summary responses are used when the questions or comments are of a similar nature to avoid repetition. When appropriate, individual responses provide additional detail.

#### **I. General comments on the TMDL**

***Summary Response:*** *These general comments vary too widely for a comprehensive summary response. Please refer to individual responses presented for each comment.*

1. CWPAAs: The use of an annual average seems reasonable, but should have projected some variability so that the "worst case" annual average is not used (cold year affects treatment but helps DO).

***Response:*** *There are many variables that might be considered to have an effect on DO. Our approach was to use what we believe is the "worst case" condition to ensure protection of the environment even under unusually bad periods. This also allows a "margin of safety", required by EPA, to protect the environment in years that might be worse than average.*

2. CWPAAs: Selection of worst case environmental conditions for modeling does not appear to relate to the latest technical recommendations on the acceptable, protective frequency of exceedance for water quality objectives (once in three years). Applying updated standards and application methodologies is

expected to have a major impact on selecting appropriate TMDL load targets and implementation measures, particularly for Connecticut waters.

**Response:** *The "once in three years" protective frequency applies to toxic chemicals, not to oxygen conditions. The selection of the "worst case" was appropriate, as noted above.*

3. CWPAA: Actions beyond Phase II improvements do not significantly improve DO conditions in Connecticut waters, except for very localized impacts. There are still wide areas where the hourly minimum DO will remain between 3.5 and 5.0 mg/l under worst case stratification conditions. If a 3.5 mg/l hourly minimum DO objective were adopted, significant statewide nitrogen load reduction measures are not justified for Connecticut waters.

**Response:** *The TMDL is developed jointly by Connecticut and New York to protect Long Island Sound in its entirety. The effects and benefits exclusive to Connecticut's waters have no relevance in the analysis. Adoption of a 3.5 mg/l hourly minimum is hypothetical and has no bearing on the TMDL until the time the DO standards are revised. The TMDL allows for five-year revisions, which will make appropriate adjustments in the TMDL when and if new standards are adopted in both Connecticut and New York.*

4. CWPAA: Low DO (i.e., less than 3.5 mg/l) conditions persist in New York waters (response regions 1 and 2) regardless of measures taken to improve water quality in Connecticut waters. Load reductions required in management zones directly impacting these areas (particularly, zones 7, 8, 9 and 10) are clearly insufficient to address the DO impacts associated with those sources.

**Response:** *The TMDL recognizes the need to manage more broadly than just western management zones. This concern is addressed by the broad application of reductions in CT and NY under Phase III, and anticipated measures for out-of-basin sources scheduled for future years. While the water quality model used to develop the TMDL shows there is a range of effects among the management zones on western LIS, there is no management zone that has no impact on western waters; hence all sources are considered in the TMDL.*

5. CWPAA: Limits of technology will not achieve even interim 3.5 mg/l DO objectives in New York waters [refers to HydroQual model output graphic], indicating that loads from NYC must be relocated if there is any possibility of achieving Phase III water quality objectives.

**Response:** *The TMDL demonstrates that DO may not reach 3.5 mg/l at all times, although there is no "interim" objective stated. It is unclear what CWPAA is referring to with respect to "interim" objectives since the TMDL was developed to attain existing water quality standards in CT and NY, as required by law. With respect to relocating NYC loads, the option has not been ruled out and the final TMDL has been revised to clarify relocation and other alternative technologies as potential management tools.*

6. CWPAA: If 1989 conditions were determined to be the reasonable worst case for modeling (i.e., represented a once in 5 plus year condition), a combination of Phase II and III load reduction measures would be considered sufficient to maintain target water quality [refers to HydroQual model output graphics]. Implementation of measures to alter hydraulic conditions associated with rare 1988 stratification conditions (in conjunction with Phase II/III type load reduction measures) may be much more cost effective than stringent statewide pollution load reduction measures and would only need to be operated under rare hydraulic conditions.

**Response:** *The TMDL clearly shows that the Phase II and III load reductions will not meet the targeted water quality goals of state standards for DO (5 mg/l in NY and 6 mg/l in CT). As noted above (no. 5), no alternative technology has been ruled out.*

7. CWPAA: Continue the Nitrogen Removal Program [in Connecticut] - Phase II to other treatment facilities to make low cost improvements to reduce Nitrogen discharges. The first phase of this

program had astounding results with a low capital outlay. The CCMP for Long Island Sound Goals have been met to the year 2010 with these low capital projects. There is significant merit to continue this program it gives the most "bang for the buck".

***Response:** It is CT's intent to continue its Nitrogen Removal Program, which includes both low-cost retrofits and full-scale reconstruction, as warranted by economic and water quality considerations.*

8. MDC: The Connecticut and Farmington Rivers, where three of the MDC's four wastewater treatment plants discharge to are not listed on the 303(d) list for low DO. Therefore is it consistent with EPA regulations and policies to implement a TMDL for facilities which discharge to water bodies where the criteria is not listed on the 303(d) list?

***Response:** It is consistent with EPA regulations and policies to regulate sources of pollution that impact distant waterbodies, regardless of the condition of the immediate receiving water.*

9. Norwalk: What is the significance of "Zone" plans and are they enforceable? (page 32).

***Response:** CTDEP does not plan to draft specific "zone" plans for its six management zones. Instead the continuing process of the Nitrogen Removal Program and relevant nonpoint source and stormwater implementation activities as outlined in the "Reasonable Assurances for Load Allocation" will be used to set direction. "Zone" plans are no longer relevant and the concept has been deleted from the final TMDL.*

10. Redding Conservation Commission: The Town of Redding has a long-standing concern with its two major river drainages, the Saugatuck and the Norwalk River. The Conservation Commission enthusiastically urges the completion of Total Maximum Daily Load analysis of both systems. The committee feels the Norwalk Drainage should receive immediate priority for the TMDL analysis. This particular river drainage system is under heavy development pressure in the mid-county towns of Wilton, Ridgefield and Redding. The Norwalk River Watershed Initiative Committee (NRWIC) examined and prioritized issues concerning the ecological health of that river, water quality was at the top of everyone's list of concerns. Selectmen from all the interested towns endorsed the findings and plan of action to halt the decline of the Norwalk River and restore it as a positive feature of our communities. There was recognition by the NRWIC of the impact of the inland towns polluting on communities and systems beyond our borders. A complete TMDL analysis would provide an important tool to begin addressing issues of water quality in the Norwalk River drainage. Connecticut's history of town and state jurisdiction over issues has left us with a system that is often ineffective on a regional level. A TMDL study cuts across town borders and provides a basis for cooperation between communities that is so necessary on ecological issues.

***Response:** While the Norwalk River watershed is included in the geographic domain for this TMDL, and will be subject implementation activities to control nitrogen in the same manner as the rest of CT and NY, it has not been singled out for special attention in the TMDL. Local issues are best managed through targeted Norwalk River efforts as is being done through the Norwalk River Watershed Initiative and ongoing state and federal regulatory requirements for impaired waters.*

11. Soundkeeper: The phased approach is an illegal application of section 303(d) of the Clean Water Act. According to section 303(d) of the CWA, TMDLs "shall be established at a level necessary to implement the applicable water quality standards." See 33 USC 1313(d)(1)(C). This language is unambiguous. The Act does not allow for incremental achievement of water quality standards through successive approval of TMDLs that fall short of the applicable water quality standard.

***Response:** CT and NY's interpretation of the regulations and FACA guidance for TMDLs finds appropriate leeway for phased implementation. It will be incumbent upon EPA to determine the legality of the approach during their required review and acceptance or rejection of the TMDL. It*

*is our opinion that the draft TMDL meets attainment of applicable water quality standards through the phased approach.*

12. Torrington: The CTDEP had previously stated that the EPA required the LIS TMDL be applied to all Point Source dischargers within the state. According to information obtained on the EPA's web site, "<http://www.epa.gov/owow/tmdl/states/ctnames.html>" it was found that the City of Torrington WPCF discharges into the Naugatuck River approximately 3/4 miles south of the confluence of the East & West Branches. The EPA documents do not list a parameter of concern for either branch, has a low priority for TMDL development and is not targeted for TMDL development before the year April, 2000. The listed potential sources of impairment are Urban Runoff, Channelization, and Removal of Riparian Vegetation. Why then is the City of Torrington WPCF being targeted by the LIS TMDL? Could CTDEP provide the municipalities the source of their previous statement.

**Response:** *It is consistent with EPA regulations and policies to regulate sources of pollution that impact distant waterbodies, regardless of the condition of the immediate receiving water. Local water problems will be addressed in a site-specific TMDL, as noted in the comment.*

## II. Nitrogen load estimates and the baseline

**Summary Response:** *As detailed in the FACA report, states are encouraged to proceed with TMDL development based on available data, acknowledging the data may be incomplete at times. CT and NY have presented best available data in all cases, although there are inherent weaknesses in the estimates, particularly for nonpoint sources, which are complex and not well monitored. Soundkeeper is referred to NYSDEC's "Response to Public Comments" for answers on the NYC base loads and centrate loads.*

13. CWPAAs: How can the TMDL be proposed without a solid knowledge of the non-point source nitrogen loading and methods to remove it?

**Response:** *As noted above, states are encouraged to move forward with TMDLs despite some uncertainty in loading estimates. CT and NY acknowledge weaknesses in nonpoint source estimates, our ability to monitor nonpoint source loads, and benefits of BMP application to reduce nitrogen loads. Improvements in monitoring and watershed modeling are underway and will be used to adjust management plans during the scheduled five-year reviews of the TMDL. The estimates used in the TMDL, while considered to be first order estimates, are suitable for planning purposes, in our opinion.*

14. Soundkeeper: Baseline Load for Zone 9 based upon primary treatment of effluent, not secondary (p.16). The baseline nitrogen loads and WLAs were calculated under the assumption that all treatment plants operated in compliance with effluent limitations required by Sec 1311(b)(1)(A) and Sec 1311(b)(1)(B) of the Clean Water Act, except the Newtown Creek facility. Newtown Creek does not operate and has never operated at secondary treatment levels. The WLA for this facility should be subtracted from the TMDL until it meets the effluent limitations required under the CWA sections identified above.

**Response:** *Refer to NYSDEC's "Response to Public Comments."*

15. Soundkeeper: (p. 29) Soundkeeper's comments wholly concur with the following discussion submitted by the plaintiffs of an ongoing TMDL case in New York. See "Memorandum of Law in Support of Plaintiffs' Motion for Summary Judgement, or, in the Alternative, for Final Judgement", March 17, 1999; NRDC [et.al.] v. Fox[et.al.], 94 CIV 8424 (PKL) at p. 49: "A substantive requirement of the Clean Water Act's Sec 303(d) scheme is that TMDLs establish "daily" load limits of maximum allowable pollution. See Sec 1313(d)(1)(C). The TMDL proposal to express WLAs as annual loads is contrary to the plain wording of the Clean Water Act and should be revised to daily loads. While administrative agencies are often given wide latitude in implementing Congressional directives, an

agency's actions cannot conflict with a specific legislative directive. In any event, the apparent belief that an agency's regulatory interpretation controls over the plain language of a statute is inconsistent with Supreme Court case law. See e.g., Estate of Cowart v. Nicklos Drilling Co., 505 US 469, 476 (1992)("[A] reviewing court should not defer to an agency position which is contrary to an intent of Congress expressed in unambiguous terms.") According to regulation 40 CFR 130.2(I), TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. Consistency between monitoring methods, permit limits, and the TMDL will minimize calculation/conversion error. The purpose of establishing daily limits is to ensure that pollution discharges be controlled on an ongoing basis. Establishing such binding daily limits on pollution discharges is quite different from setting only an annual load limit that a curious reader could, for essentially academic purposes, divide by a coefficient. By failing to set daily pollution load limits, the TMDL is substantively inconsistent with the plain language of the statute."

**Response:** *While there may be some problems with conversion errors, CT and NY have tried to use either tons/year or pounds/day to describe and quantify nitrogen loads to LIS and used tons/year exclusively in the TMDL/WLA/LA. Because the intent of the TMDL is to regulate based on annual loads, e.g., using a 12-month rolling average to assess permit compliance for point sources, we believe the needs of the TMDL and the intent of the law are both satisfactorily met. While EPA has not formally raised concerns over the use of annual units, presumably because it meets the "mass per time" criterion, they will have final review and say on the TMDL when it is formally submitted for adoption and CT and NY will abide by their decision.*

### III. Nitrogen attenuation and delivery to LIS

**Summary Response:** *CT and NY were remiss in their scanty presentation of attenuation factors, both during river transport and within the Sound, and have presented complete data for all attenuation and exchange factors relevant to the 12 management zones and several tiers within CT. These factors will be critical to an effective trading program and reallocation of sources within and among zones and need to be formally presented in the final TMDL. Further discussions on this topic are in Sections IV (Nitrogen sources and allocation approach) and V (Equitable distribution of the TMDL).*

16. CTDEP: The attenuation factors in the Connecticut River basins for the upper tiers are not presented. Those factors are relevant to developing wasteload allocations for sources in the upper tiers and should be identified in the TMDL.

**Response:** *All attenuation factors have been included in the final TMDL.*

17. CWPAA: The basis for the Connecticut management zone attenuation factors should be presented. The attenuation factors for management zone 4, in particular, appear low in comparison to other zones. Given that the TMDL is based upon conditions from 1988 and that year was a low flow year, the loss rates should reflect the longer detention time of the tributaries.

**Response:** *All attenuation factors have been included in the final TMDL. The attenuation in management zone 4 is higher (it's really the delivery efficiency that's low) because of the nearly continuous series of impoundments on the Housatonic River, which extends time of travel and allows for a higher level of attenuation. While it is correct that the TMDL reflects hydrodynamic conditions in LIS for 1988-89, river loads and attenuation were based on average flows for the period of record at USGS monitoring stations. Clearly, wet/dry year conditions will affect the delivery of nitrogen to LIS but those effects are too complex to work into a load reduction formula that could be applied for regulatory purposes.*

18. Cytec: Reconsideration of the current arbitrary inclusion of Cytec's NPDES discharge and the Town of Wallingford POTW in Tier 1 of Management Zone 3. Since both of these discharges are in the fresh water advective reach of the Quinnipiac River (not effected by any estuarine tidal influence), the

science will support their inclusion in Tier 2. With the adoption of [this] modification, reconsideration of the “exchange ratio” for these discharges.

**Response:** Tier lines were drawn based on the location of monitoring checkpoints or confluence of major tributaries. The point that attenuation occurs along a continuum is correct but would impede development of general relationships between geographic location and efficiency of nitrogen delivery to LIS, essentially requiring an individual analysis for each source of nitrogen. While good arguments could be made for revising tier boundaries, it would likely lead to a never-ending process of moving lines to incrementally accommodate the next source closest to the boundary. In most cases, the river attenuation is low and makes only a small difference in the final equivalency factor or “exchange ratio”, e.g., the difference between Tier 1 and 2 in zone 3 is only 9% (0.55 v. 0.46, respectively).

19. Mattabassett District: The remainder of the report that concerns Mattabassett is the waste load allocation (WLA). The proposed TMDL distributes the 64% reduction evenly among all the WWTP’s even though the plants in eastern and central Connecticut (management zones 1 & 2) have little impact on the hypoxia. This is inferred by the “exchange ratios” listed on page 22 of the report. For every pound of nitrogen discharged from Mattabassett, it has an impact of 0.202 on the problem. For every pound discharged from Norwalk in southwestern Connecticut, it has over 4.5 times the impact based on its exchange ratio of 0.927. I understand that the purpose of the exchange ratio is to promote nitrogen trading but there is little explanation about the program and no assurance that credits will be available. My specific comments are: - There is no definition for “exchange ratios”. - No basis or backup is presented for the exchange ratios. - There is no assurance of when nitrogen credits will be available so planning becomes a problem for low impact WWTP’s like Mattabassett. I do not agree with a lot that Attorney Hall has written but I do agree with the following paraphrase ... “nitrogen trading appears to be a way of getting the communities that have little impact on the problem to pay the high impact communities that are causing the problem when the high impact communities should be paying for it anyhow”.

**Response:** This comment covers several topics, which will be addressed in other sections. With respect to the “specific comments,” which seem to center on the exchange ratios, the TMDL did not present a complete definition of attenuation and exchange ratios, as noted above. This will be rectified in the final TMDL. In its simplest form, the exchange ratios or “equivalency factors” as they will be called in the final TMDL, are a combination of river and LIS attenuation factors.

20. Torrington: Torrington is located in zone 4 tier 2. What is the actual impact our discharge has on Long Island Sound? What percentage of our load actually makes it to the waters of the sound? What is Torrington WPCF’s zone of influence?

**Response:** Using the combined equivalency factor for Torrington, it is 0.56. This means that every 56 pounds of nitrogen discharged from Torrington have the same effect on dissolved oxygen as every 100 pounds discharged from zone 10, where nitrogen is most efficiently delivered. In terms of the percentage of Torrington’s load that reaches LIS (i.e., the mouth of the Housatonic River), the estimate is that 90% of the nitrogen reaches LIS. A specific zone of influence is not calculated for Torrington, as would be done for toxic chemical regulation in a river. The LIS 3.0 model of LIS shows all sources from throughout Connecticut have an impact throughout LIS, although it varies depending on where in the Sound the relationship is drawn. The equivalency factors were derived based on locations in western LIS and offshore from New Haven and Port Jefferson.

#### IV. Nitrogen sources and allocation approach

**Summary Response:** *The following comments seem to question the general allocation approach used in the TMDL. Somewhat similar concerns, although more targeted to concerns about the equity of geographic allocations, are presented in Section V (Equitable distribution of the TMDL)*

21. CFE: Source identification is a key component of TMDL development. EPA regulations provide that a TMDL shall consist of the sum of: (i) the loading allotments for existing and future point sources of pollution (known as "wasteload allocations"), and (ii) the loading allotments for existing and future nonpoint sources of pollution (known as "load allocations"). See, 40 CFR SubSec 130.2(e)-(i). The Draft TMDL identifies pollution loads according to in-basin management zones in which each zone contains multiple and unspecified point and nonpoint sources. Draft TMDL, at 21. While this may be one appropriate way to characterize sources on nitrogen loading, a greater degree of specificity would more effectively allocate the pollution loads and thereby "assign control responsibility among sources of impairment." Report of the Federal Advisory Committee on the TMDL Program (FACA Report), at 25. Because each management zone contains multiple point and nonpoint sources, it may be difficult to assess and monitor the effectiveness of the nitrogen reduction goals of the TMDL. For instance, the Draft TMDL states that there may be revisions to the numbers in the TMDL/WLA/LA which would include "reallocations between point and nonpoint sources within a management zone," but in order to make this type of reallocation possible, the specific sources and their respective loads must be quantified and included in the Draft TMDL. Draft TMDL, at 22. "In cases of uncertainty," which we clearly have with regard to many factors in the Long Island Sound, "an iterative approach to TMDL development and implementation will assure progress toward water quality attainment standards." FACA Report, at i. In sum, an approach which more clearly quantifies each specific source of impairment could better assure the attainment of pollution reduction goals, and foster the success of the proposed nitrogen trading program. At a minimum, allocation to individual point sources is required.

**Response:** *CT and NY agree with this concern and have included individual point source baseline and WLA estimates. CT has formally released these individual WLAs for public comment prior to including them in the TMDL. Additional details on the WLA are available in CTDEP's "Response to Public Comments on the Wasteload Allocation."*

22. CWPAA: The inequities of the proposed TMDL are increased because of the decision to require point sources to bear the burden of pollutant load reduction from NPS in their respective management zones. Because of the methodology employed in the TMDL, the *smallest facilities* with the *least impacts* on DO receive the *most stringent* requirements, an absurd result. The load reduction requirements for several management zones demonstrates that, for example, management zones 1 and 4 must achieve 64-65% removal while zones 7, 8 and 9 -- in the heart of the low DO area -- have a *less restrictive* 59% load reduction requirement. Incredibly, zone 11 in Eastern Long Island, with negligible point source loads, receives the most restrictive 80% load reduction requirement. [table of zone loads available] The load reduction scheme is arbitrary and capricious. Pollution reduction requirements must bear a reasonable relationship to the harm caused by the discharge and these load reduction requirements do not. The least restrictive limits are placed on the most damaging loads; this is the opposite of what is legally required to occur. Moreover, the State of Connecticut does not have the authority to require point sources to pay for pollution impacts associated with non-point sources, simply because the non-point sources are located in the same watershed. Some NPS loads in management zones 1, 2 and 4 come from out-of-state sources that are not even under CTDEP jurisdiction. The proposed TMDL approach is an illegal taking without just compensation as it, in effect, defers costs to those causing NPS pollution and transfers those costs to point sources simply for convenience's sake.

**Response:** *CT agrees with this concern and has uniformly assigned a 63.5% end-of-pipe WLA to all relevant point source discharges in Connecticut. This puts every discharger in the state on an equal basis in proportion to their relative contribution of nitrogen to LIS. It will be incumbent upon EPA to determine the legality of the approach. CWPAA arguments are contradictory, suggesting that load reduction requirements must be relative to the harm caused among point sources, but that emphasizing point sources over the much smaller nonpoint sources is somehow unfair or illegal. CT does not know how to respond to that contradiction, but feels the uniform*

*point and nonpoint reductions throughout the state are equitable and economical when coupled with nitrogen trading.*

23. Norwalk: The document does not adequately explain the concept of using a “Basin-wide” or “Watershed” approach to the management of the nitrogen reduction program. Although being implied throughout the document it is left unstated.

**Response:** *CT and NY will try to enhance this discussion. However, the whole premise of a TMDL is a watershed approach whereby all sources within a watershed are considered for reduction, and appropriate assignments to the WLA and LA consider all relevant sources.*

24. Stamford: The document does not adequately explain the concept of using a "Basin-wide" or "Watershed" approach to the management of the nitrogen reduction program.

**Response:** *See response to Comment 23.*

## V. Equitable distribution of the TMDL

**Summary Response:** *This concern has drawn many comments, both formally in the written comments submitted and at public informational meetings held over the years. The approach taken by CT and NY is to try to make each source proportionally responsible for their share of the nitrogen having an effect on dissolved oxygen in LIS, within limits of technology. This concept is seemingly not readily understood by many because it appears contradictory. By way of example, it may be easiest to look at effect on DO in the Sound and track back to what that means at end-of-pipe. Looking at zone 8, NYC's upper East River, they have an equivalency factor of 0.21, which means for every 100 pounds of nitrogen discharged there is a relative impact on DO of 21 pounds. The TMDL overall goal to reduce nitrogen loading by 58.5% needs to be calculated against the 21 pounds of effective nitrogen impact, or about a 12 pound effective nitrogen reduction. In order for NYC to achieve that reduction in effective nitrogen impact, however, they would need to remove about 59 lbs of nitrogen from their discharge because 59 times the 0.21 equivalency factor would yield that 12 lb reduction in effective nitrogen impact. That is the only way NYC can meet their responsibility for reducing the 21 lbs of effective nitrogen they contribute for every 100 lbs of nitrogen discharged at the end of the pipe. Similar examples could be constructed from throughout CT and NY using the equivalency factors presented in the TMDL. The only way for each discharger to meet their responsibility for the **effective** nitrogen transported to LIS and affecting DO levels is to remove nitrogen in direct proportion at the end of the pipe or by trading. Nonpoint BMPs are not as efficient as BNR at treatment plants. Hence, an aggressive (essentially limit of technology) goal of 10% reduction was assigned to the LA for urban and agricultural land uses. The effect on point sources varies between CT and NY because of the relative ratios of point to nonpoint nitrogen contributions. CT has amended the draft TMDL to make the relationship uniform throughout the state, i.e., all point source dischargers will need to meet a 63.5% reduction at end-of-pipe or by trading.*

25. CWPAA: While it is clear that current carbon and nitrogen loads to certain areas of LIS are excessive, it is certainly not apparent that a uniform basin-wide load reduction program is appropriate for addressing the identified water quality concerns. The TMDL indicates that load reduction measures are based on concerns from response regions 2, 5 and 6. This does *not* seem appropriate as the critical area is unquestionably region 2, and load reduction measures needed to address impacts in regions 5 and 6 are localized at best. Moreover, it is apparent that improvements in region 2 water quality will improve regions 5 and 6 water quality beyond the Phase III targets because poor DO originates and emanates from region 2 due to excessive loads in that area [an Appendix A is available in hard copy further elaborating on this point]. Thus, the TMDL analysis should have focused on region 2 as the key determining factor for achieving water quality objectives. The relative load/impact of sources from Connecticut and New York on response region 2 water quality, accounting for attenuation of loads from their source of origin to the critical DO area are: Connecticut, Total = 30%, Point/Non-point = 20%/10% and New York, Total = 70%, Point/Non-point = 65%/5%. As demonstrated above

(and as expected), New York State loads are the primary cause of low DO in Western LIS. Therefore, an equal load reduction approach is not appropriate because the source and effect of the excessive loads is anything but equal. From a relative standpoint, the reduction measures and economic burden required of New York State loads should be about 2.5 times *more stringent* because they are 2.5 times the problem of the Connecticut loads.

***Response:** The general response above addresses much of this concern. In addition, CWPAA has assumed that each state is managing their individual portions of LIS independently. That is not the case as a concerted effort by CT and NY is required to meet water quality standards. While the statistics in the TMDL clearly show most of the load is from point sources and most is from NYC, each zone (or aggregated by state in the case of CT) must meet the 58.5% reduction to fairly address their contribution of nitrogen effect on DO in LIS. The logic that NY load reduction measures "...should be about 2.5 more stringent because they are 2.5 times the problem of the Connecticut loads" is faulty and misleading. Based on nitrogen load (tons/year) required in the TMDL, NY will be removing 2.6 times as much nitrogen as CT, 17,153 tons/year v. 6669 tons/year.*

26. CWPAA: Where scientific information is available to determine the level of harm caused by particular dischargers, applicable law mandates that pollution reduction responsibilities be appropriately apportioned to reflect the harm caused by the discharge. *U.S. v. Alcan Aluminum Corp.*, 964 F.2d 252, 268 (3<sup>rd</sup> Cir. 1992). Moreover, *de minimus* sources should not be subject to regulation (40 CFR Sec. 122.44(d); *NRDC v. EPA*, 966 F.2d 1292, 1306 (9<sup>th</sup> Cir. 1992)). The TMDL fails to conform to both of these tenets. [table of load distribution provided] Based upon LIS 3.0 model results and the unit response matrix information provided with the TMDL, NYC/Long Island-Westchester have 5 to 10 times the DO deficit impact of Eastern Connecticut point sources and 1.5 to 6 times the impact of Central and Western Connecticut dischargers yet they are not being required to incur a higher economic burden in reducing loads than Connecticut facilities. Eastern and Central Connecticut municipal facilities are responsible for about 0.05 and 0.15 mg/l DO deficit in response region 2, respectively. This is a negligible amount of the existing DO deficit in this area. Imposing stringent percent removal requirements on such minor contributions is clearly inappropriate under existing rules. In short, the polluter is not paying for the costs of their pollution, and Connecticut municipalities are being requested to reduce their loads so that less restrictive requirements may be placed on New York facilities.

***Response:** CWPAA is confusing relative effect with actual loads of nitrogen. The fundamental intent of the TMDL is to equally apportion reduction requirements in direct proportion to the DO impact from each source. In essence, Eastern and Central Connecticut are only addressing the 0.05 and 0.15 mg/l DO deficit for which they are responsible - no more. As noted in the general response, this is effectively accomplished. CT has identified de minimus sources as those discharging less than 20 lbs of nitrogen per day at end of pipe. It will be incumbent upon EPA in the review process to determine if regulations, law or basic tenets have been violated and, if so, deny adoption of the TMDL.*

27. CWPAA: The proposed "uniform reduction" strategy is unfair, inappropriate and ineffective in achieving environmental objectives. Severe economic consequences attend that proposal although the public has been ill informed of that reality. Moreover, use of updated WQS that more realistically reflect fishery resource protection needs under appropriate exceedance frequency conditions should occur given the acknowledgement that the current standards are outdated and unachievable. Thus, it is apparent that alternative programs and approaches need to be considered and proposed for a legally sufficient TMDL to be adopted. It is a basic tenet of environmental regulation and applicable case law that pollution reduction requirements should relate to the level of impact of the facility and its proximity to the problem. One does not imposed rigorous requirements on minor or remote discharges while allowing facilities with greater impacts to avoid their pollution reduction responsibilities. Alternative management options were evaluated to determine if a more cost-effective and equitable approach to improving DO conditions in the Western LIS exist. Based upon review of the loading and DO impacts information, it is clear that loadings from New York dominate and control whether or not

DO objectives will be achieved in the critical response region 2. It is also apparent the point source loadings from management zones 1 through 4 have little to do with the low DO conditions and will not even cause localized problems with minor to moderate nitrogen load reductions. Assuming that some type of hydrodynamic alteration is not implemented, DO objectives in response region 2 will not be achieved even if NYC and the surrounding communities implement "limits of technology" which the LIS TMDL proposal admits is economically unreasonable. Thus, it is apparent that the only reasonable option is relocation of the NYC loading. Given that NYC accounts for over 50% of the problem, it is an appropriate and fair solution that has precedent in other major cities (e.g., Boston, extended outfalls for Los Angeles, San Diego, and San Juan (Puerto Rico), etc). The DO improvement by Alternative Control Methodologies: EPA Proposal (58.5% TN reduction with TOC reduction) – 1.25 mg/l; Long outfall for NYC (no other changes from base) – 1.22 mg/l; Reduction elsewhere – 1.37 mg/l; Long outfall with variable TN reductions (20-40%), 10% TOC reduction – 1.47 mg/l. In comparison to the EPA proposal, removal of NYC alone will, for all practical purposes, meet the Phase III DO improvement target of 1.25 mg/l. Because of the magnitude of the NYC loads, this action will result in substantial DO improvement in response region 1, 4, 5, and 6. Of course, additional actions (point and non-point) are still required to address localized DO problems in outlying areas and to further improve DO in response region 2 so that an interim DO target of 3.5 mg/l will be achieved under 1989 conditions. These reductions should allow all waters near NYC to achieve 3.0 mg/l (hourly) under 1988 conditions. Such a target appears reasonable based upon EPA's 1999 Marine DO Criteria Document. The alternative TMDL analysis shows that if all other facilities achieve "Phase II" reduction levels in addition to NYC load relocation (*excluding* the projected 10% NPS load reduction), the Phase III DO improvement targets are *exceeded* by 10%, or about 0.12 mg/l. Instituting a program whereby facilities in Westchester, Long Island and Western Connecticut achieve 40% reduction, Central Connecticut achieves 30%, and Eastern 20%, *Phase III targets are improved by almost 20% or an additional 0.25 mg/l*. This approach would eliminate all unacceptably low DO conditions in Connecticut waters and provide acceptable DO throughout New York waters, except for the most extreme hydrodynamic conditions (which occur very infrequently and do not pose a significant threat to maintaining a high quality fishery). Anticipated reductions in NPS loads and areal deposition of nitrogen will provide further for DO improvements. In summary, achieving Phase III water quality objectives does not appear to be possible so long as nitrogen and carbon loads from NYC facilities are discharged into response region 2 of LIS. As load relocation is more cost effective than achieving limits of technology, implementation of this option should be required. Implementing load relocation in conjunction with modest point source nitrogen load reduction requirements (up to 40% reduction) in management zones 5, 6, 7 and 10) an lesser reductions for facilities in management zones 1 through 4 and 11 will: - achieve greater environmental benefits; - impose load restrictions in reasonable relationship to the level of impairment caused by the discharge; - avoid imposing moratoriums on facilities with negligible impacts on the critical DO areas; - allow the trading program to operate effectively to produce increased water quality benefits because surplus removal capabilities will exist; and – allow more cost effective allocation of facility improvement grant monies to plants with the greatest impact on critical DO areas.

*Response: The WQS issue is discussed in Section XX. Dissolved Oxygen standard. CT and NY have painstakingly allocated nitrogen reductions in direct proportion to contributions to the low DO problem in LIS. The comment incorrectly interprets the TMDL as having specific Phase III water quality objectives, which is not the case and renders the arguments inapplicable. The TMDL has as its goal attainment of existing CT and NY water quality standards and there is no basis in law for the TMDL to partially meet that goal. Discussions directed towards "Phase III objectives" not presented in the TMDL are purely academic and fruitless. These might be considered during a five-year review should there be changes in the WQS or TMDL regulations that allow partial attainment of state WQS.*

28. CWPAA: Although the implementation of nitrogen load restrictions will also cause significant carbon load reductions (particularly in the lowest DO waters impacted by older NYC facilities), the level of DO improvements associated with anticipated carbon load reduction activities is not well described within the TMDL proposal. No analysis is presented regarding the need for a uniform basin-wide load reduction to achieve water quality objectives or whether other options placing more restrictive

requirements on facilities with the greatest environmental impacts will achieve equal or greater water quality improvement benefits.

**Response:** *CT and NY will consider additional discussion in the TMDL to clarify this issue. However, CWPAA should be aware that the starting point for DO improvements is based on LIS 3.0 model analyses that assume a secondary level of carbon removal is attained at all facilities. Clearly, carbon reduction alone via treatment will not meet state WQS for DO.*

29. MDC: The draft document continually refers to the reduction target of 58.5 percent for each management zone. However the portions of the State closest to the Sound have the greatest impact on the Sound due to their proximity. Why is it that the entire state has to share the work and costs equally, when all areas are not equally contributing to the problem? It is understood that this is the easiest way for DEP to handle the problem, however does the CWA allow for this? Management zones 1, 2, 3 and 4 do not have a significant impact on DO levels in the critical areas where criteria are not met. This is evident by the exchange and attenuation ratios. However, the facilities in zones 1 through 4 are being required to remove the same amount of nitrogen (or pay to not remove) as facilities at the west end of the Sound. Is this approach consistent with EPA regulations and policies?

**Response:** *As noted in the general response, relative impact is not accurately defined by proximity. It is rather a combination of total load and delivery efficiency. Nitrogen is more efficiently delivered to the hypoxic zone with increasing proximity. But, each discharger is only being required to remove **effective** nitrogen in direct proportion to their contribution, i.e., a 63.5% reduction for all point sources in Connecticut. All zones in CT and NY have a meaningful impact on DO and, in order to attain WQS, must be part of the solution. While facilities are required to remove the same percentage of nitrogen, the amount will vary depending on size of discharge. Further, equivalency factors can shift the burden to less costly areas if the discharger chooses to participate so the "pay not to remove" costs are much less than those with higher equivalency factors. EPA will determine the TMDL's consistency with their regulations and policies during their review and adoption or rejection.*

30. Norwalk: The document does not explain why the dischargers with point sources should be required to remove more than their share of the total nitrogen loadings (page 21).

**Response:** *This is hopefully clarified in the general response above and the discussion will be expanded in the final TMDL to provide that clarification.*

31. Norwalk: The document does not explain how the hydrodynamics of the Sound make dischargers into eastern waters affect the DO in the western Sound. Eastern Connecticut dischargers may not believe that they are in any way responsible for low D.O.'s in the Sound at all.

**Response:** *Only so much detail can be provided in the TMDL. CT and NY feel that this issue is adequately addressed with the inclusion and discussion of the attenuation factors and equivalency factors.*

## VI. Out-of-state nitrogen sources (fluvial and atmospheric)

**Summary Response:** *CT and NY have revised the out-of-state source discussions and requirements in recognition that they cannot regulate other states. The draft TMDL was attempting to provide potential out-of-state reduction scenarios to show how WQS could be met since reductions of nitrogen in CT and NY alone would not achieve that goal. There was no intent to regulate other states but, rather to request EPA begin the dialog with neighboring states that have a potential effect on LIS hypoxia.*

32. CWPAA: No requirements are placed on facilities outside of the Connecticut, even though there are additional upstream sources in Massachusetts and New York that are part of the Connecticut

watershed. Similarly, no load restrictions were placed on any New York waters outside the model area (e.g., no requirements on Hudson River discharges), even if those waters influence LIS.

**Response:** *CT and NY do not have the authority to require reductions of out-of-state sources. In the final TMDL specific actions to be taken by EPA to meet that need are recommended.*

33. MADEP: A brief review of the [TMDL] document indicates that the State of Connecticut is assuming in the TMDL that the State of Massachusetts, as well as other contributing states, will provide a 25% nitrogen load reduction from point sources and a 10% reduction from non-point sources within our jurisdiction. Please be advised that although the MADEP is interested in working with you towards this common goal, the State of Connecticut should not, at this time, assume that we are in agreement with this proposed allocation. Prior to final decisions being made, additional discussions will be necessary between our two agencies, for us to better understand how the allocation was arrived at, the extent to which the proposed reductions enhance water quality in Long Island Sound and the financial implications this will have on our efforts to reduce CSOs.

**Response:** *CT is pleased with the cooperation shown by MA, VT and NH and looks forward to future discussions organized by EPA to address out-of-state sources of nitrogen.*

34. VTDEC: VT-DEC recognizes the hard technical work that the states of Connecticut and New York have put into preparing a proposed TMDL for nitrogen in Long Island Sound (LIS). VT-DEC is also willing to discuss the nature and extent of Vermont's contributions to LIS nitrogen problems. However, VT-DEC objects to the proposed TMDL to the extent that it is based on allocating defined shares of nitrogen removal to point and nonpoint sources in the states of Vermont, New Hampshire and Massachusetts (the Northern states). As we understand it, the 58.5% reduction in nitrogen from Connecticut and New York sources assumes that the Northern states will reduce nitrogen from point sources by 25% and from non-point sources by 10%. We have process, technical, and legal concerns about the nitrogen removal allocations which have been assigned to the Northern states. We believe that Vermont, a key stakeholder in Phase IV of the TMDL, should have been included in formal discussions on the proposed TMDL allocations before they were presented to the public. From our vantage point it appears that Connecticut and New York have divided up the loadings for Long Island Sound based on the interests of their citizens without involving Vermont in the discussion. We recommend postponing a decision on the LIS TMDL until Vermont and the other Northern states have had time to fully consider the proposal.

**Response:** *CT agrees that MA, VT and NH should have been involved in the LISS effort and have recommended EPA take a lead role in organizing the necessary discussions in the TMDL.*

35. VTDEC: Readers of the proposed LIS TMDL might be led to assume that the states of Connecticut and New York had the authority to establish a wasteload allocation for nitrogen from the Northern states. This is not the case. Section 303(d) of the federal CWA [33 USC 1313(d)] does not authorize a state to establish a TMDL for the waters of another state. The pertinent language is in Section 303(d)(1)(A) and (C) reads as follows: "(A) Each State shall identify those waters *within its boundaries* for which the effluent limitations required by section 1311(b)(1)(A) and section 1311(b)(1)(B) of this title are not stringent enough to implement any water quality standard applicable to such waters... (C) Each State shall establish *for the waters identified in paragraph (1)(A)* of this subsection, and in accordance with the priority ranking, the total maximum daily load, for those pollutants which the Administrator identifies under section 1314(a)(2) of this title as suitable for such calculation. Such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." (Emphasis added.) It is clear that the CWA does not authorize one state to establish a TMDL for waters of another state. More broadly, the CWA does not authorize a downstream state to regulate the discharges of an upstream state. The definitive statement on this issue is in the U.S. Supreme Court's opinion in *International Paper Co. v. Ouellette*, 479 U.S. 481, 490-491: "While source States have a strong voice in regulating their own pollution, the CWA contemplates a much lesser role for States that

share an interstate waterway with the source (the affected States). Even though it may be harmed by the discharges, an affected State only has an advisory role in regulating pollution that originates beyond its borders. Before a federal permit may be issued, each affected State is given notice and the opportunity to object to the proposed standards at a public hearing. 33 USC Sec 1342(a)(2). An affected State has similar rights to be consulted before the source State issues its own permit; the source State must send notification, and must consider the objections and recommendations submitted by other States before taking action. Sec 1342(b). Significantly, however, an affected State does not have the authority to block the issuance of the permit if it is dissatisfied with the proposed standards. An affected State's only recourse is to apply to the EPA Administrator, who then has the discretion to disapprove the permit if he concludes that the discharges will have an undue impact on interstate waters. Sec 1342(d)(2). Also, an affected State may not establish a separate permit system to regulate an out-of-state source. See Sec 1342(b). Thus the Act makes it clear that affected States occupy a subordinate position to source States in the federal regulatory program." (Citations and footnotes omitted). In summary, VT-DEC is willing to explore with Connecticut, New York, Massachusetts, and New Hampshire the feasibility and appropriateness of a multi-state remediation plan for nitrogen in Long Island Sound. However, we object to Connecticut and New York adopting the plan before we have adequate opportunity to evaluate both the impact on the citizens of our state and the appropriateness of the plan itself.

*Response: CT and NY agree with VT's concerns and have modified the TMDL accordingly to clarify our intent.*

## VII. New York TMDL/WLA/LA

*Summary Response: CT and NY are full partners in this TMDL effort and feel the nitrogen reduction needs are equitably distributed between the two states, in proportion to their contributions. To date, NY facilities have made substantial reductions in point source loads, led by NYC, and have dedicated substantial levels of bond act funding to begin to address nonpoint source loads. CT anticipates implementation of the TMDL will continue in a cooperative vein and sees no need to speculate on potential failures at this time.*

36. CCM: It remains unclear whether New York - particularly New York City - will make meaningful investments in nitrogen removal for Long Island Sound. In Connecticut, municipalities and the State have already spent hundreds of millions of dollars without any real indication of what New York will do. In a study done for CCM last year, Malcolm Pirnie, Inc. estimated that it will cost Connecticut almost \$1 billion to meet nitrogen removal requirements. *Cities and towns, and their taxpayers, need to see that their financial expenditures will not be for naught before committing to costly wastewater treatment projects. Connecticut should not adopt TMDLs unless and until New York State and New York City have (a) adopted their own TMDLs, and (b) have made significant and real financial commitments to move forward - not unenforceable promises.*

*Response: See Summary Response.*

37. Soundkeeper: Implementation of the WLAs as calculated in the TMDL could lead to a violation of the anti-backsliding provision of the Clean Water Act. See 33 USC Sec 1342(o). If the TMDL baseline load for point sources and CSO loads combined in Zone 8 of Table 6 (see p. 22) is adopted, the first 5-year interim target for point sources in that zone will be 75,369 pounds per day. The Zone 8 WLA is 1,469 pounds more than the existing SPDES permit limit for Zone 8 point sources of 73,900 pounds per day. The four point sources in Zone 8 (Hunts Point, Wards Island, Bowery Bay, and Tallman Island) were required to meet the SPDES limit by January 1997. No documentation was provided to describe the calculations used to establish the waste load allocations in Table 1 and Table 6 of the TMDL. According to federal regulation, "[C]alculations to establish TMDLs shall be subject to public review as defined in the State CPP." See 40 CFR 130.7(c)(ii). The New York State Department of Environmental Conservation has failed to provide or explain its method for calculating WLAs. The data from daily monitoring reports and monthly monitoring reports for sewage treatment plants in

Management Zones 8 and 9 significantly deviate from the corresponding WLA values in the TMDL. The TMDL states that in general the data from 1988-1990 were used to calculate nitrogen loads that serve as the baseline from which reductions would be measured. It is noted that data monitored later than 1993 was used for many point sources in Connecticut, including the nitrogen concentration used to calculate loads. This minimal description of data and calculations used to develop load estimates for Connecticut is not provided for New York plants. See TMDL at p. 22.

***Response:** CT recognizes that Soundkeeper has submitted this comment to NYSDEC and will defer to them for a response in their "Response to Public Comments."*

38. Soundkeeper: According to the New York City Department of Environmental Protection's Sludge Management Plan (May 1991), centrate from the North River Plant was delivered to the Wards Island facility on the East River. Centrate from Hudson River plants is an out-of-basin source and therefore should not be considered in the calculations for the TMDL. New York has failed to provide the public with documents that describe the calculation of out-of-basin sources, specifically centrate, that were not described in the out-of-basin section of the TMDL.

***Response:** CT recognizes that Soundkeeper has submitted this comment to NYSDEC and will defer to them for a response in their "Response to Public Comments."*

## VIII. The LIS 3.0 model

***Summary Response:** The LIS 3.0 model was the key tool in assessing nitrogen reduction possibilities and their effect on DO.*

39. CWPAA: When was the Long Island Sound Model last updated and run?

***Response:** Although the LIS 3.0 model has undergone several refinements during its development, it has never been completely "updated." Model runs instrumental to the TMDL were conducted in the mid-1990's culminating in the final scenario report in 1997. A new, systemwide model, is nearing completion and technical review and may supersede LIS 3.0 for future revisions of the TMDL, if adopted by the LISS participants.*

40. CWPAA: Has the model been run with the future proposed reduction of the Dissolved Oxygen Goals for Long Island Sound from 6.0 to 4.5 mg/l?

***Response:** The model has been run using several incremental reductions in nitrogen loading from the management zones established around the Sound. Those runs were used to develop a response matrix that allows evaluation of an infinite number of loading and response scenarios. The model has not been run from the direction of loading that would attain certain DO levels, but the outcome, using the range of model runs and response matrix, is the same. Phase III nitrogen reductions would not attain the suggested 4.5 mg/l throughout the Sound as shown in Table 7 of the draft TMDL.*

41. CWPAA: Has the model been run since the low cost improvements to POTWs in the western end of the sound were made? These improvements reduced nitrogen loading from those POTWs to the sound by 25%

***Response:** One of the model runs was a "Phase II" analyses, which estimated the benefits of the Phase II reductions.*

42. CWPAA: What is the future schedule of updates and runs of the model?

**Response:** *There are no plans to update and run the LIS 3.0 model. NYC has funded a more comprehensive model which, if approved and adopted by LISS participants, may be used for future analyses.*

43. Fromer: Of particular concern is the effects on dissolved oxygen (DO) levels based on the concentration of nutrients, mostly nitrogen, in Long Island Sound (LISS). Apparently, the analysis uses current water levels and volumes. However, the anticipated rise in sea level (i.e., one-foot in 50 years or 1-3 feet in 100 years) from climactic changes has not been factored into the model which would reduce future nutrient concentration levels assuming, of course, no growth in loadings. The climactic change consideration is a required strategy of the State of Connecticut Policies Plan for Conservation and Development. Only algae are considered as requiring dissolved oxygen in the decaying process. No consideration is made of the plethora of decaying biologics and chemicals requiring dissolved oxygen for the metabolic cycle. Was consideration given to phosphorus as an algae growth limiter after successful 58.5% reductions of nitrogen loadings by the year 2014?

**Response:** *The model and analysis did not consider the future potential effects of sea level rise. However, the intent of the TMDL is to model against "worst case" conditions that were experienced in 1988 and 1989. A TMDL must account for those conditions and allow for a margin of safety. Consideration of potential dilution benefits of sea level rise would not alter the TMDL as it would not constitute a "worst case" condition. The phosphorus question is an interesting one not evaluated by the model. It is conceivable that adjustments in the TMDL will need to be made during the scheduled five-year reviews should phosphorus become the limiting nutrient, but present analysis does not appear to support that potential effect.*

## IX. Costs, benefits and cost:benefit analysis

**Summary Response:** *A cost:benefit analysis was conducted to determine financial feasibility and cost effectiveness of the proposed Phase III nitrogen reduction proposal. The analysis was based on DO response in western LIS on a plant-by-plant basis, thereby accounting for geographic location and attenuation effects.*

44. CWPAA: The TMDL presented information on cost versus DO improvement for response regions 2, 5 and 6 (Framework for Developing the Proposed Phase III Nitrogen Reduction Targets, USEPA Long Island Sound Study (January 1997)). The data showing cost versus improvement should have been presented by *management zone, not water quality impact zone*. This would have demonstrated high costs but very limited benefits of nitrogen load reductions in zones 1-4.

**Response:** *On the contrary, the data were analyzed on a plant-by-plant basis and did show differences by location. The final number (58.5%) was then applied to all contributing zones to fairly distribute the reduction. If trading is used, we would expect a distribution of actions similar to the cost:benefit analysis, but a shared responsibility for each source to reduce the nitrogen in proportion to its contribution.*

45. CWPAA: The TMDL stated that the "knee of curve" based upon water quality improvements tests was used which supported the reasonableness of 58.5% load reduction goal and not implementing "limits of technology." As noted above, limits of technology will be forced on smaller communities that are growing. Most importantly, the economics/benefits analysis is misplaced. The benefit for those with a small fraction of their load impacting areas is considered the same as those with 100% of the load reaching an impacted area. Thus, the analysis grossly overstates the benefit derived from Zones 1-4 and those far up in the watershed whose load impact is further attenuated. If the analysis was done properly, increased load reduction would have been required on those with the most impact, as spending resources in outlying zones produces no measurable benefit.

**Response:** *The analysis was done properly, in essentially the manner suggested by CWPAA. CWPAA has misinterpreted the analysis. All attenuation, in rivers and in the Sound, was used in the calculations to come up with the Phase III proposal.*

46. CWPAA: Revise the cost effectiveness analysis to reflect actual impacts from the management zone, including environmental losses of nitrogen and carbon. Local restrictions should reflect prior actions that resulted in improved effluent quality and not impose more restrictive requirements on the best-operated plants. The estimated pollution reduction cost doesn't include cost impacts from projected growth. Actual costs will be far more than the estimated, as "limits of technology" will be needed to offset population growth increases.

**Response:** *Again, the analysis did reflect the actual impacts from each management zone and each tier and each source. Subsequent analyses for the CT WLA show that no facility will be forced to the limit of technology and a substantial growth allotment is available but would be distributed among participants through trading.*

47. CWPAA: There is no indication that the proposed TMDL implementation proposal is cost-effective or appropriate. Given the inability to achieve interim objectives in New York waters, alternative programs, such as load relocation or hydrodynamic alteration should have been reviewed. Preliminary analyses indicate that such programs will produce greater benefits at a significantly reduced cost.

**Response:** *While the LISS participants went through the cost:benefit exercise to try to develop a cost-effective proposal, there is no requirement or precedent that the TMDL be based on cost effectiveness. It is CT and NY's opinion that the TMDL is affordable and will not create undue financial hardship for any community. The TMDL leaves open the possibility for alternative approaches, although nitrogen control at least to the Phase III level proposed will be a component of any program if water quality standards are to be attained.*

48. CWPAA: The TMDL stated that the "knee of the curve" approach considering the level of DO improvement was used and supported the reasonableness of a 58.5% load reduction goal and not implementing "limits of technology." Thus, the TMDL was based upon generalized economic considerations and not information relevant to assigning responsibility for the current low DO condition. This approach is not legally or technically appropriate. TMDLs are required to be based upon WQS compliance and a demonstration that reasonable assurances exist that the proposed approach will achieve WQS. 40 CFR Sec 130.7©(1); 64 Fed. Reg. 46012, 46015 (August 23, 1999). Moreover, the economic analysis was flawed because it did not relate the costs imposed to the incremental DO benefits achieved for various management zones. The incremental cost of removing pollutants in Zones 1 and 2 is a dramatically higher than increased load reduction in Zones 7, 8, 9 and 10. Such an analysis would have demonstrated that it was not cost effective to remove pollutants in Central and Eastern Connecticut because little of the discharged loads actually affect the area of critical low DO.

**Response:** *Again, there is no cost effectiveness requirement for a TMDL and CT and NY have met reasonable assurances criteria through demonstration that funding is available and implementation is feasible. The analysis did show that cost effectiveness varies by location, as would be expected, but, on the whole and with a successful trading program, the economic burden would be fairly distributed. It should also be clear that the Phase III target is an aggressive one and that the burden cannot be entirely shifted to New York or southwestern CT and still be met. The final distribution of reductions will likely emphasize higher removals in southwestern CT and a transition to low-cost, lesser nitrogen removal rates towards northeastern CT where purchasing credits is the more economical option.*

49. CWPAA: The basis for selecting the equal percent removal approach (knee of the curve analysis) is legally and technically infirm. The analysis should have imposed more restrictive requirements on the facilities with the greater environmental impacts as only 5-10% of the benefits per dollar expended will be achieved through imposing stringent requirements on dischargers in management zones 1 and 2.

Likewise lesser benefits are received through imposition of stringent limitations on Zones 3 and 4. Given the disparity in impacts and benefits, the economic analysis should not have been used to support imposition of a uniform load reduction program.

**Response:** *CWPAA does not appear to understand the approach or mechanics of the equal percent removal approach. Again, the uniform reduction requirements coupled with nitrogen trading will provide for a cost-effective, affordable nitrogen removal program. The economic analysis had little to do with "...imposition of a uniform load reduction program." It was simply the starting point to determine how much reduction in CT and NY was practical and affordable. It met that test very well and it is the states' belief that the TMDL can be implemented as proposed. Any legal and technical infirmity will be subject to EPA review, comment, and revision, if appropriate.*

50. Cytex: A concerted reevaluation of the cost effectiveness of nitrogen reduction for industrial point sources is necessary. The conclusion in the LISS Phase III Action for Hypoxia Management that the cost-effective level of treatment identified for sewage treatment plants may be applied to industrial sources is arbitrary and capricious based as it is on an avowed lack of readily available data. It is incongruous to espouse a cost effectiveness implementation strategy but to fail to evaluate cost effectiveness across a given class of regulated entities. Rather, any implementation strategy for the proposed TMDL must evaluate: - the potential inapplicability of additional end-of-pipe treatment for additional nitrogen removal, - current high efficiency waste minimization programs employed by industry, - the fundamentally different nature of the nitrogen discharged by industrial sources compared to sewage derived nitrogen, - the review and revision, if appropriate, of the exchange ratio of a particular industrial sources' discharged organic nitrogen, with respect to its actual impact on LIS.

**Response:** *CT acknowledges that there may be specific sources that do not fit the proposed approach for nitrogen control. Those exceptions will need to be negotiated during the permitting process.*

51. Norwalk: The costs projected for the 15-year program (page 18) are too low and the document should indicate which are purely nitrogen removal costs and what the projected costs for other upgrades necessary to implement the nitrogen removals might be (See WERF report on trading and the 1998 CCM report on projected wastewater treatment costs).

**Response:** *CT and NY agree that the dollar amounts used in the TMDL are dated, but only wish to make the point that there are substantial potential cost savings achieved by setting the final target based on the cost:benefit analysis. However, the dollar amounts were the best available at the time and revising the costs to reflect more recent analyses would not affect the Phase III targets.*

52. Soundkeeper: The nitrogen reduction formula for point sources is based upon a cost analysis. This TMDL relies, in part, on a cost sensitive calculation to determine the assimilative capacity of the waterbody to absorb a pollutant and still meet water quality standards. Section 303(d) of the Act does not provide for a cost sensitivity analysis in conjunction with the calculation of a TMDL as it does for individual dischargers under Sec 1312 of the Act. The calculation method for WLAs in the proposed TMDL has therefore relied upon a factor which Congress has not intended it to consider.

**Response:** *As noted in preceding responses to comments, CT and NY recognize that cost is not the driving consideration in developing the TMDL. The analysis was used simply to provide a target that was affordable and would make substantial improvements in DO in LIS under the Phase III proposal. The TMDL adheres to the requirement that the proposed actions must meet state WQS.*

53. Stamford: The costs projected for the 15-year program appear to be too low. You cannot simply look at the incremental cost since the nitrogen removal process impacts many unit processes. For example, the solids and hydraulic loading for secondary clarifiers are stricter than for non-BNR plants and therefore a plant may have to build additional units. The costs of those additional units and other cascading costs must be included in the total cost for improving Long Island Sound.

*Response: See response to Comment 51.*

54. VTDEC: Connecticut and New York have concluded it is not cost effective to require more than 58.5% reduction from sources in those states while at the same time "allocating" a 25% and 10% reduction in point and non-point sources respectively in the Northern states. Given the unpredictability in the benefits of these northern reductions and the large natural attenuation of these loadings, it cannot be said with any certainty that the 25% and 10% reductions are cost effective, or more cost effective than requiring additional controls on Connecticut and New York sources.

*Response: It was not the intent of CT and NY to analyze cost-effectiveness of Phase IV actions. These were presented as potential actions that could be implemented to achieve state WQS. As EPA moves forward with coordination of actions beyond Phase III, discussions as to cost-effectiveness and appropriateness of these suggested activities will be needed.*

## X. Schedule for implementing the TMDL

*Summary Response: The schedule negotiations for implementing the TMDL were difficult, with many considerations of construction time frames and costs. CT and NY feel the 15-year schedule is doable and reasonable to implement such a far-reaching program.*

55. CFE: CFE supports the need for an adaptive management approach to TMDL implementation. At the same time, we would like to encourage faster implementation of the TMDL standard wherever feasible. The Draft TMDL outlines complete implementation within a 15 year time-frame. Based upon our understanding of construction and financing feasibility time-frames, we urge a phased enforceable schedule which would assure achievement of the nitrogen reduction targets within a 10 year period. This shorter time-frame would require nitrogen reduction targets of 60 percent by the year 2005, and 100 percent reduction by 2010.

*Response: See the Summary Response.*

56. CWPAA: Please clarify the schedule for implementation of the TMDL, WLA for point source and the Load Allocation (LA) for non-point source discharges.

*Response: The schedule is summarized in the TMDL in text and tables with specific 15-year targets beginning in 1999 and ending in 2014. CT and NY are unable to determine what is unclear.*

57. Mattabassett District: We are requesting at least a 5 year delay in the 40%, 75%, and 100% implementation schedule of the WWTP 64% removals for eastern and central CT (MZ 1&2). Currently there is no hypoxia in eastern LIS. Also, the impact from MZ 1&2 is minimal assuming that the "exchange ratio" is the measure of the impact on the low D.O. problem in western LIS. This 5 year or greater period will give CT DEP a chance to do its first assessment before penalizing eastern and central CT for their minimal contribution to the problem. It will also indicate whether nitrogen credits will be available or western CT will drag its feet with only 30% funding available. With MZ 1&2 being lumped in with the primary sources of the problem (NY and western CT), sparsely populated eastern and central CT will be unfairly subject to sewer moratoriums at the same time as densely populated areas of NY and southwestern CT.

*Response: CT and NY do not see a basis for delaying implementation in certain geographic areas. The WLA analysis does not support concerns over growth moratoria and every regulated discharger will have the option of delaying implementation indefinitely by purchasing credits if they so choose. The condition of water quality in eastern LIS has no bearing on the Phase III program as all sources in CT and NY that drain to LIS have a role in hypoxia and the solution is*

*comprehensive management. It can't be accomplished without full participation. Waiting for a five-year reassessment will only disrupt the schedule and could result in missed deadlines.*

58. VTDEC: The benefits of Phase IV reductions are highly uncertain and Phase IV should follow the completion of the Phase III rather than running concurrently. The acknowledged uncertainty in the LIS model predictions, particularly for Phase IV, (see page 32) argues for implementation of Phase IV after implementation and assessment of Phase III, not concurrent with Phase III as is proposed.

**Response:** *As noted in Section VI (Out-of-state nitrogen sources (fluvial and atmospheric)), Phase IV activities will require EPA coordination. The schedule presented in the TMDL does not commit to any specific actions, but recommends appropriate planning discussions be held with the affected states. While CT and NY feel that progress can and should be made prior to 2014, it will be up to EPA and the affected states to negotiate actions and a schedule.*

## XI. Five-year reassessments

**Summary Response:** *The TMDL process allows states to proceed with completing a TMDL despite areas of uncertainty to step up progress. The LIS TMDL incorporates a very high level of understanding, analysis and certainty but there are ongoing investigations and analyses and potential regulatory changes that will affect the TMDL throughout its 15-year implementation time frame. To accommodate this learning curve and to ensure the TMDL is in keeping with the best available science and the most recent regulations and standards, CT and NY have incorporated a periodic, 5-year reassessment.*

59. Norwalk: The commitment to re-assess the improvements to DO every 5 years should be clearly stated. It is assumed that this means re-sampling and running the LIS 3 model at the end of each five-year period. The adoption and application of environmental indicators to illustrate the progress being made by the reductions taking place on a five-year cycle should be included in the report.

**Response:** *CT and NY feel the reassessment actions are adequately described in both text and tables. Because the TMDL is designed to address attainment of water quality standards, in this case DO, other environmental indicators would be difficult to incorporate. However, the LISS has initiated an indicators project that will be helpful with assessments of LIS status and improvement, as identified in the TMDL.*

60. Stamford: You need to quantify how the "reassessment of improvements in DO" will be carried out. Define how sampling will be done, which model(s) will be used. Also, the schedule for these reassessments must be defined to ensure there is a commitment to do them every five years.

**Response:** *As noted above, the schedule for reassessments seems clear to CT and NY. The sampling programs and strategies are presented in Chapter V. of the TMDL on "TMDL Development." With respect to the model(s) planned for use, there is no certainty that any will be part of the reassessments although the Systemwide Eutrophication Model is identified in Table 11 as a potential reassessment tool.*

## XII. Monitoring and Tracking and Indicators

**Summary Response:** *The monitoring and tracking of TMDL implementation will fall primarily to the programs within NYSDEC and CTDEP. Permitting programs have specific monitoring requirements that will also be specified, by law, in the proposed nitrogen-trading program. Ambient monitoring of LIS is briefly presented in the TMDL and will be instrumental in determining if state WQS are being met, which is the fundamental measure of successful TMDL implementation. The LISS supports use of indicators and has been developing an indicators program that will help supplement our understanding about the health of LIS.*

61. Save the Sound: On page nine (9), the author refers to citizen monitoring data: “[a] number of citizen volunteer monitoring programs also exist and can provide valuable information on water quality in local harbors and bays”. Save the Sound strongly supports the mandatory use of citizen volunteer data which has been collected under an approved Quality Assurance Project Plan (QAPP). This data provides a wealth of knowledge about our harbors which generally are not monitored by the state agencies. In addition, rivers and streams which are currently on the state 303(d) lists could get a jump start on the TMDL process with the help of citizen monitoring groups who could provide the necessary baseline data.

**Response:** *Citizens' monitoring data will continue to be an important asset in CTDEP's water quality evaluation activities and in ascertaining water quality impairments.*

62. Stamford: The adoption and application of environmental indicators to illustrate the progress being made because of the reduction in nitrogen taking place on a five-year cycle should be included in the report.

**Response:** *As noted in the Summary Response, LISS is developing an indicators program, but the TMDL is strictly linked to state WQS and will most likely be measured against DO levels in LIS.*

### XIII. General comments on the WLA

**Summary Response:** *Most of the comments on the WLA for CT's point sources are fully addressed in CTDEP's "Response to Public Comments on the WLA." It was important to much of the regulated community and other interested parties that individual WLAs be specified in the TMDL, which has been done. CT public noticed and heard comments on the WLAs, which are being concurrently adopted along with submission of the TMDL to EPA.*

63. CWPAA: The assumption that the 1989 effluent TN levels were 15 mg/l is, in all probability, low. The actual is most likely in the range of 18 to 20 mg/l.

**Response:** *The WLA estimates placed statewide nitrogen concentrations from WWTFs at about 15.6 mg/l. While this may be lower than the average of some WWTFs, it appears to be a reasonable statewide estimate based on monitoring data. CTDEP's intent was to provide every discharger with an identical starting concentration to iron out differences related to plant operational efficiencies.*

64. CWPAA: How will pre-1990 nitrogen reduction improvements to POTWs be addressed in the reduction calculation of the 1990 baseline?

**Response:** *By using a uniform nitrogen concentration applied to 1997-99 average discharge volume, every plant has a baseline load estimate that assumes uniform nitrogen treatment. This approach avoids effects from nitrogen improvement projects that may have occurred along the way and does not unfairly provide a bonus to plants that have been performing poorly.*

65. CWPAA: How will the WLA for new facilities or sewer expansion be established under the program?

**Response:** *This is not relevant to the TMDL. However, in CTDEP's "Response to Public Comments on the WLA," the issue is discussed in some detail and is likely to be accommodated in the nitrogen permitting and trading program.*

66. CWPAA: The assumption that 1988 effluent TN levels were 15 mg/l for Connecticut facilities that lack effluent data is far too low; a more reasonable estimate of effluent TN levels would be in the 25 – 30 mg/l range.

*Response: See the Summary Response and the response to Comment 63.*

67. CWPAA: Use of an annual average loading approach seems reasonable but the proposed limitations should have projected some variability around this average so that “worst case” annual average is not used to set permit limits (cold wet year affects treatment capabilities but helps DO in LIS).

*Response: This comment is not relevant to the TMDL as it refers to permitting issues. The plan is to implement permit limits based on a 12 month rolling average to allow for seasonal variation and periodic upsets.*

68. CWPAA: A credit for carbon reduction should be included as the model specifies that it is 15% of the DO deficit. This would allow a 3:1 TN:C trade at plants where carbon has a significant impact on the ambient DO.

*Response: Carbon reductions have been worked in as a companion to nitrogen reductions at a modest level since most CT facilities already remove carbon to a very low level. Also, the baseline assumes treatment at a secondary level.*

69. CWPAA: Load restrictions should provide credit reflect prior actions that resulted in improved effluent quality and not impose more restrictive requirements on the best-operated plants.

*Response: The recent WLA process in CT has addressed this concern. See CTDEP's "Response to Public Comment on the WLA."*

70. Mattabassett District: There is no effluent data to document the 1990 baseline nitrogen loads for many Connecticut WWTP's including Mattabassett. For 1991, 1992, and 1993 the effluent total nitrogen (TN) was 20.6, 23.3, and 17.9 mg/l, respectively. This is significantly above the estimate of 15 mg/l TN used in the report.

*Response: CT agrees that data from 1990 were sketchy and has abandoned using 1990 to set individual plant baseline loads and WLAs. The WLA process has equally distributed the statewide point source load for 1990 among all affected WWTFs, as detailed in CTDEP's "Response to Public Comment on the WLA."*

71. MDC: In a November 1999 DEP publication titled “Nitrogen TMDL to Control Hypoxia in Long Island Sound” is the following sentence: “The TMDL will specify how much nitrogen sewage treatment plants and other point sources in CT and NY will be allowed to discharge, known as a Wasteload Allocation (WLA).” However, the WLAs are not part of the proposed TMDL. Also, during the December 7, 1999 public meeting DEP expressed that the WLAs will be performed in the coming months. The November 1999 publication also states: “Collectively, the TMDL is equal to the point source wasteload allocation plus the nonpoint source load allocation plus the margin of safety.” Therefore is we do not know what the WLAs are, what is the TMDL we are agreeing to at this time? Is this the theoretical TMDL and the solid TMDL will come later? What if this TMDL goes forward and later we have problems with the solid TMDL, or find that it is not feasible? Will we be stuck with it because the theoretical TMDL was approved?

*Response: This was a widespread concern in the draft TMDL and has been addressed by incorporating individual WLAs and through the WLA public process. See CTDEP's "Response to Public Comment on the WLA."*

72. Norwalk: The single most important issue, from this point in the process on, will be how the Department determines the **baseline criteria against which reductions are to be assessed**. The theory and methodology must be clearly defined in the TMDL document. It is unlikely that those plants that have good nitrogen data for the year 1990 will agree to an “across the board” concentration (that has the effect of artificially increasing the reductions) being applied to reduction targets at those

plants. In fact, plants that were removing nitrogen should (somehow) be given credit for reducing nitrogen at that time and in the 10 year period since.

**Response:** *CT acknowledges this shortcoming in the draft TMDL and has incorporated individual WLAs through a WLA public process in CT. See CTDEP's "Response to Public Comments on the WLA."*

73. Stamford: It is very important that the DEP clearly defines how the baseline criteria, against which reductions are to be assessed, is established. There are well-established theoretical calculations, which should be part of the TMDL document. It is unfair for the plants that were removing nitrogen in the late 1980's and early 1990's, such as Stamford, to have an across the board adjustment especially since there are good theoretical models for calculating nitrogen concentrations.

**Response:** *See response to Comment 72.*

74. Torrington: What flow (MGD) from a point source is CTDEP using for the baseline modeling?

**Response:** *The original TMDL analysis was based on rough estimates for each point source in CT and NY using 1990 flow. Because of the many issues raised in the public comments on the TMDL, presented herein, CTDEP initiated a WLA public process that has established baseline conditions using 1997-99 average flow data for each affected WWTF.*

#### XIV. Equitable distribution of the WLA

**Summary Response:** *Please refer to Section V (Equitable distribution of the TMDL), which parallels this discussion. CT and NY have provided for an equitable distribution of the TMDL, the WLA, and the LA by requiring each source to remove **effective** nitrogen impact on DO in proportion to their contribution to DO impact. In sum, no source is required to treat beyond their contribution of DO impact to LIS. The following comments are for the most part related to that issue and are summarily addressed. Also, CT's WLA public process further explained the load distribution and individual WLAs, how they relate to DO impact, and what the individual plant expectations are subsequent to receipt of the comments listed below. The "Response to Public Comments on the WLA" details the fairness of the approach and how the use of equivalency factors can be used to ensure cost effectiveness.*

75. CWPAAs: All facilities are treated the same even though many Connecticut facilities have already produced much lower carbon and nitrogen loads as a result of implementing advanced treatment. This causes the lowest limitations to be imposed on facilities that historically have the lowest effluent quality. Facilities that were poorly operated or failed to upgrade will have the least restrictive compliance responsibilities. (Punish good deeds! Reward inaction.) The TMDL should level the playing field - not impose more restrictive limits on those who have already done more than their share.

**Response:** *See also Section XIII and the Summary Response. The WLA has equitably distributed reduction responsibility among all contributing dischargers as detailed in CTDEP's "Response to Public Comment on the WLA."*

76. CWPAAs: Although credit was given NYC for *increased* nitrogen sources [ODB], no credit was given to Connecticut facilities that previously *reduced* nitrogen and carbon loads in the mid-1980's through instituting advanced treatment (typically, nitrification) and improved solids handling. Most Connecticut facilities were presumed to be discharging 15 mg/l TN in 1989, as limited data were available to set baseline loadings. This estimate was not justified in the public documents and seems too low, as the typical municipal TKN influent concentration is in the 25-30 mg/l range. No credit is given to facilities that will be required to achieve lower carbon levels in the future.

**Response:** *The Offshore Dumping Ban brought nitrogen that was formerly disposed offshore back to the treatment plants. Since CT has always treated sludge at the treatment plants, that nitrogen was part of the statewide wastestream. Since CT has included it in the baseline, it seemed reasonable to allow NY to include it as well. The relevance of influent TKN to effluent TN of 15 mg/l is unclear. Monitoring data show an average statewide reduction in the order of 50% from influent to effluent, which would put effluent concentrations at about 15 mg/l or less if the 25-30 influent concentration is correct.*

77. CWPAA: The load reduction scheme is unrelated to the level of impact associated with sources in Connecticut and violates fundamental principles of administrative law that pollution reduction measures must bear some reasonable relationship to the culpability for the impairment, *i.e.*, negligible sources are not regulated as stringently as major sources, and the largest sources of the problem are responsible for cleaning up their share of the pollution. In essence, Connecticut facilities are being required to remove pollutants to offset the impacts of much higher loads from New York State that are directly and severely impacting New York State waters.

**Response:** *CWPAA has misinterpreted or misunderstood the TMDL proposal. The reduction scheme is fairly balanced so as not to create an undue burden on any individual nitrogen source. It would be unfair to require NY to remove extra nitrogen to make up for inaction in CT. In this joint TMDL, LIS is treated as a whole so CT v. NY jurisdictional "waters" have no relevance.*

78. CWPAA: The proposed TMDL will not achieve intended environmental goals because the load reduction requirements are not directed at facilities with the greatest adverse environmental impact, and the trading program will be ineffective because excess pollution reduction credits are unlikely to be available given the stringent limitations and projected growth for the region.

**Response:** *This comment is without foundation. The TMDL is equitably and fairly distributed to attain the most benefit for an affordable cost without shifting the burden away from responsible parties. There is no evidence that trading will be ineffective and, although the TMDL allows for trading, it does not require such a program. If necessary, the proposed Phase III reductions could be met at end-of-pipe for all the listed dischargers.*

79. CWPAA: In establishing the baseline load levels, NYC was granted an increased load to account for legally mandated changes to their sludge disposal methods (ocean dumping). No changes or considerations were provided for other point sources that previously implemented requirements that reduced nitrogen levels. This approach is unfair and needs to be amended, as it rewards the communities along the Sound that historically provided a much poorer level of treatment than facilities further inland. Under the proposed TMDL all facilities are treated the same even though many Connecticut facilities have already produced significantly lower carbon and nitrogen loads as a result of implementing advanced treatment and improving sludge disposal practices. More restrictive requirements were extensively implemented through the 1980s in management zones 1, 2, 3 and 4. As demonstrated by "before and after" plant performance data, these measures reduced nitrogen discharges and helped to reduce adverse DO impacts in LIS. Pre-nitrification (1989) TN load = 1205 lbs/day; Post-nitrification (1992-93) TN load = 991 (1053/930) lbs/day, an 18% reduction. Because the TMDL implementation strategy ignores these prior actions and used the plant performance from 1990 as the baseline for calculation of future load limits, this causes the lowest limitations to be imposed on facilities that historically have the lowest effluent quality. Facilities that were run poorly or failed to upgrade before 1990 will have the least restrictive compliance responsibilities because they will have the highest effluent nitrogen levels to which are applied the new percent reduction requirements. This approach punishes good deeds and rewards inaction, which is not appropriate. The TMDL baseline should level the playing field, not skew it further by imposing the most restrictive limits on facilities that were already producing the lowest nitrogen loads. The TMDL should have estimated the pre-upgrade nitrogen levels and provide a level of credit for nitrogen load reductions already achieved just as NYC has received credits for increases in nitrogen load that occurred after 1990. Revise the baseline to account for prior pollution reduction measures that reduced both nitrogen and, as appropriate carbon loadings.

**Response:** *This comment is fundamentally the same as Comment 76 and several other CWPAA comments. Please refer to that and other responses to the same and similar comments.*

80. CWPAA: Restructure load reduction requirements to establish non-uniform reduction limits. Generally, dischargers closer to the critical low DO zones and those causing localized impacts should receive the most restrictive limits.

**Response:** *Non-uniform reduction limits would force facilities to clean up beyond their level of contribution, an unfair proposal at best. The TMDL proposal fairly distributes the reduction requirements in direct proportion to each source's contribution.*

81. CWPAA: Revise the load reduction requirements to reasonably reflect the level of impact associated with the various sources and impose the most restrictive limitations on facilities with the greatest impact on the critical low DO areas.

**Response:** *This comment cannot be differentiated from Comment 80. Please refer to that response.*

82. CWPAA: Reevaluate the options for achieving reasonable water quality objectives including relocation of NYC loads and establishing less restrictive load reduction requirements for other management zones.

**Response:** *All alternative technology possibilities are on the table in the final TMDL. However, the Phase III nitrogen reduction program is unlikely to be offset by any of the alternative technologies and will remain the cornerstone of WQS attainment in LIS, if approved by EPA.*

83. Torrington: Is it correct that the point source reduction required for the City of Torrington is 63.7% based on zone 4 and the Waste Load Allocation (WLA)? If correct, what is the basis for this percent reduction? Why is New York City given a lower percent removal when they represent the most impact?

**Response:** *This concern has been addressed through CT's WLA public process. The uneven distribution of reductions was unfair. All dischargers in CT are now required to remove 63.5% of their baseline. The New York percent removal is lower because of the relative point/nonpoint ratios that force higher removal requirements on point sources. Each zone in NY is required to achieve the same 58.5% reduction as CT will achieve statewide. The reductions are apportioned as 10% of urban and agricultural runoff and 63.5% of point source contribution in CT, based on treatment ability.*

84. Torrington: Are all 84 wastewater treatment facilities being treated equally in the assignment of base loading?

**Response:** *With changes made through CT's WLA process, yes. Please refer to CTDEP's "Response to Public Comment on the WLA" for additional details.*

## XV. Individual Plant WLA concerns

**Summary Response:** *Individual Plant WLA concerns cannot, for the most part, be addressed through TMDL modifications. The opportunity for presenting individual cases was made available through CT's WLA public process. Further opportunity for appropriate adjustments will be available through the permitting process.*

85. Bristol: The plant expansion should provide for adequate removal of nitrogen species such as ammonia and nitrate but this upgrade will not specifically remove organic nitrogen from the wastestream. We

realized that a percentage of organic nitrogen will be chemically converted to ammonia by hydrolysis and biologically converted to ammonia through ammonification in aerobic or anoxic zones but how much of the organic nitrogen can be removed? We understand a strategy employed for the treatment of residual nitrate such as varying recycle flows might enhance organic nitrogen removal but to what extent? We also know that there will be a certain soluble fraction of Total Kjeldahl Nitrogen that is not biodegradable and therefore can never be removed in a wastewater treatment plant. This fraction will be determined for the City of Bristol through analysis of a number of composite samples by the Stamford WPCF in January of 2000. The city wishes to state for the record that we fully plan on upgrading our facility with an eye to meeting the phased nitrogen limits culminating in the final limits in the year 2014. We are concerned though that we are being permitted at the limits of BAT and run the risk of non-compliance during periods of insufficient nitrogen removal. Please review Table 1 [available in hard copy], which shows historical organic nitrogen concentrations from March 1997 through the present. The data reveals large fluctuations in organic nitrogen content, which are our greatest concerns.

*Response: Please refer to "Public Comments on the WLA" for CTDEP's position on these concerns.*

86. Bristol: The City's second concern is whether or not the organic nitrogen concentration will dilute with increases in flow, as one would expect. If the flow to the treatment plant increases above design flow, the resulting Total Nitrogen concentration that we will need to discharge to remain in compliance will obviously decrease. The City is currently undergoing an Infiltration and Inflow study to remove excess ground or storm water from entering the facility but as we all know, these studies and their associated rehabilitation does not remove all sources of water. The City of Bristol does anticipate an increase in its population over the next 15 years. The larger population will result in greater flows and higher influent nitrogen loadings. The higher wastewater flows will result in an even lower total nitrogen concentration required to meet the proposed permit levels. With the proposed limits already at the limit of treatment technology, this would prohibit the City's ability to support a larger population.

*Response: While this is primarily a permitting issue, the TMDL and WLA are based on loads of nitrogen (e.g., lbs/day) so effluent strength increasing concomitant with decreased flows should yield essentially the same daily mass load. Permit limits will not be based on concentration. Growth issues are addressed in CTDEP's "Response to Public Comment on the WLA."*

87. MDC: Provided below are two areas concerning the MDC and the nitrogen program. While they may not directly impact the TMDL document, it is not clear to us and therefore we have included them. Also, the baseload discussion may not be relevant to the proposed TMDL, however no information has been provided to us to definitively indicate how the nitrogen baseloads or baselines have been or will be established. We are reluctant to support a TMDL where such basic issues remain vague. *Baseloads* in establishing nitrogen baseloads for the MDC there are two issues regarding DEP's calculated values. (The values were obtained during WERF meetings). The first issue is organic nitrogen and the second is the combined sewer overflow wastewaters which are not being captured in our wet weather pumping and storage facilities at the Hartford WPCF. The wastewaters collected in the wet weather storage basin (WWSB) are either returned to the facility for full secondary treatment (during a short duration storm for example), or the basin overflows, providing primary treatment of the wastewaters. Based on our review, we strongly request that DEP modify our 1990 baseload values as described in this letter. [MDC provides lengthy discussion on how CSO nitrogen offsets might be calculated. Calculation A estimates 103 lbs/day removed by the wet weather storage basin (WWSB) project while calculation by estimates 76 lbs/day removed. See letter for details.] Averaging the two values, MDC has captured and removed an additional 90 lbs/day of nitrogen. This reduction in the non-point source nitrogen load to the Connecticut River should be credited to the MDC on an annual basis as determined by measurement of nitrogen removal through the WWSB for the previous 12 months. The credits will be used for the Hartford WPCF in DEP's planned Nitrogen Credit Trading Program. Work is continuing on removing CSOs from the collection system and therefore the MDC will continue to reduce the amount of nitrogen from these non-point sources. How will the elimination of CSOs, now and in the future, be addressed?

**Response:** *This concern has been addressed through the WLA public process in CT. Please refer to CTDEP's "Response to Public Comments on the WLA."*

88. MDC: Mr. Anthony Cerino of MDC discussed DEP's 1990 baseload values with you regarding the calculation of the baseload. Our understanding is that the baseload values were established using data from our WPCFs acute toxicity monitoring reports. These were quarterly samples and included ammonia, nitrite, and nitrate measurements; however, organic nitrogen was not measured. It appears that the DEP averaged these constituent concentrations for 1990 and calculated the total pounds based on the annual average flow as shown in the second column of the attached table. For true total nitrogen values, we reviewed the average organic nitrogen (TKN less NH<sub>3</sub>) concentration discharged from each facility based on 1993 through 1996 data. We developed a ratio between total nitrogen and total nitrogen without organic nitrogen. This ratio was used to estimate the true total nitrogen discharged from the WPCFs in 1990, as shown in the table below. Poquonock: DEP = 487 lbs/day; MDC = 596 lbs/day w/o ON; MDC = 656 lbs TN/day. Rocky Hill: DEP = 585 lbs/day; MDC = 588 lbs/day w/o ON; MDC = 659 lbs TN/day. East Hartford: DEP = 1660 lbs/day; MDC = 1544 lbs/day w/o ON; MDC = 1698 lbs TN/day. Hartford: DEP = 6500 lbs/day; MDC = 6008 lbs/day w/o ON; MDC = 6944 lbs TN/day.

**Response:** *CTDEP's WLA process has tried to equitably distribute baseline loads and the WLA among point sources. Please refer to CTDEP's "Response to Public Comments on the WLA."*

89. New London: [Not sent in response to TMDL public notice – verbal request to include it in the comments to Mr. Robert Norwood]. I am requesting that the Piacenti Regional Waste Water Treatment Plan in New London 1990 nitrogen base level be increased to reflect the additional flows from East Lyme and Waterford connected after that date to alleviate pollution and stop run-off into Long Island Sound. These connections include the Waste Water Treatment Plan at the Niantic Correction Facility, the Waste Water Treatment Plant at Seaside State Hospital, 1,243 connections in Waterford and 2,283 connections to Municipal Sewer in East Lyme. Please make these adjustments to our nitrification base levels. [Attachments showing sewer permits issues from Jan. 1990 through Dec 1998 and the number of East Lyme connections.]

**Response:** *CTDEP is no longer using 1990 data for setting individual WLAs. A public process to establish individual WLAs was completed in the fall of 2000. Please refer to CTDEP's "Response to Public Comments on the WLA."*

90. Torrington: It appears that the City of Torrington has been assigned a 1990 total nitrogen base loading of 551 #/day. What is the basis of this proposed 1990 baseline loading for the City of Torrington? Is it 18 mg/l or some other value? How was this value arrived at? Based on research of our 1990 permit reports, our loading was: 7.00 MGD (Design Flow) x 18 mg/l x 8.34 lbs/gal = 1051 lbs/day TN. 7.04 MGD (1990 Avg. Daily flow) x 13.41 mg/l x 8.34 lbs/gal = 787.3 lbs/day TN.

**Response:** *CTDEP is no longer using 1990 data for setting individual WLAs. A public process to establish individual WLAs was completed in the fall of 2000. Please refer to CTDEP's "Response to Public Comments on the WLA."*

91. Torrington: Facilities that receive septage have a potential increased load. Will this increased load be offset from facility loading requirements? What about facilities that truck out their biosolids to other treatment facilities for disposal, will they be required to take back that portion of the load? If so how would you accurately determine the load to be turned back to the generator?

**Response:** *This concern will be handled through CTDEP's NPDES permitting process and cannot be addressed through the TMDL. Please refer to CTDEP's "Response to Public Comments on the WLA" for additional details.*

## XVI. Reasonable assurances for WLA implementation

**Summary Response:** *CT and NY believe the WLA meets all reasonable assurances tests, is practical and affordable, and is presented in a reasonable time frame.*

92. CWPAA: The TMDL clearly concludes that the proposed treatment scheme is insufficient to achieve WQS (possibly even update WQS). The TMDL indicated that load relocation for NYC and others may be needed. The analysis should have determined whether or not load relocation and significantly less restrictive TN reduction requirements for certain Connecticut management zones should be the preferred alternative because the proposed approach will clearly force limits of technology and freeze growth in Connecticut, as follows: 1989 Flow = 3.0 MGD; TN = 15 mg/l Phase III Reduction (Zone 1-5) = 5.6 mg/l. 2010 flow = 5.5 MGD; Phase III Reduction = 3.0 mg/l. This proposal will clearly place facilities beyond the limits of technology and force a moratorium on accepting additional flows. Alternative load reduction requirements that do not cause widespread economic harm should have been proposed, given the TMDL's admission that the proposed approach is insufficient. Relying on mixing and aeration (which have no demonstrated capability of achieving standards) rather than appropriate WQS updates and load relocation renders the TMDL unlawful and insufficient under CWA regulations.

**Response:** *CWPAA fails to demonstrate that the Phase III implementation will place facilities beyond limits of technology and force a moratorium on growth. CTDEP's WLA analysis clearly shows that not to be the case. CWPAA's example is unrealistic as it projects a more than 80% increase in flow to force the example point source to a 3.0 mg of TN/l limit of technology. Population growth projection, statewide, by CT's Office of Policy and Management is less than 10% through 2020. CWPAA's example makes the case that there is ample treatment capacity without pushing to the limit of technology. Further, the treatment options proposed under Phase III meet reasonable assurances criteria far more clearly than any of the proposed alternatives that would require extensive environmental analyses and cost evaluation.*

93. CWPAA: The TMDL clearly concludes that the proposed treatment scheme is insufficient to achieve the existing WQS and interim objectives (and possibly even updated WQS). The TMDL indicated that, under Phase IV, load relocation for NYC and others might be needed to ultimately achieve compliance, as well as mixing and aeration (which have no demonstrated capability of achieving standards). Failure to achieve WQS objectives and reliance on speculative measures to "assure" compliance renders the TMDL unlawful and insufficient under CWA regulations. 33 USC Sec. 1313(d)(1)(C). Considering the uncertainty associated with implementing "theoretical" solutions, the TMDL approach would need to be made more restrictive for major dischargers and/or the water quality criteria would have to be amended to eliminate the ongoing violation of water quality objectives to achieve Clean Water Act mandates. Given the clear discontinuity between compliance objectives and the regulatory proposal, the analysis should have presented whether or not load relocation should be required. Moreover, because air deposition is a significant component of the nitrogen load and Clean Air Act requirements are projected to significantly reduce such loads, the Phase III TMDL should have reasonably accounted for those load reduction measures in assessing the need for stringent load reductions in Connecticut. The failure of the TMDL and economic analysis to account for these factors before imposing restrictive limits on minor load inputs renders the analysis flawed and misplaced.

**Response:** *CT and NY agree, and have not hidden the fact that Phase III does not attain existing WQS. By any analysis, there are insufficient other sources and means to control nitrogen to the extent that WQS are attained, including the suggested emphasis on additional atmospheric reductions. The revised TMDL emphasizes more heavily EPA's responsibility to promote and implement additional air and out-of-state nitrogen reductions. While the alternative strategies are not fully fleshed out, seemingly CWPAA concurs that they are feasible mechanisms for improving oxygen conditions in the Sound, as judged by their support of NYC discharge relocation argued in Comment 92 and others. CT and NY believe that all practicable load reductions have been*

*accounted for and the proposed TMDL will meet with EPA's approval as a prudent and practical plan for addressing hypoxia in LIS.*

## XVII. General comments on the LA

**Summary Response:** *Most comments on the LA have to do with its stringency. CT and NY used best available estimates for nonpoint source loading and BMP efficiency to propose a LA that would stand the reasonable assurances test. The Phase III proposal uses an aggressive 20% removal efficiency for BMPs and applies it to 50% of the urban and agricultural land in the portions of CT and NY that drain to LIS to come up with the 10% nonpoint source goal. Additional reductions were not deemed attainable or cost-effective.*

94. CWPAA: Point sources are being required to pay for pollution caused by third parties (non-point sources) without compensation, and the load reduction scheme arbitrarily places the highest reduction requirements on facilities from areas with the greatest NPS loads regardless of the relative importance of the point source load to improving water quality in critical areas.

**Response:** *As discussed in the Summary Response and earlier sections, the division of point and nonpoint source reduction requirements was far from arbitrary and is based on a combination of available technology and cost considerations.*

95. CWPAA: Do not impose NPS load requirements on point sources, unless fair compensation is provided to account for the additional treatment costs and impacts on community growth.

**Response:** *See response to Comment 94.*

96. CWPAA: Do not establish more restrictive point source load reduction requirements to offset a failure to limit NPS loads without just compensation to the point sources.

**Response:** *See response to Comment 94.*

97. Fromer: The current approach for nitrogen reduction from Publicly Owned Treatment works (POTW) continues the past DEP philosophy that “the solution to pollution is dilution.” The POTW’s will merely shift the nitrogen loading from the water to the air with greater dispersal, but the total multi-media nitrogen loading remains unchanged. The better solution is to examine all known causes of nitrogen loading and to consider alternatives based on source reduction or relocation of discharge points. So, for example, the Load Allocation (LA) for non-point sources of pollution should give serious consideration to a phased-in ban on pesticides, herbicides and inorganic nitrogen fertilizers, except where essential. Another alternative is Integrated Pest Management for agricultural purposes instead the heavy reliance on pesticides and herbicides. Increased education and awareness of the adverse effects from organic pest controls and lawn care chemicals. Promulgation of a zoning statute which limits lawn areas during the site plan approval process and which requires and which requires at least 50 percent of the remaining landscape to be non-lawn naturalistic or forested landscaping. Such approval process would require detailed landscaping plans and incorporate as conditions of approval a one-night training session to educate the prospective property owner and a deeded restriction on the use of pesticides, etc. Another alternative would require the relocation of all outfall pipes, where feasible and prudent, to not hot zones of the ocean.

**Response:** *This TMDL does not address toxic chemicals. See response to Comment 94. Also, many of the BMPs proposed in the comments are promoted through ongoing state programs and are briefly outlined in the LA Reasonable Assurances section of the TMDL.*

98. MDC: Along the Long Island Sound shore there are numerous homes with failed septic systems which are leaching nitrogen to the Sound. DEP has had orders against the towns where these septic systems

exist for years. Understanding that there are political ramifications, scientifically and financially wouldn't it make sense to aggressively address (correct) the failed septic system situation? If a new wastewater treatment facility must be built in a community where septic systems can no longer adequately address the wastewater from the community, credits will have to be purchased. This will further increase the cost of that new facility. On page 21 of the draft TMDL document is a discussion on the 10 percent reduction in the total nonpoint source load. What if the 10 percent is not met? Will the point sources be expected to make up the difference? Is a description of the "aggressive nonpoint source control program" available? Is the program outlined on page 25 of the draft document? Included on page 25 as one item to "control coastal nonpoint pollution" is "improve the monitoring and tracking of septic system performance in areas close to coastal waters;". How will monitoring and tracking of septic system performance control pollution? DEP is aware of septic systems, which have failed years ago, and little has been done to remedy these situations, therefore it is doubtful if monitoring and tracking will control pollution.

**Response:** *The issue of correcting septic systems through sewer system expansions is not specifically addressed in the TMDL. However, the CTDEP WLA Public Process has discussed this issue (See "Response to Public Comments on the WLA). State permitting and regulatory programs appropriately handle these issues. If the 10% LA is not met, or appears in danger of not being met, alternative strategies will have to be developed and will likely be proposed in five-year TMDL reassessments and revisions. The basics of the LA approach are outlined in the TMDL LA Reasonable Assurances Section. Monitoring and tracking methods are proposed in the Connecticut Coastal Nonpoint Pollution Control Program, available from CTDEP's Office of Long Island Sound Programs.*

99. Norwalk: The issue of determining the effectiveness of non-point reduction strategies is not given sufficient attention in the document. Even though there is scant data at this subject the state should commit to a timetable to acquire the data and generate nitrogen reduction criteria for storm water runoff. Measurement and verification of non-point nitrogen reductions is going to be difficult to accomplish.

**Response:** *It would be impossible to fully detail a nonpoint source program in the TMDL. Instead, as presented in the LA Reasonable Assurances Section of the TMDL, CT and NY plan to rely on ongoing programs to attain the proposed reduction. As noted in the response to Comment 98, there will be opportunities to revise and strengthen our approaches during the five-year reassessments written into the TMDL.*

100. Save the Sound: On page twenty-one (21), it is explained that the goal for non-point source pollution reduction is 10%. Save the Sound would like to see the baseline data which will measure the additional 10% reduction, and also the technology used incorporated into the TMDL. We should be sure that there is a way to accurately evaluate the reduction of what tends to be an elusive source of pollution.

**Response:** *Earlier responses address this concern. The best explanation of how the reductions will be measured is through the monitoring plan incorporated into the Coastal Nonpoint Pollution Control Program, as indicated in the response to Comment 98. There is no question that nonpoint source monitoring and control are difficult and elusive, and even the plan proposed for the Coastal Nonpoint program cannot guarantee an "accurate" assessment of nonpoint status and trends. We are forced to work within the limits of practicality.*

101. Save the Sound: Non-point pollution, also known as runoff, is a major source of water pollution in the Sound. In 1995, over 190,000 acres of shellfishing beds were closed in Connecticut. Polluted runoff contributed to 96% of these closures according to the National Oceanic and Atmospheric Administration (NOAA). Similarly, in New York 93,000 acres of shellfishing beds were closed, and NOAA estimates that these were 100% due to polluted runoff. With this kind of impact, polluted runoff should be reduced more than 10%.

**Response:** *The TMDL does not address pathogen contamination, but Save the Sound's point is probably to show the importance of nonpoint sources. However, for nitrogen, the nonpoint source enrichment contribution is much less than 10% of the total nitrogen load to LIS. But that statistic did not drive CT and NY's LA target of 10% from urban and agricultural runoff. As noted in the Summary Response and the response to Comment 94, the available technology and cost considerations were prominent in setting the target, which is an ambitious one by all measures.*

102. Soundkeeper: (p. 24) The LA Assurance for in-basin sources depends upon implementation of existing programs. There is no evidence or documentation that existing programs have yielded any measurable reductions in nitrogen loads. According to the TMDL, implementation activities will be tracked using existing ambient monitoring networks for in-harbor areas and open waters, and that enforceable mechanisms are already in place through CZMA Sec 6217 programs and nonpoint management plans. There is no evidence or documentation presented in the TMDL that enforcement mechanisms have been implemented through existing programs, and there is no mechanism described in the TMDL that describes when they will be implemented.

**Response:** *Soundkeeper is referred to CTDEP's Coastal Nonpoint Pollution Control Program documentation, which is briefly summarized along with other relevant programs in the TMDL's LA Reasonable Assurances section. It would have made the TMDL too unwieldy to include the hundreds of pages used to define the CNPCP, available from CTDEP's Office of Long Island Sound Programs. The LA implementation schedule will be driven by the CNPCP and is also constrained to the 15-year Phase III time frame.*

103. Stamford: The document needs to explain why municipalities are required to remove more nitrogen than what the point sources dictate. How do the non-point sources influence total nitrogen into the Sound and what is the magnitude of those sources. Furthermore, measurement of non-point nitrogen reductions is going to be difficult to accomplish. The document needs to define in detail how this will be done; what are the criteria, what is the timetable, etc.

**Response:** *The TMDL describes the relative magnitudes of point and nonpoint sources in great detail. The Summary Response and responses to many of the preceding comments describe CT and NY's position on this issue. As noted, the details of nonpoint source control are presented in other plans, such as CTDEP's Coastal Nonpoint Pollution Control Program, as well as available monitoring and tracking options. It would have been impractical to provide that level of detail in the TMDL, so the LA Reasonable Assurances section refers to those programs instead. The timetable is according to those programs, but will be within the 15-year timeframe established for Phase III implementation in the TMDL, unless revised during one of the five-year reassessments.*

104. Torrington: Why are non-point sources not being addressed more aggressively? Non-point source nitrogen loading accounts for approximately 29% of the total load. This is a significant contribution. Why a target of only a 10% reduction in NPS load contribution.

**Response:** *As noted in the Summary Response and throughout this section, the proposed LA is aggressive, given the efficiency of BMPs and the relatively high cost to implement them compared to point source controls. The portion of the nonpoint source load subject to management (i.e., that not coming from forested areas or what would have been there naturally), is much less than 10% of the total nitrogen load from CT and NY sources (it's about 5% when pre-Colonial and atmospheric sources are discounted).*

## XVIII. Atmospheric Deposition

### **Summary Response:**

105. Norwalk: Projected anticipated reduction of NO<sub>x</sub> over the 15-year program should be quantified even as a conservative guess in order to demonstrate that all approaches to “anthropogenic nitrogen” reduction are being taken into account (page 35).

**Response:** *NO<sub>x</sub> reductions presently planned under the Clean Air Act have been quantified and presented in the TMDL. The anticipated reduction is about 1,524 tons of nitrogen, basinwide. However, in the revised TMDL, CT and NY are recommending EPA investigate and coordinate additional reductions from atmospheric sources, since it is such an important contributor of nitrogen to LIS.*

## XIX. Combined Sewer Overflows

**Summary Response:** *In the revised TMDL, NYC CSOs have been changed to the point source category as required by EPA. For CT CSOs, data were not available to estimate the nitrogen contribution, so nitrogen loads were accounted for by splitting estimates between the relevant treatment plant and a stormwater/nonpoint source estimate.*

106. Norwalk: On page 25 you state that Norwalk is to undertake a CSO abatement project. Since Norwalk is the only plant to provide primary treatment to storm water (one of E.P.A.’s 9 point strategies) and the designation of Norwalk’s only “CSO” is purely technical, please let me know what you have in mind.

**Response:** *Nothing beyond what is already planned, underway or implemented. The TMDL adds no CSO abatement activities peculiar to the Phase III effort.*

107. Norwalk: The document should explanation how CSO’s might be considered non-point sources of nitrogen. According to the CWA’s own definitions a “treatment facility” includes a “conduit” making all combined sewers subject to the requirements of Act. This would appear to include CSO’s as point sources.

**Response:** *The EPA advised CT and NY to include CSO estimates in the point source category, to the extent that it was possible. For NYC CSOs, the data were available and, in the final TMDL, the distinction is made. In CT, there were no estimates of CSO nitrogen loads so, as is explained in the TMDL, a division of estimated CSO loads was made between treatment plant loads and stormwater runoff.*

108. Soundkeeper: The combined sewer overflow (CSO) loads for Zones 8 and 9 in Table 1 (p. 11) and Table 6 (p. 22) are listed in the nonpoint load (LA) column. The characterization of CSO loads as nonpoint sources of nitrogen is illegal under the Clean Water Act. Federal rules state that TMDLs are “[t]he sum of individual WLAs [wasteload allocations] for point sources and Las [load allocations] for nonpoint sources and background.” 40 CFR Sec 130.2(i). CSOs are point sources as stated in footnote c of Table 6. Furthermore, they are discreet conveyances and therefore fit within the definition of “point source” in the Clean Water Act. See 33 USC Sec 1362(14). The CSO load should be incorporated into the point source load, and the WLA should be recalculated to reflect the adjustment.

**Response:** *See Summary Response and response to Comment 107.*

## XX. Dissolved Oxygen standard

**Summary Response:** *Many comments were submitted with respect to potential changes in the states’ DO standards. Unfortunately, suggested “interim” targets and content of the draft EPA Marine DO Criteria document have no status in developing a TMDL. CT and NY were required by law to develop the TMDL to meet existing state WQS, meaning 6 mg/l in CT and 5 mg/l in NY. All discussions and projections about*

*future DO standards are academic. The TMDL did, however, acknowledge the probability of revised DO standards, which could be addressed, and the TMDL revised, during the first five-year reassessment, if appropriate.*

109.CCM: The levels of dissolved oxygen proposed for New York (not less than 5 mg/l) are more easily attainable than those being proposed for Connecticut (not less than 6.0 mg/l). The levels for our state should match that of our neighbor. This will ensure a consistent level of environmental protection, and have a major impact on the cost of required treatment plant upgrades in this state - an important consideration in getting the projects to happen. *At a minimum, the TMDL proposal should reflect this change.* Moreover, DEP should examine other scientific approaches in establishing TMDLs in an effort to find ways to protect water quality while avoiding unnecessary costs.

***Response:*** *A uniform DO standard for the two states makes good scientific sense, since the same fish populations are being protected. However, the premise that CT's nitrogen only impacts CT waters and that the Sound could be managed for each state's jurisdictional waters within that state alone is false. The joint CT-NY TMDL is the only way to effectively manage a shared resource as the impacts on each state's waters cross-jurisdictional lines.*

110.CFE: The Draft TMDL uses criteria for dissolved oxygen developed from research conducted on freshwater organisms. Draft TMDL, at 6. Once the EPA Marine Dissolved Oxygen Criteria is established, there must be a commitment to re-opening the TMDL process. While the Draft TMDL does include provisions and schedules for a revised TMDL analysis, CFE would like to emphasize the mandatory nature of a commitment to TMDL re-evaluation. For instance, the TMDL may need to be reformulated in light of new protection limits which may be revealed in the EPA study. Connecticut has a non-discretionary duty to review and revise water quality standards on a regular basis. "The State *shall* from time to time, but at least once every three years, hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards." 40 CFR 131.20 (emphasis added). Furthermore, the FACA report highlights the importance of re-evaluation and revision where there are uncertain and complex circumstances, such as we have with the Long Island Sound. "TMDLs for which a high degree of quantitative analytical rigor is not possible in target identification and/or load allocation should contain relatively more rigor or detail in their implementation plans, including provisions for follow-up evaluation and potential revision based on the evaluation. FACA Report, at ii. In short, the TMDL must commit to a re-opening to reconsider the marine dissolved oxygen water quality standard once the EPA marine dissolved oxygen criteria is finalized.

***Response:*** *CT and NY believe that such a commitment is incorporated into the TMDL and agree that a revision of state DO standards is a top priority in the next few years. Both states have already begun the process of revising the DO standards.*

111.CWPAA: The model is based upon water quality standards (WQS) that are acknowledged to be outdated and unachievable. Existing WQS are clearly misapplied as they are chronic, not acute, water quality criteria (Connecticut/New York used "never less than" language to imply that the existing criteria were intended to protect short-term exceedances). This interpretation is inconsistent with prior WQS application and EPA science (both fresh and salt water) which unquestionably confirmed that a much longer averaging period (thirty days) applied to DO criteria in the 5-6 mg/l range. Application of proper DO criteria would probably show only minor load reduction required for Connecticut waters and would likely have produced a different load reduction scenario to meet objectives in the western LIS. Connecticut waters just miss achieving 3.5 mg/l acute DO criteria - minor reductions in area of low DO should be sufficient to address WQS compliance. (Possibly additional carbon reduction would be sufficient.) The TMDL also applies criteria on a very extreme return frequency by using unusual hydrologic conditions from 1988-89 (likely a once in 10-20 year event). This does not appear reasonable (EPA recommends that a once in three year exceedance is highly protective"). The TMDL should have shown results of less restrictive hydrologic conditions and estimated the return frequency of the events so that the appropriate design condition could be selected. Also, the TMDL admits that

revised criteria "will affect the TMDL" and would provide a "firmer scientific basis" for action. Therefore, use of outdated criteria is clearly inappropriate.

**Response:** As shown in the TMDL, Phase III nitrogen reductions in CT and NY would only attain about 3.0 mg/l in the most impacted region of LIS. The joint TMDL, as is proper, cannot meet existing WQS without a concerted effort by both states to meet a 58.5% reduction plus additional Phase IV and V actions. Should WQS be revised in both states, it is unlikely that the new standards would be met with just the Phase III implementation actions, let alone something less as is suggested by CWPAA. Regardless of which state the lowest oxygen conditions occur, both states have a legal obligation to manage nitrogen and take whatever other actions are deemed appropriate to meet both states' standards. As noted in an earlier section, the three-year criterion does not apply to DO standards. CT and NY are aware that revised criteria will affect the TMDL and that they would presumably be based on better science, but make no judgement as to what the final standards might be - higher or lower or the same.

112.CWPAA: The TMDL acknowledges that the current DO WQS applicable to the waters are outdated and unnecessarily restrictive. Those standards are over three decades old and based on information for fresh (not saline) waters. The TMDL indicates that the affected states plan to review new information published by EPA that is directly applicable to assessing appropriate DO standards for marine waters.

**Response:** If the TMDL states that the current DO WQS is "unnecessarily restrictive," it shouldn't and CT and NY don't believe that it does. CWPAA is welcome to comment on state WQS revision proposals, but the TMDL is required to address existing WQS.

113.CWPAA: The proposed TMDL will not achieve the currently adopted WQS and is directed at achieving a less restrictive target - 3.5 mg/l DO as an hourly minimum. However, the target was not met in response region 2 even with "limits of technology." The TMDL indicates that the update of the DO standards is not likely to significantly affect the "Phase III" load reduction requirements, but no analysis is presented to support that position. The TMDL documents further note that more restrictive requirements (additional carbon and nitrogen load reductions), physical alteration of LIS hydrodynamics, or other measures are required to achieve interim WQS targets. To achieve current WQS, the TMDL modeling demonstrates that all man-created loads would have to be removed from the basin, a seemingly impossible task.

**Response:** The TMDL is not directed at achieving a less restrictive target. By law, it must meet existing WQS. Nowhere does the TMDL establish a "less restrictive target" as suggested by CWPAA. The TMDL does discuss LISS proposals and CCMP interim targets, but neither has status in the TMDL process. See also the Summary Response and responses to similar comments in this section.

114.CWPAA: The program is based on admittedly outdated DO standards that require amendment to reflect realistic and appropriate fishery resource protection goals. Given the magnitude of statewide expenditures associated with the proposed TMDL, failure to use updated requirements is a major flaw in the process.

**Response:** This comment is repetitive of earlier CWPAA comments 111 through 113. Please refer to those comments for a response.

115.CWPAA: Existing DO WQS, if maintained, would require elimination of all man-made point and non-point sources [refers to HydroQual model output graphics]. These standards should be amended as unachievable and unnecessary to maintain resources.

**Response:** CT and NY's TMDL does not plan to meet WQS by nitrogen control alone.

116.CWPAA: The TMDL program, as noted above, will impose severe economic harm on communities and cost hundreds of millions of dollars statewide beyond that projected by DEP. There is a major

flaw in the program that undercuts all of the recommendations: the model is based upon WQS that are acknowledged to be outdated and unachievable (October 1999 TMDL Document @6). Moreover, it is not apparent that the relevant criteria should be applied to infrequent (once in 10-20 year) hydrodynamic occurrences selected for modeling as, for over 15 years, EPA has asserted that meeting water quality objectives (acute and chronic) on a once in three year return interval provides a "high degree of protection." Given the magnitude of expenditures involved it is inconceivable that the TMDL would be based upon outdated and inappropriate criteria and implementation policies. This failure to update the relevant objectives has the greatest impact on Connecticut facilities, as application of current science would likely lead to the conclusion that impairment of Connecticut waters is minor. To the degree activities need to be undertaken, the application of updated criteria would shift the TMDL focus to measures needed to improve DO in New York waters and address localized impairment in Connecticut waters. Therefore, imposing rigorous limits on all Connecticut dischargers under the rubric that such action is needed generally to improve Connecticut waters is simply incorrect. Connecticut is imposing rigorous requirements to improve New York waters and reduce load reduction requirements of New York communities which is equivalent to transferring hundreds of millions in Connecticut taxpayer dollars to New York State. Moreover, if a decision were rendered that the 1988 hydrodynamic conditions were too "extreme" and that protecting water quality for 1989 conditions (once in 5-10 year event) was sufficient to protect fishery resources, the entire complexion of the TMDL would be changed, even for New York waters.

*Response: Nowhere does the TMDL acknowledge that the existing WQS are "outdated and unachievable." It simply states that there is new science that needs to be considered in any revision of the standards that the states might consider. In the event of revised WQS, the TMDL will be revisited and revised accordingly during the five-year reassessment.*

117.CWPAA: [An analysis of the draft EPA DO criteria document was presented]. Knowing that the strict application of the current criteria was unreasonable and inappropriate, the EPA and the affected states recommended that Phase II measures be based upon achievement of a minimum hourly DO of 3.5 mg/l. The TMDL document implies that more restrictive measures are nonetheless necessary and that updating the criteria will not likely change this conclusion (October 1999 TMDL Document @ 34). This position is misplaced from a number of perspectives: 1) Application of proper DO criteria would likely show only minor load reduction is required to improve Connecticut waters and would likely have produced a different load reduction scenario to meet objectives in Western LIS. The LIS TMDL report indicates that Connecticut waters just miss achieving 3.5 mg/l short-term DO criteria in the worst case location in region 5; thus, minor load reductions in areas of low DO should be sufficient to address WQS compliance. Possibly additional carbon reduction would be sufficient. 2) The LIS 3.0 model indicates that additional measures, at least in Connecticut, do not result in any significant change in New York waters; only load removal or hydrodynamic alteration would be sufficient to remedy low DO under the extreme stratification events occurring in 1988. 3) With respect to New York waters, even limits of technology will not produce DO levels better than 3.5 mg/l under the critical conditions modeled. Thus, either complete removal of that discharge or some other measures are necessary to achieve compliance. As discussed in subsequent sections, such actions would all but eliminate the need for the stringent basin-wide load reduction measures proposed in the TMDL under appropriate revised WQS. 4) The TMDL is also applying criteria on an unnecessarily extreme return frequency by using unusual hydrologic conditions from 1988 (likely a once in 20 year event). These conditions were described as "the most severe period of hypoxia on record." Use of this rare hydrologic event to develop the TMDL does not appear reasonable and is more restrictive than historical WQS application procedures that do not consider conditions occurring less frequently than once in 10 years. EPA states that a once in 3 year exceedance is "highly protective." TMDL should have evaluated less restrictive hydrologic conditions and estimated the return frequency of the events so that the appropriate design condition could be selected. 5) Given the rare environmental conditions used to set the TMDL, it is not at all apparent that the revised short-term criteria should be as high as 3.5 mg/l; therefore, the need for and benefits of applying these criteria must be publicly evaluated. It would seem reasonable that a less restrictive criteria would apply to a more extreme stratification event such that some level of impairment of resources would be allowed to occur once in 10-20 years (*i.e.*, under 1988 conditions). For the 1989 conditions, the "no likely impairment" criteria would apply (3.5

mg/l hourly minimum; 5.0 mg/l 30-day average DO). The proposal admits that revised marine DO criteria "will affect the TMDL" and would provide a "firmer scientific basis" for action. Thus, use of outdated criteria is clearly inappropriate. The TMDL process should be halted until a clear indication of the proper standard and exceedance frequency is determined as both of these factors dramatically impact the level of treatment required to protect LIS resources.

**Response:** *CWPAA should recognize that the EPA criteria document is still a draft. Despite the careful analyses provided, the only legal standards are those adopted by the states at the time of TMDL development. CWPAA is encouraged to provide their input to the states at such time as proposals for DO standard revision are being publicly heard. CT and NY cannot revise the TMDL based on speculation on how the legal process for standard adoption may turn out. As noted several times before in earlier comments, the three-year exceedance criterion does not apply to DO. CWPAA arguments, however well formulated and documented, cannot be legally applied to this TMDL.*

118.CWPAA: Update WQS, including appropriate criteria exceedance frequency and reassess TMDL needs based upon those revised objectives.

**Response:** *There are good arguments for updating the WQS and it is anticipated that the states will adopt new standards in the next few years. At that time, within the five-year reassessment schedule written into the TMDL, CT and NY will make appropriate revisions to the TMDL. It is unlikely that any change in WQS will relax targets established for Phase III nitrogen reductions. Exceedance criteria do not apply to DO.*

119.CWPAA: How will any future reduced D.O. targets impact nitrogen reduction needs in the program?

**Response:** *Those evaluations will be made at such time that new DO standards are adopted by CT and NY.*

120.MDC: Connecticut's DO standard for Long Island Sound is 6.0 mg/l. DEP has expressed "that there is some uncertainty as to whether it is technologically feasible, or ecologically beneficial, to achieve the DO water quality standard in all areas of the Sound." From a November 1999 DEP publication: "Long Island Sound Study sponsored research shows that oxygen levels in the 4 to 5 mg/l range may be adequate to protect most aquatic life in Long Island Sound and may be representative of minimum levels experienced during pre-Colonial days." However, the model was run using 6.0 mg/l. Therefore is the nitrogen reduction target of 58.5 percent too high? In the draft document is the following sentence: "In Connecticut, the Class SA waters in Long Island Sound have a protection limit for DO of not less than 6.0 mg/l at any time." The phrase "at any time" implies that this is an acute criterion. As stated above, the 6.0 mg/l standard may not be appropriate. According to the draft document, a chronic value of 5.0 mg/l and an acute value of 3.5 mg/l are supported by scientific research. The water quality criteria should be changed to reflect the research and the TMDL reevaluated based on this information.

**Response:** *The TMDL clearly demonstrates that the existing state DO standards cannot be attained through nitrogen reductions of 58.5% in CT and NY alone. Additional phases of reduction and alternative technologies are proposed, showing that the existing standards can be attained, as is required for a legal TMDL. When CT and NY propose new WQS for DO, discussions on and documentation of appropriate new standards will occur, but speculation on the outcome has no bearing on the TMDL.*

121.Soundkeeper: The draft TMDL states that "the TMDL will be revised upon adoption of revised dissolved oxygen standards by [New York and Connecticut]." See TMDL at p. 38. Anticipated revisions to applicable water quality standards should not be used to justify a phased TMDL approach. The federal criteria for new dissolved oxygen standards have not been adopted, no timeframe has been established for their incorporation into State water quality standards, and there is no reasonable assurance that they will apply to conditions in Long Island Sound.

**Response:** *CT and NY did not develop the TMDL in anticipation of any potential new DO standards. If new standards are adopted they could be higher, lower or the same. As Soundkeeper correctly points out, there are discussions and evaluations of the EPA criteria that must be completed. The TMDL addresses existing standards in the most reasonable manner that CT and NY could devise, starting with an ambitious nitrogen reduction program that was not aimed at any specific DO target except the WQS. When it became apparent that the existing standards could not be attained through nitrogen management in CT and NY alone, more nitrogen reductions from out-of-state sources and alternative technologies had to be proposed to produce a legal TMDL.*

122. Torrington: Why is there a difference between the protection limit for DO in Connecticut and that of New York (CT is 6.0 mg/l and NY is 5.0 mg/l). Is the correct DO criteria being applied in evaluation of the low DO impact on Connecticut waters? Since this is a joint effort should not all affected parties treat to the same level to reach a common goal?

**Response:** *The difference dates back to the legal and public process of adopting WQS for DO by the two states that happened to reflect different science and interpretation of available science between the two states. New EPA criteria are under development, which will be the best available. For now, the law requires CT and NY to develop the TMDL in accordance with existing state standards. Yes, all affected parties should treat to the same level in CT and NY, which is a fundamental principal of the TMDL. CT has proposed each point source discharger reduce its baseline load by 63.5% across the board in CTDEP's recent WLA public process. Percentages vary in NY depending on the proportion of nonpoint source load involved since the total for each jurisdiction must be 58.5%. In the case of NYC, which is 100% point sources – either treatment plants or CSOs – the total reduction is 58.5%.*

## XXI. Alternative technologies

**Summary Response:** *The Phase IV alternative technologies proposal in the TMDL received numerous comments. Some suggested that one or two of the alternative technologies, such as relocating NYC discharges into the Atlantic Ocean, could solve the entire problem. Others felt that alternative technologies could never be implemented, especially the selected approach of aeration and mixing, for a variety of environmental and legal reasons. The final TMDL has revisited the alternative technologies proposal and broadened the list of possible approaches while leaving open the door to other proposals that might bear review in the spirit of "adaptive management." Clearly, there is not one alternative technology that has been thoroughly scrutinized and could be proposed as achievable, implementable and realistic. Before any alternative technologies are applied, a rigorous scientific, economic and public review will be warranted, which is the main point of the revised TMDL. Nevertheless, the alternative technologies, now defined as Phase V, will be a critical component of any program to attain today's WQS for DO. Whether DO standards are revised or not, no final decision can be made on alternative technologies until the Phase III actions are underway and CT and NY have time to assess progress at least in the first five-year review period.*

123. CFE: There are several serious problems with the mixing/aeration scheme included as part of the Draft TMDL. See, Draft TMDL, at 26. First, mixing/aeration may have long term and serious consequences for marine life. Thus, the mixing/aeration technique may thwart the very goals of the Clean Water Act, namely "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water." 33 USC Sec 1251(a)(2). Second, as stated in the Draft TMDL, the mixing/aeration technique may "potentially conflict with other human uses and values of Long Island Sound." Again, potentially in direct conflict with the Act's stated purpose. Draft TMDL, at 27. Third, mixing/aeration, and other non-treatment alternatives like it, may not be appropriately consider at the TMDL development stage. Rather, 40 CFR 125.3, which the Draft relies

upon to support its approach, applies more appropriately to individual dischargers seeking to meet their NPDES permit requirements *after* the TMDL has been established.

**Response:** *CT and NY presented cautionary statements about alternative technology application in the TMDL and recognize additional review and evaluation are needed, as discussed in the Summary Response. If there are legal concerns about phasing or alternative technology proposals, it will be incumbent upon EPA to unearth those concerns in their review and deny adoption of the TMDL and require the states, or provide, appropriate revisions to the TMDL.*

124.CWPAA: Load relocation by New York City would basically meet the entire TN reduction target for the LIS and produce greater than 70% carbon reduction. This would eliminate the need for restrictive TN limits in Connecticut (except for localized problems). This can be accomplished by relocation of major WPCF outfalls. The Federal Government should propose and fund relocation of point source loads from critical management zones.

**Response:** *CT and NY have proposed a TMDL that first looks at pollutant treatment options, as is appropriate, and then proposes alternatives to attain the WQS that the Phase III actions cannot achieve, as is appropriate. As noted in the Summary Response, alternative technologies are proposed, but need further evaluation and their appropriateness will be decided during future reassessments and revisions of the TMDL. As such, actions beyond Phase III are proposed for following phases to allow for needed assessment.*

125.Save the Sound: Page twenty-seven (27) begins the discussion of “non-treatment alternatives”. The author writes that “[m]ixing/aeration has been applied to other waterbodies”. A closer examination of the other waterbodies which have used mixing in the authors footnote, indicates that these waterbodies were significantly smaller than the Sound. Indeed, these waterbodies referred to in the footnote were small areas near coastal marinas, not estuaries which, in Long Island Sound’s case, is 110 miles in length and 15 miles in width. Save the Sound has significant doubts as to the effectiveness of aeration as a last step when treatment fails to reduce nitrogen to acceptable levels. Something which has not been proven to work, should not become part of the TMDL plan and implementation.

**Response:** *As noted in the Summary Response, the alternative technologies are not fully developed and CT and NY have revised their recommendations in the final TMDL. The alternative technologies could undoubtedly be technically implemented, but evaluations of environmental effects, cost and other practicalities may negate their utility. The TMDL schedules appropriate review before any plans are finalized with respect to alternative technologies.*

126.Soundkeeper: The proposed TMDL for Long Island Sound relies upon the anticipated reduction of the dissolved oxygen standard and mixing/aeration, which is an implausible treatment alternative. Anticipated revisions to water quality standards and reliance upon implausible nitrogen alternatives do not constitute margins of safety or procedures to collect additional data in order to justify a phased TMDL approach.

**Response:** *The TMDL does not rely on an anticipated reduction of the DO standard as noted in earlier Section XX and elsewhere in this public response document. CT and NY will rely on EPA’s legal review of the TMDL to determine adequacy of margin of safety, phasing and alternative technologies.*

127.Soundkeeper: Mixing/aeration of Long Island Sound is used in the TMDL as a treatment alternative to fill the gap between inadequate nitrogen control measures and attainment of water quality standards. Mixing/aeration is not a nitrogen control measure. Mixing/aeration would treat sewage after it leaves the pipe in order to meet standards. The Clean Water Act requires treatment of sewage before it leaves the pipe. Mixing/aeration is not feasible as a nitrogen control action nor for raising dissolved oxygen levels in Long Island Sound. According to the TMDL, “[M]ixing/aeration has been applied to other waterbodies and has therefore been considered in this TMDL for attaining water quality standards. See TMDL at p. 27. The author of the reference stated that he doubts his operation is feasible in an area as

large as Long Island Sound. See letter dated January 4, 2000 from Dewayne Hollin, attached. [Letter available in hard copy.] The TMDL has entirely failed to consider an important aspect of the mixing/aeration alternative. Disruption of stratification, which is the stated purpose of mixing/aeration (TMDL at p. 27), may have long-term and destructive consequences for marine habitat in the Sound. The impacts of forced destratification of the water column on other water quality criteria and designated uses have not been considered or evaluated. Inclusion of aeration as an alternative to nitrogen treatment technologies is inappropriate for this TMDL. Approval of the TMDL with mixing/aeration as a treatment alternative is a major federal action that will have a negative impact on the environment. It will trigger the NEPA requirement for an environmental impact statement for the mixing/aeration alternative. Thus an EIS would be required before USEPA approval of the TMDL. See 42 USC Sec 4332(2)(C).

***Response:** As noted above, CT and NY have softened reliance on the mixing/aeration strategy for many of the reasons presented by Soundkeeper. However, it is clear that there is no nitrogen treatment alternative that can attain existing WQS and alternative technologies will be required under the existing standard and management scenario. If alternative technologies proceed, there will full public and scientific scrutiny as to applicability and ramifications before any action can be taken, as required by law.*

## XXII. Margin of Safety

***Summary Response:** Establishing a nitrogen treatment margin of safety presented a dilemma to CT and NY as it would require not only treatment beyond the limit of technology throughout the basin, but would likely require returning nitrogen loading conditions back to pre-Colonial levels. This is clearly not practicable or affordable. As a result, the TMDL tries to demonstrate that a margin of safety is incorporated in two ways. First, by addressing the worst hypoxia period on record to describe baseline conditions, average and better than average years would have an inherent margin of safety. Second, to demonstrate that existing WQS could be attained, the alternative technologies could be applied to the degree that the standards are met, plus a little beyond to provide a margin of safety. The example is mixing/aeration, which could be intensified not only to meet standards but also to exceed standards, if desired.*

128.CFE: The Margin of Safety (MOS) is an important and necessary component of the TMDL. The function of the MOS is to "account for the uncertainty about the relationship between the pollutant load and the quality of the receiving water body." Draft TMDL, glossary, p. 42. In essence, the MOS represents the room for error inherent in the gap between the theoretical underpinning of TMDL calculations and the realities of the marine environment. Regardless of how sophisticated the modeling techniques may be, they cannot account for the myriad possible conditions of any marine ecosystem. In order to protect marine life and the safety of human recreation, the MOS must represent a buffer between scientific modeling and nature itself. In addition, the MOS should be based upon distinct, discrete, and explicit scientific and mathematical calculations. In light of this, we propose several revisions to the Draft TMDL MOS. First, the proposed TMDL uses an implicit MOS based on "conservative assumptions in the analysis such as the use of the 1988-89 worst case scenario as the base condition and safety factors in the calculation of aeration levels." Draft TMDL, at 28. We are concerned that this version of an MOS does not leave the necessary room for error that an MOS is intended to represent. The Draft TMDL MOS attempts to achieve a margin for error by relying on modeling data from a particularly severe eighteen month period. We propose that the MOS should provide a buffer *in addition to* the modeling calculations based upon a particularly severe period. Since there is only a limited data set from which we can ascertain the most severe year, the TMDL should include a margin of safety which sets the standard even higher. As it stands, this TMDL includes an MOS for *average years* only; there is no MOS for another severe year. Second, the MOS should be *explicitly* stated. The MOS should be based on a "mathematical or scientific calculation" which incorporates the statutory requirement for "*any* lack of knowledge concerning the relationship between effluent limitations and water quality." NRDC v. Fox, 30 F.Supp.2d 369(1988), 33 USC Sec

1313(d)(1)(C) (emphasis added). There is no record in this Draft TMDL of a mathematical or scientific calculation which explains, for instance, how severe the 1988-1989 worst case scenario is in comparison to an average year. Thus, it is impossible to assess the size of the MOS or its adequacy given the numerous uncertainties involved. Finally, the Draft attributes some uncalculated portion of the MOS to the "calculation of aeration levels necessary to disrupt stratification." Draft TMDL, at 28. There are potentially serious problems with the mixing/aeration proposal which will be discussed in Part E of these comments [under questions on alternative technologies].

***Response:** While the CFE comment is legally articulate, it fails to note that there are inadequate opportunities to remove additional nitrogen to create a margin of safety in the traditional sense. Without the flexibility of phasing and alternative technologies, if approved by EPA, a legal TMDL could not be written and CT and NY would be placed in a position of developing a use attainability analysis for LIS and possibly compromising hopes of attaining the DO standards. CT and NY prefer to be optimistic about achieving a healthy LIS over the next 15-year, although some modifications in the TMDL are likely during the reassessments.*

129.MDC: The nitrogen "reductions were calculated based on worst hypoxia years on record to provide a MOS" [margin of safety]. The unusual hydrologic conditions which occurred in 1988 and 1989 were rare, likely once in every ten years or so. The EPA recommends that significant hydrologic conditions occurring once in three years are sufficient. Therefore is the proposed MOS excessive?

***Response:** As noted in other sections, the three-year criterion applies to toxic contaminants rather than to DO.*

130.Soundkeeper: (pp. 28 and 15 bottom) The TMDL is deficient with regard to the margin of safety in two areas: One element incorporated in the conservation assumptions for the MOS was "safety factors" in the calculation of aeration levels necessary to disrupt stratification. See TMDL at p. 28. There is no description of the specific safety factors in the TMDL document except for a reference to a memo written by Aslam Mirza concerning aeration and its objective of disrupting stratification. A detailed description of the safety factors should be provided. Another conservative assumption is the calibration of the LIS 3.0 model to base conditions in the 1988-89 time period. Only one of the specific physical conditions that were incorporated into the model (degree of stratification in the water column) is described. The TMDL states (p. 15) that the level of nitrogen reduction identified is conservative and therefore provides a margin of safety that is designed for average years. There is no way to determine the difference between the nitrogen reductions identified and the point where water quality standards will be met. The specific conditions that existed during the 1988-89 time period used to establish the MOS should be as descriptive and well documented in the TMDL as a numeric load. Stating that "The level of nitrogen reduction identified is conservative" (p. 15) is insufficient explanation to determine if the MOS accounts for any lack of knowledge between effluent limitations and water quality. For example, the TMDL does not adequately describe what we do know about the relationship between effluent limitations and water quality. It is known that the quantity of nitrogen discharged from point sources during the 1988-1989 period is several thousand pounds per day less than the amount of nitrogen discharged during the 1993-1995 discharge monitoring period. The TMDL states, parenthetically, that the nitrogen loading scenario for the 1988 conditions includes increases in nitrogen loads from New York City plants as a result of the ocean dumping ban. See TMDL at p. 16. This increased load varies from 8,000 pounds per day to 25,000 pounds per day depending on which monitoring report is consulted. The TMDL should cite the document or nitrogen discharge monitoring reports and time periods used to calibrate the water quality model for 1988 conditions. The water quality model should be recalibrated to reflect nitrogen loads represented in daily monitoring reports for the period used to establish the baseline load. The MOS is supposedly calibrated to the environmental conditions that existed during the summer of 1988. This is the worst condition to occur in the last 10 years. The MOS should include an additional nitrogen load reduction to account for worse case conditions over a longer period. It is also unclear which phases of the TMDL the MOS was applied.

**Response:** The response to comment 128 tries to address this concern. CT and NY have tried to present the best prospective approach to meeting existing WQS standards, considering that more favorable than a use attainability analysis. The NYC loading concerns should be addressed in the NYSDEC "Response to Public Comments on the TMDL." The bottom line is that there are slim opportunities for further reducing the nitrogen loads in CT and NY, although the revised TMDL strengthens the requirements for EPA to evaluate and initiate out-of-basin actions. However, even with more aggressive out-of-basin actions, the state DO standards cannot be met through nitrogen management alone.

### XXIII. Seasonal variation

**Summary Response:** Seasonal variation concerns in the LIS TMDL mainly refer to the relationship between loading and oxygen effect in the Sound. Seasonal management does not appear to be an effective strategy in the Sound as annual loading of nitrogen contributes to each year's pool of nitrogen that creates the organic carbon oxygen sink. Hence, the TMDL is developed around an annual load and, according to the modeling results, reductions can be unequally distributed throughout the year.

131.CFE: The Draft TMDL appears to combine the concepts of seasonal variation and margin of safety. See, Draft TMDL, at 28-29. An allowance for seasonal variation in the TMDL should be included as a calculation separate and apart from the MOS calculation. See, 33 USC Sec 1313(d)(1)(C). The Draft TMDL represents a maximum annual load, rather than a maximum daily load, and it is based on a modeling time-frame that spans an eighteen month period. Reliance upon the severe 1988-1989 time-span is the same factor the TMDL relies upon to account for its alleged margin of safety. The Draft claims "this TMDL is based on the critical condition in Long Island Sound on both seasonal and inter annual scales." Draft TMDL, at 29. It appears to us that, instead, the TMDL should be based on data from the season in which hypoxia generally occurs in the Long Island Sound, from June to September. Only then will the TMDL truly represent an allowance for the critical seasonal variation component.

**Response:** It is unclear what CFE is trying to refer to here. The margin of safety and seasonal variation are separate issues and treated as such in the TMDL. The Summary Response may help clarify CT and NY's position on seasonal variation and its relevance to the TMDL.

132.Soundkeeper: (pp. 28-29) The requirement to account for seasonal variations in pollutant loading appears to be adequately addressed in the TMDL.

**Response:** Thank you.

### XXIV. Public involvement and process

**Summary Response:** The TMDL was built upon a strong foundation of public interest and comment, both through activities of the LISS, CT, NY and the public process for the TMDL. CT and NY believes they have not only met EPA requirements for a public process but have provided ample opportunity for public input, which has greatly enhanced the outcome of the TMDL.

133.MDC: Our understanding is that DEP does not have any outreach program planned to assist the cities and towns of Connecticut. All Mayors, Selectmen, Town Managers, etc. should be made aware of the impact of this program. Per 40 CFR 103.7(a), "The process for identifying water quality limited segments still requiring wasteload allocations, ...; and involving the public, affected dischargers, designated areawide agencies, and local governments in this process shall be clearly described in the State Continuing Planning Process (CPP)." What is included in the CPP to involve local governments in this process? Has this been done?

**Response:** CT's CPP has not been specifically used for this process or in recent years. Instead, CT and NY have both endeavored to provide appropriate planning information to EPA and other interested parties through the LISS Management Conference, the Performance Partnership granting process with EPA, and the many outreach and public informational efforts conducted by the LISS and the states of CT and NY. In particular, the CWA Section 303 process sets specific legal requirements for listing impaired waters and developing appropriate responses and plans in the form of TMDLs. Further, CTDEP has completed a full process for a WLA.

134. Norwalk: Will the process that allocates the individual zone and municipal loadings (WLA's/LA's) be a public process with appropriate opportunity for comment and input? What is the schedule? (page 33).

**Response:** Yes for CT. The public WLA process has been completed. NY has met its WLA commitment through the TMDL process.

135. Soundkeeper: The TMDL calculations process is not in compliance with public involvement procedures. Soundkeeper wholly concurs with the discussion below on TMDL calculations and compliance with regulations for the State's Continuing Planning Process (CPP) submitted by the plaintiffs of an ongoing TMDL case in New York. See "Memorandum of Law in Support of Plaintiffs' Motion for Summary Judgment, or, in the Alternative, for Final Judgment", March 17, 1999; NRDC [et.al.] v. Fox [et.al.], 94 CIV 8424 (PKL) at pp. 19-21. "EPA regulations mandate that states develop a specific process for implementing the Sec 303(d) program and require that such process be spelled out in public documents. Specifically, the regulations direct that a state's process for implementing the Sec 303(d) scheme -- including, among other things, the process for identification of impaired and threatened waterbodies, for prioritizing those waterbodies for TMDL development and for TMDL development itself -- shall be clearly described in the State Continuing Planning Process (CPP)." 40 CFR Sec 130.7(a). See also 40 CFR Sec 130.5(b)(3). The CPP is a publicly available document approved by EPA, that states must prepare under Sec 303(e) of the Clean Water Act to describe how the states will implement various water quality programs. 33 USC 1313(e); 40 CFR Sec 130.5. The purpose of this CPP is to "establish a continuing overview process whereby the states would monitor and control water quality standards." City of New Haven v. Train, 424 F. Supp. 648, 651 (D. Conn. 1976)(Newman, J.); see also Environmental Defense Fund v. Costle, 657 F.2d 275, 296 (D.C. Cir. 1981)(noting that CPPs, which must be consistent with Clean Water Act requirements, "establish strategies for the development of [state] water quality management plans."). New York State's most recent CPP document that has been approved by EPA was completed in 1985. JA at 1645, 4906. The State's 1985 CCP does not "clearly describe" the procedures for implementing TMDLs in the State as required in 40 CFR Sec 130.7(a). It does not describe any process for establishing TMDLs for Long Island Sound and other waterbodies identified as impaired, including how these TMDLs will be calculated. It does not describe any process for public review of proposed TMDLs, nor does it describe any process for submitting waterbody lists, priority rankings or final TMDLs to EPA for approval or disapproval. JA at 1645-1677AAA. Thus, the proposed TMDL was developed in the absence of a Sec 303(d) process having been publicly described in the State's CPP. The Clean Water Act and EPA regulations spell out an important role for the public in the development and implementation of water quality protection programs. 33 USC Sec 1251(e); 40 CFR Part 25. The Clean Water Act states the Congressional intent that "[p]ublic participation in the development, revision and enforcement of any regulation, standard, effluent limitation, plan or program established by the Administrator [of EPA] or any State under [the Act] shall be provided for, encouraged, and assisted by the Administrator and the States." 33 USC Sec 1251 (e). With respect to the Sec 303(d) scheme, EPA regulations specify, among other things, that "[c]alculations to establish TMDLs shall be subject to public review as defined in the State CPP." 40 CFR 130.7(c)(1)(ii). An EPA guidance document further specifies that in the development of TMDLs, states "should issue a public notice offering an opportunity for a public hearing pertinent to the TMDL under review." EPA, "Guidance for Water Quality-Based Decisions: The TMDL Process" (April 1991) at 31; AR at 615."

**Response:** See response to Comment 133.

136.Stamford: Will the wasteload allocation and load allocation be a public process? When and how will these be established? That was not clear.

*Response: Yes. See response to Comment 134.*

## XXV. Effects on Living Marine Resources

*Summary Response: While the health of the living marine resources of LIS is at the heart of the rationale for meeting DO standards in LIS, the TMDL is specific to the legal requirement under Section 303(d) of the CWA of meeting adopted WQS. In this case, the measurable goals of the plan are to attain existing WQS in CT and NY and progress will be charted as DO improvements in LIS.*

137.CCA CT: CCA CT limits its comments to noting the importance of the Atlantic menhaden in combating hypoxia in eutrophic estuarine environments such as Long Island Sound, and urging CDEP to incorporate in its implementation of the Long Island Sound Plan (the "Plan") measures designed to minimize menhaden mortality. [Brief life history of the menhaden and chronology of LIS actions presented]. Failing to minimize menhaden mortality in Long Island Sound may have the effect of enhancing the occurrence of hypoxia. As indicated above, menhaden are vegetarian filter feeders and prodigious consumers of phytoplankton and plant detritus to filter up to a million gallons of water every 180 days. Studies in this emerging area of scientific inquiry indicate that menhaden consume a significant percentage of the phytoplankton and plant detritus produced in estuarine environments. Furthermore, in a recent assessment of the Atlantic menhaden stock, a scientific peer review panel repeatedly characterized the ecological role of menhaden in maintaining estuarine water quality through the consumption of phytoplankton, as "critical", and stated that "[e]vidence in the literature and new data presented to the Panel strongly support the important role of Atlantic menhaden in...ecosystem phytoplankton and nutrient dynamics..." If, however, menhaden seemingly act as a natural barrier to hypoxia by removing, to some significant extent, the plant blooms that result from nitrogen overloading, it would be irresponsible to permit large-scale menhaden harvests from Long Island Sound least this promote hypoxia, and undermine Connecticut's efforts to eliminate this problem. The mere possibility that industrial purse seining for menhaden contributes to the hypoxia problem and negates, to some significant extent, Connecticut's efforts and expenditures towards its elimination, demonstrates the need to continue the Moratorium. At the very least, menhaden mortality in Long Island Sound must be minimized until studies have been conducted precisely quantifying the impact of menhaden on retarding eutrophication, hypoxia and other related ecological problems.

*Response: The LIS 3.0 model does not account for the potential DO benefits of an active population of fish species, as suggested by CCA CT. The CCA CT proposal could be considered for its relevance as an alternative technology, if adequately researched and detailed, as part of the five-year reassessment process. While menhaden would accumulate nutrients and carbon as CCA CT postulates, the waste products and respiration of the organisms would also have to be considered, as well as the final disposition of the biomass. If the carbon and nutrients, through menhaden waste products, mortality, and after cycling through predator species, ultimately stays in LIS, large menhaden stocks may not have much effect on hypoxia once in equilibrium. However, if the biomass migrates out of LIS or is harvested, carbon and nutrients would be effectively removed from the system.*

138.Soundkeeper: The anticipated designated use benefits of nitrogen reductions from point sources are not documented, cited, nor adequately described in the TMDL. The percentage improvements in survival rates of larvae, juvenile, or adult populations are not referenced to a baseline or biological target population for each species mentioned. Effects on lobster abundance do not account for in situ larval survival.

**Response:** While these aspects of response or effect are essential to criteria development and application, the TMDL presumes the adopted WQS are protective of resident organisms. The TMDL cannot argue for relaxed or revised standards, which is part of another legal process.

## XXVI. Effects on Economic Development and Growth

**Summary Response:** In developing the LIS TMDL, CT and NY tried to strike a balance between an aggressive Phase III nitrogen reduction program and economic considerations. The end result was a nitrogen reduction plan that is aggressive but still allows ample room for growth over the next 15 years.

139.CWPAA: The proposal will inflict major economic harm on growing communities as arbitrarily established load reductions are frozen at a specific level associated with flows occurring in 1990. Any increase in flow must be accompanied by a reduction in concentration. Limits of technology or growth moratorium are certain to be required to maintain the TMDL load caps for many small communities.

**Response:** The reduction plan, as described in the TMDL and in this public response document, is anything but arbitrary. It's built upon a strong scientific and technical foundation and economic evaluations show it to be affordable. As described in the CTDEP's "Response to Public Comment on the WLA," the Phase III nitrogen reduction plan leaves room for growth and is far from a moratorium.

140.CWPAA: More restrictive load reduction requirements [forced on eastern management zones] will force a growth moratorium because additional point source load reductions will be unfeasible. Consequently, through the TMDL process, DEP is transferring the future development capability from the point source, sewer areas to non-point source, unsewered areas that fall outside direct regulation under the TMDL. Assuming the State has the authority to take such action, it must compensate the point sources for the additional costs incurred and the economic harm that accompanies sewer moratoriums.

**Response:** The draft TMDL did require more restrictive reductions for eastern management zones than for some of the other zones. This has been rectified in the revised TMDL. Currently all point sources have an equal reduction requirement in CT, as requested by CWPAA. The state is under no obligation to compensate point sources for actions taken under state and federal legal authorities to regulate sources of pollution to the environment.

141.CWPAA: The uniform reduction requirement was established to avoid imposing "limits of technology" on point sources. Unfortunately, the TMDL load reduction methodology employed will, nonetheless, force such hardships on smaller communities that are growing. The cause of this oversight is simple: the proposal failed to assess the impacts on approved growth scheduled to occur over the TMDL period (15 years or 2000 to 2015). As demonstrated below, by indexing load reductions to 1990 conditions, the strategy will impose more restrictive treatment on any facility that has grown since then, as follows: 1990 - 3.0 MGD - 15 mg TN/l in effluent; 2000 - 3.75 MGD - 4.2 mg TN/l in effluent - 72 % TN load reduction; 2015 - 5.0 MGD - 3.1 mg TN/l in effluent - 79% TN load reduction. This analysis confirms that for growing communities (unlike older established communities in the New York and Western Connecticut areas) Phase III reduction will far exceed the intended "uniform" percent reduction requirements and will exceed limits of technology (estimated to be about 4.0 mg/l). This proposal will place many facilities beyond limits of technology and force a moratorium to be imposed because additional pollution reduction credits will not be available given the stringent state-wide percent removal requirements imposed by the proposed program. Alternative load reduction requirements that do not cause widespread economic harm should have been evaluated, particularly given the admission that the proposed approach was insufficient to achieve intended and existing water quality objectives. Most importantly, the imposition of a rigid load limit on small or remote facilities is misplaced. Regardless of growth, remote communities with a small fraction of their load impacting critical areas are not as important to achieving standards compliance as those with 100% of the load

reaching an area (*i.e.*, built out areas near response region 2). Thus, the analysis grossly misstated the benefit and cost effectiveness derived from management zones 1-4 and those far up in the watershed whose load impact is further attenuated. If the economic analysis had been done properly, increased load reduction would have been required on those with the most impact, as spending resources in outlying zones produces insignificant benefits.

**Response:** *This comment repeats CWPAA Comment 92. Please see the answer to that comment. Further, CWPAA has misconstrued the economic analysis conducted by the LISS and used in the TMDL. The analyses was based on the load reaching the area, i.e., as DO impact from each source, taking into account all attenuation factors. It would be grossly unfair to require a source to treat to a higher level to make up for inaction of other sources. Each CT source is required to treat only to the extent that their **effective** contribution is reduced by 63.5%. This can be done at end of pipe or by trading, which would lower cost for those sources with favorable exchange rates while not shifting their burden to western CT or NY sources unfairly.*

142.CWPAA: The economic impacts of the proposed program on Connecticut facilities has been substantially underestimated and the proposed program is likely to result in imposition of limits of technology or growth moratoriums on many small communities, unrelated to environmental need. The proposed TMDL is not sufficient to meet interim WQS goals in New York waters and therefore more restrictive requirements are clearly necessary from the major facilities impacting that area. Amending requirements for these facilities will alter requirements for Connecticut facilities.

**Response:** *CWPAA has presented no evidence that economic impacts are underestimated or that limits of technology and growth moratoria are being imposed. LISS and state analyses show otherwise. Perhaps CWPAA's misinterpretation of the economic analyses, as evidenced in Comment 142 and elsewhere is the reason for these unsubstantiated statements. The TMDL clearly shows how WQS can be achieved and makes no reference to "interim" WQS goals in NY, which have not been established in the TMDL and are not legitimate goals of the TMDL.*

143.MDC: As DEP is aware, POTWs are built with reserve capacity that is intended for future residential and industrial growth. Implementation of the nitrogen removal program to meet the TMDL will use this reserve capacity and jeopardize future growth in the service area for many of the POTWs in the State. Funding for the nitrogen program should include provisions that preserves reserve capacity that has already been funded.

**Response:** *While the TMDL does not and is not required to address this concern, CTDEP has addressed this and similar issues in the public WLA process recently completed. Please refer to the "Response to Public Comments on the WLA."*

## XXVII. Funding and funding mechanisms

**Summary Response:** *While funding and funding mechanisms are critical to successful implementation of the Phase III actions in the TMDL, and CTDEP and NYSDEC are keenly aware of this need, the TMDL is not the vehicle for resolving these concerns. Nevertheless, CT and NY believe adequate funds and the means for disbursing the funds are available to implement the Phase III requirements over the next 15 years.*

144.CCM: Statutes governing the [Connecticut] Clean Water Fund require the State to provide 20% grants for most treatment projects, 30% grants for nitrogen removal projects, and 50% grants for projects to separate combined sewers (the remainder of the cost is received as a loan at 2% interest). Yet in practice, no grants are available to municipalities for planned increases in capacity. This means municipalities that need to make efforts to expand their own grand lists must either (a) not do so, or (b) absorb the cost of building the excess capacity. This is a built-in impediment to economic development. Beyond that it means that *municipalities that do experience growth in their wastewater*

*flows will have to pay even more to reduce the levels of nitrogen to meet the limits of the proposed TMDLs. Not only that, but if economic growth occurs in municipalities that otherwise would be "sellers" of nitrogen credits, it will eat away at the numbers of credits that would be available to be purchased by other municipalities-it would forcing them to build rather than purchase credits and defeat the purpose of a program for credit trading. To avoid municipalities having to choose between economic growth and a cleaner Sound, DEP should expand its criteria for providing grants to ensure that the grants are available to pay for projects taking into account reasonable expectations for growth. DEP should not adopt TMDLs unless this is done. Municipal officials would welcome the opportunity to further explore the way in which such an expansion would work in practice.*

***Response:*** *This comment should be brought directly to the attention of CTDEP's Clean Water Fund directors, as it is not a TMDL issue.*

145.CCM: As discussed above [CCM question on economic development], Connecticut's state government has made a significant financial commitment to help cities and towns build and improve treatment plants. However, there are still about \$46 million in Clean Water Fund projects that have been referred to the state Bond Commission for action but that have not been approved (most of these are for facility planning, but there are several construction projects as well). The combination of stalled funding approvals as regulations become more stringent (such as the TMDLs) sends a mixed signal, at best, to municipalities.

***Response:*** *See response to Comment 144 and the Summary Response.*

146.CWPAA: What is the capital cost for each POTW in the state for low and high level nitrogen removal? Will the Connecticut Clean Water Fund finance these improvements and at what level grant and loan? Clean Water Funds should be used for 100% funding of this program.

***Response:*** *Implementation will be regulated and managed by CTDEP's Bureau of Water Management. These issues are not relevant to a TMDL, but should be brought to the attention of the Water Bureau.*

147.MDC: Our consultants estimate that for the four MDC wastewater treatment facilities to meet the goals of the 15 year nitrogen reduction program the cost will be range from \$112 million to \$150 million in capital costs. DEP is quick to point out that funding will be available. However the funding will only cover a portion of the capital costs and it will not cover any of the \$3 million to \$5 million annual increase in operating and maintenance costs. Our customers will bear a significant portion of the cost of the nitrogen reduction program and we believe that the DEP should be educating the public regarding the costs of this program to gain taxpayer acceptance. What happens if our taxpayers are unwilling to vote in favor of a costly program that has minimal benefits for them versus residents of coastal towns.

***Response:*** *See the response to Comment 146 and others in this section, and the Summary Response. The TMDL is not the appropriate document to respond to these concerns.*

## XXVIII. Nitrogen trading

***Summary Response:*** *Although the TMDL refers to the potential and value of nutrient trading to take advantage of favorable exchange ratios, and allows implementation through a trading program, it is not the appropriate mechanism for detailing a trading program. Any trading programs will be at the discretion of the state regulatory agencies in accordance with state and federal laws and regulations. Specifics of trading and concerns raised in these comments should be brought to the attention of the appropriate authorities during trading program development processes.*

148.CTDEP: The effect of nitrogen trading on the TMDL is not articulated. Because the TMDL is based on "edge of Sound" or river mouth loadings, any shifts from one management zone to another with the applied exchange ratios (Table 6 [in the TMDL]) will affect the TMDL. It should be stated that trades will affect the TMDL, probably increasing the edge of the Sound load, but will not reduce anticipated dissolved oxygen improvement. Regulators need to be aware that the TMDL will change and not view it as a violation of permit limits or a breach of TMDL regulations. It might have been better to apply the exchange ratios and express all nitrogen as "effective" nitrogen (on dissolved oxygen) to clarify the intent of implementation and avoid confusion about management targets for nitrogen.

**Response:** *It was an oversight not to describe how trading will affect the overall loads and distribution of nitrogen loads to LIS. This has been rectified in the revised TMDL, including specific attenuation factors for rivers and the Sound, and final estimated exchange ratios that could be used to establish relative value of traded credits. This information should be used in developing state trading programs to ensure compatibility with TMDL requirements.*

149.CWPAA: A Nitrogen Credit trading scheme may not work to reduce cost impacts because the point source load reduction amounts are so stringent; facilities will have limited credits to trade.

**Response:** *While not a concern of the TMDL process, these issues were discussed in more detail in CTDEP's "Response to Public Comments on the WLA" and are subject of additional review as the trading program legislation and development continues.*

150.CWPAA: Has the Nitrogen Trading Program been finalized and approved if so, what are the components and how does it impact the NPDES permittees in the state?

**Response:** *The trading program has not been finalized and will not be until the CT General Assembly provides legislative authority. This process has been open to the public and CWPAA can keep abreast of the process through regular contact with CTDEP's Bureau of Water Management and state legislators. Opportunity for public comment is provided in the General Assembly, and will continue during the succeeding processes, as appropriate, until the program becomes final.*

151.CWPAA: The TMDL recognizes that loadings from areas that are remote from the critical low DO areas (management zones 1, 2, 3 and 4) have a much smaller impact on DO levels than equivalent loads directly discharged to these areas, as would be expected. Normally, facilities with the greatest adverse impact on water quality receive the most stringent limitations; however, the TMDL does not take this approach. In lieu of the normal approach, a trading program has been proposed by the State of Connecticut that will allow remote facilities to trade for nitrogen load credits that account for the lesser impact of the remote facility. For example, a facility in management zone 1 would receive 5 to 10 times the load credit if it pays a facility in management zone 8 to remove pollutants for it. The trading program, however, has received negative comments from EPA Region I and it is not apparent that, ultimately, any change in facility construction needs will occur due to projected growth and the generally stringent limitations applied throughout Connecticut. Thus, the trading program should be viewed, at best, as an interim measure to reduce treatment costs for some, but not a means to reduce the ultimate construction needs imposed by the proposed TMDL.

**Response:** *This comment summarizes the fundamental premise of an effective trading program. Each source is responsible for its share of the pollution, yet cost-effective trading provides a mechanism for lessening the financial impact of smaller, less efficiently delivered sources. As noted in the response to comment 150, this is not a matter to be resolved in the TMDL. CWPAA needs to stay in touch with state legislators and CTDEP's Bureau of Water Management for comments and concerns regarding the potential trading program.*

152.CWPAA: In principle, trading programs tend to offer a cost-effective means for reducing pollution reduction costs. These programs have certain basic assumptions, which include: 1) The trade will

promote WQS compliance and will achieve the applicable legal requirements of the Clean Water Act. 2) The TMDL program equitably determined treatment needs and load allocations such that the decision to treat or purchase credits are not forced decisions; and, 3) There will be an excess of pollution reduction credits to trade. The proposed trading program fails each of these criteria and appears designed to force communities with little impact on the DO regime in LIS to pay money to those who should have received more restrictive limitations in the first place. Why else would the communities furthest from the problem have received the most restrictive limitations? Since the TMDL document verifies that applicable criteria will not be achieved, the trading scheme is illegal under the CWA because it will maintain WQS non-compliance, not improve the situation. Finally, analysis of likely growth in the state as well as the treatment needs for achieving 65 - 80% reduction in 1990 effluent concentrations indicates that there will be no load reduction credits to offer at the completion of the TMDL. The credits will be interim at best resulting in funds transferred between communities with no attendant environmental benefits associated with such payments. In short, this proposed trading program appears to be conceived primarily to force small, remote communities to fund pollution reduction measures at the facilities who are actually causing problems. The program violates the "polluter pays" principle that underlies both state and federal law and should not be implemented as proposed. To the degree cost savings occur, the program would have benefits. However, facilities in Connecticut are being short-changed on the trading ratios established in the TMDL. The trading ratios should be indexed to response region 2 (where the critical DO deficits occur).

***Response:** CWPAA has provided no new information and has presented this comment in various forms repeatedly throughout their submissions. Please review earlier responses to the same question.*

153.CWPAA: The trading program is flawed as it appears to be based on the premise that increasing load reduction requirements on minor facilities will force them to fund pollution reduction efforts at facilities causing major impacts. This approach violates the "polluter pays" principle that underlies federal and state law and the program should be restructured to remove this inappropriate result.

***Response:** See responses to earlier CWPAA comments that are essentially the same.*

154.CWPAA: Revise the trading program to be indexed to impacts occurring in response region 2, account for DO improvements associated with carbon reductions in the most critical low DO area and present the basis for the Connecticut watershed attenuation factors for public review and comment.

***Response:** See response to earlier CWPAA comments that are essentially the same.*

155.CWPAA: The implementation plan should be established and approved by the USEPA and legislative bodies before adopting the TMDL. Establishing the TMDL prior to having a clear vision as to the method of implementing it is not in the best interest of Connecticut Communities. We are especially concerned over the States ability to conduct a Nitrogen Trading Program in light of the EPA's issues outlined in the WERF Draft Report on Nitrogen Credit Trading for the Long Island Sound Watershed, dated February 1999, which states the following: Section 5.3.1 The TMDL. US EPA Region 1, despite considerable involvement and leadership in the development of the CCMP and the trading program, has recently raised several serious questions which not only affect the viability of trading but would also reject the approved CCMP plan for nitrogen reduction. EPA has indicated that it is possible that the TMDL could not have a fifteen-year implementation schedule, could not be phased in three targets and could not be segmented with sources on differing schedules. The result would be that the DEP would be required to issue all 84 sources and NPDES permit with the final WLA to be achieved in five years. Under this interpretation, the LIS CCMP for nitrogen reduction could not be used to achieve the TMDL and some variance, or consent order, may be necessary to move forward. Neither state is fiscally able to meet a five-year schedule for the construction of the facilities needed. The enforcement of TMDL and WLA is the critical drivers to encourage trading, without their adoption credit trading may not be viewed as enforceable and without the final limit opting out of trading will have little consequence if immediate imposition of the WLA is not the result. EPA has also indicated, under their

1996 framework for trading guidance, trading can only be for those credits created which are in excess of the final WLA. This results in only a limited possibility for trading for sources operating below their WLA. The true cost savings and incentives for trading are realized by trading against the annual reduction limit under this program. This allows those to increase treatment performance to the maximum extent and get rewarded by the sale of credits produced. It also reduces the cost of those buying credits in the early years of the program when they only are required to buy credits needed to meet the annual reduction limit. Trading is used to facilitate and reduce the cost of implementing the TMDL not simply maintaining a certain level or compensating for growth.

**Response:** While it would have been CT's preference that the state legislature pass a trading program before submission of the TMDL to EPA, it has not happened. CT and NY are under pressure to submit the TMDL as soon as possible, and a delay for trading legislation is not legitimate cause for delay. It is hoped that the trading program is realized, along with the general permitting authority, before individual permits must be issued. EPA does not require tradable credits be only those beyond the WLA level. CT believes there are adequate credits available to carry the program through the first 15 years.

156.Cytec: Consideration of inclusion in any nitrogen trading program, of an objective and equitable method of establishing a "fair market value" of industrial nitrogen credits. Consideration to include sale or purchase of credits by and for industrial and municipal entities.

**Response:** While the trading program legislation, as currently written, does not specifically include industrial sources, it does allow for industrial and nonpoint source trades. However, unless sources are specifically listed in the legislation to establish a base load and individual WLA, it is likely that industrial trades could not be effected.

157.Fromer: Based on the above [nonpoint source management] alternatives, I oppose the use of trading credits for nitrogen.

**Response:** Duly noted.

158.MDC: The draft TMDL document did not have any detail regarding the POTW baselines and trading mechanisms. Reportedly these details are to be provided at a later date, however it is difficult to know how the TMDL report will effect the specific aspects concerning the POTWs.

**Response:** MDC is correct about this problem with the draft TMDL. EPA has required that CT and NY include individual WLAs in the revised TMDL. CT has held a WLA public process and individual WLAs have been set and incorporated into the TMDL.

159.Norwalk: Now that the Commissioner has publicly announced that trading will take place in Connecticut, the document should include an explanation of trading in much greater detail. Now that you have the public's attention the Department should take advantage of this and lay out the major economic advantages that trading makes available. The WERF report on trading for the Long Island Sound Watershed, should be included in your bibliography. (pages 21/22)

**Response:** CT and NY disagree that the TMDL is the appropriate place for a detailed description of a trading program. If used, trading programs will have to be developed by each state and their legality affirmed by EPA.

160.Stamford: You need to better define and explain the Nitrogen Trading Program and its potential economic advantage. It might be good to reference the WERF project.

**Response:** Some expansion of the trading program discussion has been included in the TMDL to clarify its potential impact on the TMDL, including specific attenuation rates and exchange ratios. But the TMDL is not the appropriate vehicle to formulate a trading program. While it allows

trading, it does not fully define trading operations and regulation. That will be left to the states, if they choose to implement trading.

161.Torrington: Is reallocation or trading among zones in the best interest of all Connecticut facilities when many facilities have little or no impact on the problem? Should not all facilities be required to meet their WLA without incorporating a trading program?

**Response:** *If trading is approved and implemented in CT, no discharger would be required to buy or sell credits. If a municipality decided to treat their share at end-of-pipe and no more or less, they would effectively not be part of trading. CT disagrees that trading is not beneficial to the state as a whole and expects it to reduce costs and equitably distribute costs as well.*

162.Torrington: Will credit be given for NPS reduction in excess of 10%? Municipalities that aggressively address NPS pollution and eliminate it have in turn an increased load on their WPCF's. Will this increased loading be offset? If so, at what ratio?

**Response:** *The proposed legislation for trading does not disallow point – nonpoint source trading, but it doesn't set up mechanisms for those trades either, at this point. This is not an issue that can be addressed in the TMDL, but Torrington should work with the state legislature to ensure the program includes aspects they would be interested in.*

## XXIX. Permitting and enforcement

**Summary Response:** *As with the trading program, permitting and enforcement issues are beyond the scope of a TMDL and are properly addressed at the state regulatory level.*

163.CWPAA: How will the TMDL affect individual NPDES permits or will a statewide general permit be issued?

**Response:** *Presently, a statewide permit is proposed, but legislation has not yet been passed.*

164.CWPAA: How will backsliding be addressed when there is no more additional credits to be purchased or sold?

**Response:** *CTDEP's analysis suggests adequate credits will be available for at least the 15 year time frame of Phase III implementation. Backsliding should not become an issue of concern to the municipalities.*

165.CWPAA: What is the schedule for implementation of the WLA in individual NPDES permits?

**Response:** *Although the TMDL sets five-year accelerated reduction targets, the current plan for CT's general permit is an annual reduction to balance credit sales and purchases from the proposed trading program.*

166.Norwalk: What is the relationship between the mandates proposed in the TMDL document and the NPDES permits currently being administered? How will NPDES permits be modified?

**Response:** *This will be worked out at the state level in the permitting program. Specific permitting approaches are formulated in the proposed legislation before the CT General Assembly.*

167.Norwalk: There is no reference to the possibility of a General Permit for the discharge of nitrogen being issued. I understand that E.P.A. is willing to allow this to be included as a means of enforcing a watershed TMDL.

**Response:** As noted in the Summary Response, state-specific permitting authorities and procedures are not relevant to the TMDL. Please see also the response to Comment 166.

168.Stamford: What is the relationship between the mandates proposed in the TMDL document and the NPDES permits currently used? Will individual NPDES permits be modified and if so, how?

**Response:** Please see the response to Comment 167.

### XXX. Other pollutants not addressed in the TMDL

**Summary Response:** For the most part, other pollutants are irrelevant or minimally relevant to hypoxia in LIS, for which the TMDL is developed. Phosphorus is an exception (see response to Comment 169).

169.CWPAA: Why has phosphorus been dismissed from consideration as a nutrient source for algae in the Sound?

**Response:** Phosphorus has not been completely dismissed from consideration, although the current TMDL focuses on nitrogen, and to some extent carbon, as the primary causes of hypoxia in LIS. This has been documented in the LIS 3.0 model and seems to be borne out by more than 10 years of monitoring on LIS. Nitrogen is the limiting nutrient in the Sound. Management of phosphorus will not have an effect on phytoplankton production and hypoxia, as best as the science can tell us. During five-year reassessments, field and modeling data will continue to be reviewed to see if there is any shift towards phosphorus limitation, and to see if phosphorus management in freshwater contributing systems might be impacting oxygen in LIS. At this time, there appears no need to further control phosphorus.

170.Save the Sound: On page nineteen (19), the author points out numerous positive effects that nitrogen reduction will have on marine life. Although excessive nitrogen has an enormous impact on marine life in the Sound, we would argue that other pollutants can be just as destructive and should not be ignored. If nitrogen is reduced to the stated goal levels, there will still be other dangerous pollutants which may or may not kill marine life. For example, mercury and PCBs are pollutants of concern in both New York and Connecticut, and have proven adverse effects on fish. Therefore, this TMDL should not only concentrate on nitrogen, when the technology and knowledge about pollution reduction for other pollutants exists.

**Response:** CT and NY recognize that there may be other chemicals that are exerting an impact on LIS's health, but this TMDL responds to a legally-documented need (through the CWA Section 303(d) process) to meet DO standards in the Sound. There is no foundation for including management actions to control toxic substances in this TMDL. Although federal law requires TMDL development for any 303(d) listed water quality impairments, those would be handled through TMDLs specific to those problems.

**Attachment 1. Public Notice and Notification Letters**

**Attachment 2. Informational Materials on the TMDL.**

**Attachment 3. Comment Letters Received on the TMDL.**