



# Connecticut Department of Environmental Protection

Amey Marrella, Commissioner

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Meriden WPCF

## **Report of the Nitrogen Credit Advisory Board for Calendar Year 2009 To the Joint Standing Environment Committee of the General Assembly**

September 30, 2010

**REPORT OF THE NITROGEN CREDIT ADVISORY BOARD  
FOR CALENDAR YEAR 2009**

**TO THE JOINT STANDING ENVIRONMENT COMMITTEE  
OF THE GENERAL ASSEMBLY**

**Concerning the**

**NITROGEN CREDIT EXCHANGE PROGRAM**

**As required by  
Section 22a-523(c) of the  
Connecticut General Statutes**

**September 30, 2010**

This report has been prepared by the Nitrogen Credit Advisory Board and is respectfully submitted to the Joint Standing Environment Committee of the General Assembly pursuant to the requirement of Section 22a-523(c) Connecticut General Statutes. Such section requires that the Nitrogen Credit Advisory Board submit to the Joint Standing Environment Committee of the General Assembly a report that addresses issues associated with the implementation of the Nitrogen Credit Exchange Program. This report covers the period from January 1, 2009 to December 31, 2009.

This report provides a summary of the technical progress and financial requirements that the Nitrogen Credit Advisory Board deems necessary to achieve progress in this important program in reducing nitrogen loads to Long Island Sound. The continued success of this program is only possible if adequate funding is provided through the Clean Water Fund each year to construct new projects and through the development and application of innovative approaches and management techniques to meet nutrient reduction goals for Long Island Sound.

## **Highlights of the Nitrogen Program for Calendar Year 2009**

- All 79 municipalities regulated under the General Permit for Nitrogen Discharges cooperated fully in implementing the program. Aggregate treatment plant performance for 2009 was 11,674 equalized pounds of nitrogen per day (eq. lbs N/day), which is well below the 2009 Total Maximum Daily Load (TMDL) target of 13,149 eq. lbs N/day.
- The Nitrogen Credit Advisory Board recommended a value of \$4.54 per equalized pound of nitrogen in 2009 approved by DEP Commissioner Amey Marrella. The price of a credit in 2008 was \$4.50.
- In 2009, the value of credits purchased by the Nitrogen Credit Exchange was \$4,384,688 and the value of those sold was \$2,838,546. Forty-five facilities were required to purchase credits to meet their permit limits, while thirty-four facilities had credits to sell.
- The key to the success of the program is the implementation of nitrogen removal projects. Two projects that finished construction by the end of 2008 were added as “project facilities” in 2009 (Plainville and Hartford (interim)).
- Facilities that finished construction in 2009, Milford Beaver Brook (Phase 2), Milford Housatonic (Phase 2) and Stratford (Phase 2), will become “project facilities” for 2010. They have already removed approximately 1,082 eq. lbs N/day, more than the expected 894 eq. lbs N/day.
- Project construction schedules for the coming years indicate that the 2014 nitrogen load target of the TMDL will likely be met if adequate financing is available from Connecticut Clean Water Fund (CWF).
- Continued success of the Nitrogen Credit Exchange depends on adequate, continuing funding of Connecticut’s Clean Water Fund (CWF) of at least \$90 million/yr in general obligation bond funding to meet nitrogen control needs and other priority infrastructure financing such as treatment plant upgrades, combined sewer overflow abatement and phosphorus controls.

## Executive Summary

In accordance with Sec 22a-523(c) CGS, the Nitrogen Credit Advisory Board (NCAB) submits this 2009 Annual Report of the Nitrogen Credit Advisory Board on the progress of the Nitrogen Credit Exchange for the calendar year 2009.

### *The NCAB highlights these key findings and concerns regarding the continuing success of the program:*

- Plainville and Hartford were completed by the end 2008 therefore became project facilities in 2009. A project facility is defined as any facility with a fully operational nitrogen removal system on January 1, of the trading year.
- Three additional denitrification projects were completed in 2009 –Milford Beaver Brook (phase 2), Milford Housatonic (Phase 2), and Stratford.
- Project implementation depends on continued bonding authorization for the CWF to avoid backlogging projects and to ensure the 2014 nitrogen reduction goal is met.
- The Clean Water Fund Project Priority List for fiscal years 2010 and 2011 was issued in final form on June 25, 2010 and provides \$79,995,976 in general obligation bonds, \$200,000,000 in state revenue bonds, and \$33,963,000 in Federal capitalization grants. This level of funding provides only partial funding for FY11 denitrification projects in Norwalk and Manchester and no funding for the Mattabasset WPCA. Attaining the 2014 TMDL goal is less certain at this pace of funding.

### *Major accomplishments and activities relative to the 2009 program operations include:*

- All 79 municipalities regulated under the General Permit for Nitrogen Discharges cooperated fully in implementing the program. In 2009 the aggregate equalized average nitrogen load was 11,674 eq. lbs N/day, which is below the 2009 TMDL target of 13,149 eq. lbs N/day.
- The Nitrogen Credit Advisory Board recommended a value of \$4.54 per equalized pound of nitrogen in 2009 based on capital and operational costs and nitrogen removal at project facilities. The price of a credit in 2008 was \$4.50. This is the fourth consecutive year of increases in the price of a credit.
- In 2009, forty-five facilities were required to purchase credits to remain in compliance with the General Permit. Municipalities purchasing credits contributed a total of \$4,384,688 and thirty-four facilities received payments totaling \$2,838,546 from the sale of nitrogen credits.
- The projected facility upgrades for nitrogen removal completed or to be completed in 2010 include, but may not be limited to, Danbury, Southington (interim project), Stafford, Groton Town, Windham, Meriden, and Glastonbury. Between 2011 and 2013, with projects such as Ansonia, South Windsor, West Haven, New Milford and Hartford (phase 2) completed, nitrogen loads will be reduced by an additional 1,380 eq. lbs N/day.
- With these expected reductions, the state aggregate nitrogen load by 2013 is estimated to be 9,330 eq. lbs N/day, which is very close to the 2014 TMDL limit of 9,141eq. lbs N/day.

- The revision of the Long Island Sound TMDL was anticipated in 2010 with the understanding that dissolved oxygen criteria attainment will require nitrogen reductions from additional sources throughout the watershed. However, it was decided that the TMDL revision should be a 5-state TMDL to include Massachusetts, New Hampshire and Vermont to ensure full participation in the evaluation and commitment to the planned reductions in nitrogen. The TMDL completion date schedule is, therefore, under review.

## **I. Introduction**

### **Background**

Long Island Sound's (LIS) most pressing water quality problem is caused by over enrichment of nutrients, specifically nitrogen, that leads to greatly reduced levels of dissolved oxygen in the bottom waters of western LIS. The overload of nitrogen fuels excessive growth of algae, which eventually dies, sinks to the bottom and decays. During decay, oxygen is consumed and the dissolved oxygen in the water falls to levels well below those allowable in State Water Quality Standards. Low oxygen levels, or "hypoxia" typically occur during the July through September period. These conditions are inadequate to support healthy populations of fish and shellfish because they create an ecosystem imbalance by disrupting the feeding, growth and reproduction of nearly all forms of aquatic life. Primary sources of nitrogen include municipal wastewater treatment plant discharges, atmospheric deposition and runoff from urban, suburban and agricultural areas.

The federal Clean Water Act requires that the State establish Total Maximum Daily Loads (TMDLs) for all waterbodies that do not meet minimum State Water Quality Standards, such as Long Island Sound. Once the State establishes a TMDL, federal law requires that the TMDL be reviewed and approved by the federal Environmental Protection Agency (EPA). In April 2001, EPA approved Connecticut and New York's jointly submitted TMDL to address the impairment to Long Island Sound water quality that results from excessive nitrogen loading. The TMDL established the maximum loading for nitrogen that Long Island Sound can assimilate without causing impaired water quality, apportioned that maximum loading among sources, and laid out a plan to achieve the loading reductions necessary to meet Water Quality Standards.

In the TMDL, discharges from municipal sewage treatment plants (STPs), stormwater runoff and atmospheric deposition, the primary sources of nitrogen enrichment in LIS, are targeted for control. The TMDL requires the two states, by 2014 to achieve a 58.5% collective reduction of nitrogen loading from point discharges and urban and agricultural runoff sources to LIS from an established baseline. A 64% reduction goal was set for Connecticut STPs through a wasteload allocation (WLA) process.

Nitrogen "trading" was identified as a mechanism for cost-effectively attaining the aggregate goal for Connecticut STPs. Public Act 01-180, codified in the Connecticut General Statutes in Sections 22a-521 through 527, established a Nitrogen Credit Exchange (NCE) overseen by a Nitrogen Credit Advisory Board (NCAB – Attachment A), and authorized issuance of a Nitrogen General Permit (NGP). Collectively, the NGP, the NCE and the NCAB form the foundation for the nitrogen-trading program instituted by Connecticut in 2002.

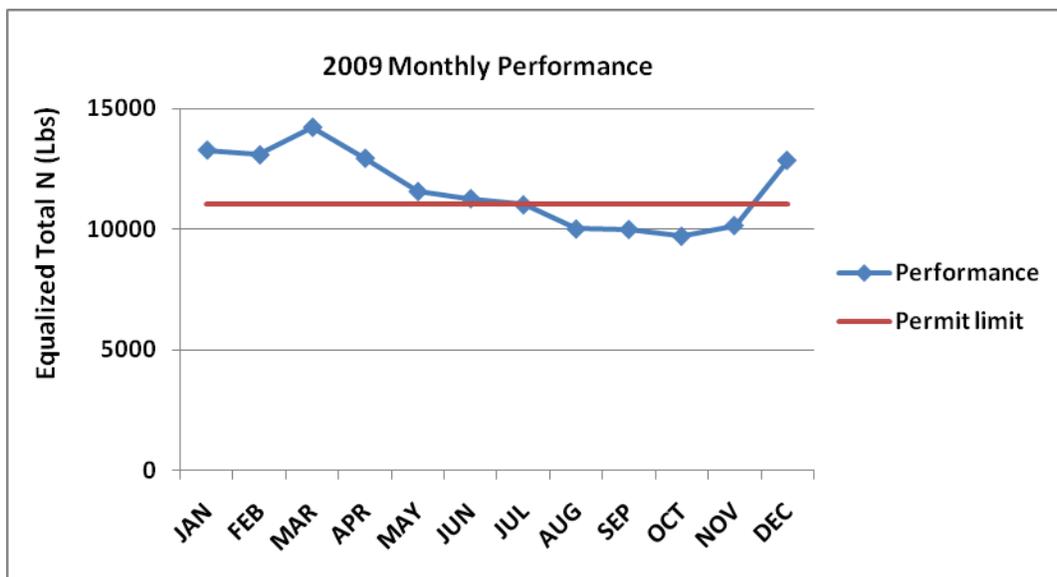
### **2009 Performance of the Nitrogen Credit Exchange**

In 2009 the equalized average load of nitrogen to LIS was 11,674 eq. lbs N/day, which is below the 2009 WLA target specified in the TMDL of 13,149 eq. lbs N/day.

In 2009 the equalized average load of 11,674 eq. lbs N/day was higher than the 2009 permit limit of 10,746, eq. lbs N/day target and permit loads are intentionally set below the WLA (13,149) to ensure compliance with the TMDL requirements (Attachment B). Although the aggregate nitrogen loading levels were higher than 2009 permit limit (In Figure 1, the twelve month moving nitrogen load average through December 2009 was 12,224 eq. lbs N/day (yellow line in Figure 3) and has continued its downward trend into 2010.

- In general, there has been a downward trend in aggregate end-of-pipe loads of nitrogen statewide on an annual basis through the end of 2009. (Attachment C). Hartford and Plainville contributed to reduced nitrogen loads to LIS in 2009 because they finished construction by the end of 2008 and were fully removing nitrogen by January 1, 2009, making them eligible “project facilities” for the 2009 nitrogen credit exchange.
- The intense rainfalls and melt snow in March in 2009 were the primary factors adversely impacting nitrogen removal in 2009; however, the winter/spring excursion was not as large as in previous years. The load in March 2009 (14,223 eq. lbs N/day) was the highest of the year (Attachment B) but was lower than the March 2008 load of 17,070 eq. lbs N/day. The effect can be seen in Figure 1.
- The drier and warmer weather that occurred during the summer and fall of 2009 enhanced nitrogen removal. The fall of 2009 (October) had the lowest (9,711 eq. lbs N/day) aggregate monthly nitrogen load since the program started.

A second important effect on the ability to remove nitrogen is the level of funding available for the Clean Water Fund (CWF). The general permit limits are based on the anticipated ability of sewage treatment plants to remove additional nitrogen, which is a direct result of the number of nitrogen removal upgrade projects that become operational during the year. Although three plants came on line in 2009 with nitrogen process upgrades, several more projects, some at critical facilities, will need to be implemented if the final 2014 permit limit is to be met on schedule.



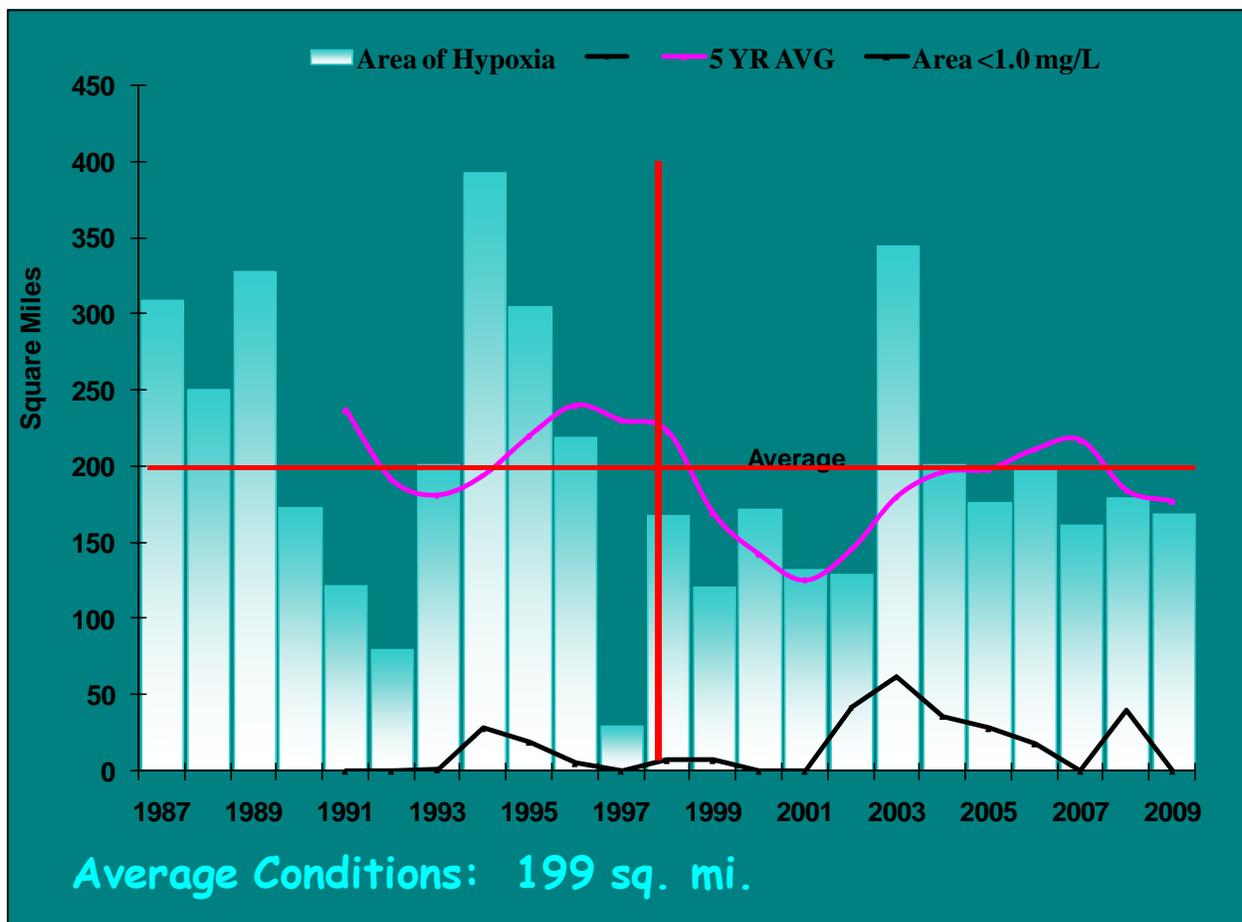
**Figure 1. Monthly aggregate performance of 79 facilities during 2009.**

### Condition of Long Island Sound

Nitrogen trading has led to measurable reductions in Connecticut’s nitrogen load to the Sound. Signs of improvement in hypoxia are evident, but more reductions are needed to meet management goals to attain a healthyLIS. Added attention must be directed towards sources from outside of Connecticut, including atmospheric sources, and stormwater and nonpoint source runoff.

The area affected by hypoxia in LIS, which is monitored each summer by DEP staff, provides a good indicator of overall condition, and the long term trend (Figure 2). Although annual variation is large, subject to changing weather conditions that affect the severity of hypoxia each year, the underlying trend in hypoxic area is downward, although slight. That change is best illustrated by the direction of the 5-year moving average (Figure 2). Since 1987, the affected area has averaged about 199 square miles; however, during the last 10 years, only the 2003 event was significantly higher than the long term average. Taking into consideration that several of the warmest years on record have occurred in the last 12 years which exacerbates hypoxia, the areal indicator appears to be benefitting from nitrogen management. Also, no observations below 1.0 mg/L of dissolved oxygen, severe hypoxia or anoxia, were reported in 2009 (Figure 2).

Although wet weather can deliver a surplus of nitrogen to the Sound, the cooler summer weather through July of 2009 appears to have offset the potential impact of hypoxia, which was not observed until late in July. By late August, with warmer and more stable weather conditions, the areal extent of hypoxic waters had grown, but did not exceed the area observed during the same period in 2008.



**Figure 2. Area and trend of hypoxia in Long Island Sound, 1987-2009.**

The hot, stable conditions of 2010 were expected to create favorable conditions for a severe hypoxia event. However, as of early August, the areal extent of hypoxia had peaked, covering only about 167 sq.

mi., lower than 2009. By late August, hypoxia had dissipated with the lowest dissolved oxygen concentrations observed in the 3.0 to 3.5 mg/L range in small areas of the Sound.

## **II. The 2009 Nitrogen Credit Exchange**

### **Credit Price**

A major task of the NCAB each year is to establish the value, or price, of an equalized nitrogen credit, and propose the annual value to the Commissioner of the DEP for approval. The Board calculates this value as follows:

$$\textit{The value of an equalized credit} = \textit{Capital Costs} + \textit{Operational Costs} / \textit{Total amount of equalized nitrogen reduced from project facilities}$$

The statute further identifies the total project cost as: 1) capital expenditures for construction of nitrogen removal at project facilities; and 2) ongoing operation and maintenance costs for nitrogen removal treatment.

"Nitrogen Removal Project" is defined as any alteration of the physical structure of a wastewater treatment facility specifically constructed to remove nitrogen that was financed by the CWF. A "Project Facility" is further defined as any facility with a fully operational nitrogen removal system of any scale on January 1 of the trading year. Under this definition, 41 facilities were considered to be Project Facilities during 2009 (Attachments D, E and F). In addition, Milford Beaver Brook (Phase 2), Milford Housatonic (Phase 2) and Stratford finished construction early in 2009. Therefore, although not considered Project Facilities for 2009, they did contribute to nitrogen load reductions through most of the year. Plainville and Hartford (interim) were completed by the end 2008 and therefore are project facilities in 2009.

"Capital Costs" were established by the Board as the annual CWF repayment amount associated with construction of nitrogen treatment facilities as set forth in the loan agreement between the municipality and DEP. Financing derived from grants to municipalities is not considered to be a capital cost for purposes of setting credit prices. Using this procedure, the Board established the annual capital cost for nitrogen treatment in 2009 at \$7,871,891 (Attachment F). This figure represents the annual interest and repayment of principal on the 2% loans for nitrogen removal processes.

"Operation and maintenance costs" were estimated by means of a survey sent to all Project Facilities. Department staff reviewed all survey data for consistency and reasonableness and an estimate of \$13,132,938 was adopted by the Board as the annual operation and maintenance cost for nitrogen removal in 2009. Combining capital and operation and maintenance costs yielded a total cost for nitrogen removal in 2009 of \$21,004,829 (Attachment F). Operation and maintenance costs didn't increase substantially in 2009 because by the end of 2008 some of the facilities had updated electrical components, making the plants more energy efficient, and the price of fossil fuels had declined in 2009 making energy less expensive.

The reduction in equalized pounds of nitrogen was calculated by subtracting the actual end-of-pipe pounds of nitrogen discharged by each of the Project Facilities from the "baseline" loading established for the facility in the TMDL for Long Island Sound. The baseline loading represents the loading of nitrogen each facility would have discharged if no nitrogen treatment were provided. Load reductions for each facility were multiplied by the equalization factor for the facility (converting the pounds reduced to equalized pounds reduced) and the statewide reduction calculated by summing the equalized pounds reduced for all Project Facilities. Using this procedure, a total of 12,674 eq. lbs N/day of nitrogen was reduced by the 41 project facilities that were on line in 2009 (See Attachment E). Based on these

analyses, the cost was determined by dividing the Total Project Cost of \$21,004,829 by 12,674 pounds per day of equalized nitrogen removed during the year times 365 days in the year.

The Board formally submitted a recommendation to the Commissioner that she establish the value of an equalized nitrogen credit at \$4.54 for trading in 2009. The Commissioner accepted this recommendation and issued a draft ruling pursuant to CGS Section 22a-527 (Attachment H). No municipality petitioned for a review of the Commissioner's draft ruling during the statutory 15-day review period and the draft ruling became final establishing the value of an equalized nitrogen credit at \$4.54 for 2009.

### **Numbers of Credits Traded and Final Balances**

In 2009, 45 facilities were required to purchase credits in order to remain in compliance with the General Permit (Attachment D). Municipalities purchased 625,230 equalized credits at a total cost of \$4,384,688 (Table 1). Thirty four facilities received payments totaling \$2,838,546 from the sale of 965,790 equalized nitrogen credits. To date, more than 15.75 million credits have been bought and sold on the NCE at a total value of nearly \$46 million. Because less nitrogen was removed than required in the nitrogen general permit in 2009, payments from credit purchasers are greater than monies paid out by sellers (Attachment D).

Credit prices have risen from \$1.65 to \$4.54 over the eight years of operation of the NCE. Fluctuations above and below the aggregate limits are expected and acceptable in the trading program provided the conditions of the TMDL are met. The goal is a “balanced budget”, where credits sold are adequate to cover those purchased.

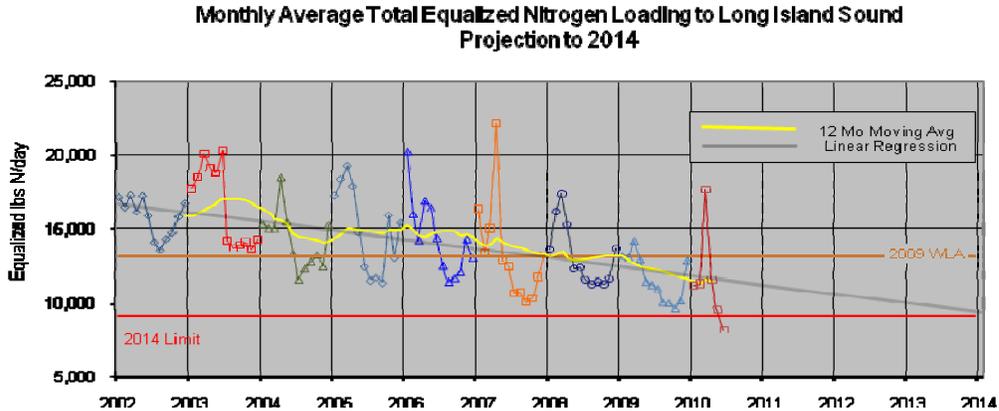
### **III. Progress towards TMDL goal**

#### **Nitrogen Loading Trend and Scheduled Projects**

Despite the effect of intense storms, wet weather, and cold periods that impair nitrogen removal capability at municipal facilities and the financial limitations that have kept the number of nitrogen removal projects below desired levels, steady progress has been made towards achieving the 2009 and 2014 TMDL allocations.

In 2009 the equalized average nitrogen load was 11,674 eq. lbs N/day, which is well below the 2009 TMDL target of 13,149 eq. lbs N/day. The twelve month moving nitrogen load average through December 2009 was 12,224 eq. lbs N/day (yellow line in Figure 3) and has continued its downward trend into 2010.

Overall, the total equalized pounds of nitrogen discharged during 2009 was lower than 2008; in general, the rate of improvement was slower in 2009, but the aggregate performance was very good. Three facilities completed construction for nitrogen removal at the beginning of 2009, which helped the overall 2009 performance. Although they are not considered project facilities for the 2009 trade, Milford Beaver Brook (phase 2), Milford Housatonic (Phase 2) and Stratford were on line for much of the year. Hartford (Interim) and Plainville are considered project facilities in 2009 because they finished construction by the end of 2008. Good performance was observed for these five project facilities in 2009. The total amount of eq. lbs N/day removed from these facilities between 2008 and 2009 was 1,160 eq. lbs N/day.



**Figure 3. Monthly average total nitrogen loading to Long Island Sound, 2002-2010 Meeting the 2014 Wasteload Allocation and Permit Limits.**

The Department developed projections to determine whether the 2014 TMDL target nitrogen load allocation will be attained. Assumptions included:

- The project facilities added for the 2009 trading year that finished construction by the end of 2008 (Hartford (interim project) and Plainville) removed approximately 484 eq. lbs N/day. These facilities removed more nitrogen than the predicted 130 eq. lbs N/day.
- The total amount of nitrogen removed from project facilities that finished construction early in 2009 (Milford Beaver Brook (Phase 2), Milford Housatonic (Phase 2) and Stratford (Phase 2)) was approximately 676 eq. lbs N/day. It is more nitrogen removed than the predicted 653 eq. lbs N/day.
- Facility upgrades for nitrogen removal to be completed in 2010 include, but may not be limited to, Danbury, Southington (interim project), Stafford, Groton Town, Windham, Meriden, Ansonia and Glastonbury. By the end of 2012 with projects such as Ansonia, West Haven and Hartford (phase 2) it is estimated that nitrogen loads will be reduced by an additional 1,413 eq. lbs N/day.
- With these reductions the state aggregate nitrogen load by 2013 is estimated to be around 9,330 eq. lbs N/day, which is very close to the 2014 TMDL limit of 9,141 eq. lbs N/day.

Clearly, additional projects will need to become operational, and nitrogen removal will need to be optimized at existing project facilities by 2014 if the permit limit is to be successfully met each year. The annual reduction in limits reflects the statewide projection of nitrogen reduction generated by newly constructed treatment facilities. Based on the plants that will be on line in 2010 and a linear extrapolation, it is predicted that in 2011 the state will collectively reduce the nitrogen load by 60%. By 2012 the reduction will be 64%, which is very close to the TMDL WLA for 2014.

### Proposed Revisions to the Program

In order to provide assurance that the aggregate 2014 WLA required under the Nitrogen General Permit will be met, some additional assessments and revisions to the program may be necessary.

The Department and Nitrogen Credit Advisory Board members will continue to work with municipalities that plan to host projects to ensure their projects are implemented. If warranted, the DEP and NCAB members will evaluate the potential benefits of adjusting the price of the nitrogen credit and other actions that will help maintain progress towards the goal. Strategies including either incentive or enforcement may be needed to encourage municipalities with key projects to initiate and complete improvements to their facilities in a timely manner.

The Nitrogen General Permit (NGP) is due to expire at the end of 2010. In order to renew the permit in 2010, the permit was public noticed in all major newspapers in the state on July 8<sup>th</sup>, 2010. The proposed revised draft general permit for Nitrogen Discharges covers the 5-year period January 2011-2015. The proposed changes to the NGP include annual discharge limits for total nitrogen for the period 2011 through 2015 (attachment I). Limits were derived with a consistent methodology used to set limits in the prior permits.

Comments were received from the public by July 30, 2010. The comments are being evaluated and a response document will be produced. The permit should be adopted and issued well before the end of the year and go into effect on January 1, 2011.

The NCAB will continue to emphasize training for the wastewater treatment operators to better manage wet and cold weather conditions that have had an adverse impact on nitrogen removal (See Section IV – Use of NCE Funds). This will help ensure that the maximum benefit from existing upgrades.

In 2009 the NCAB also approved a funding program for dissolved oxygen and nitrogen sampling equipment purchases by municipal treatment plants. The equipment will help optimize the denitrification process. By constantly monitoring dissolved oxygen and nitrate levels facilities will be better able to control the amount of dissolved oxygen entering the anoxic zones and optimize nitrate recycles and supplemental carbon. It is estimated that an additional 1,374 eq. lbs N/day will be removed from the facilities that acquire analyzers to be used for process control. It is expected that the new monitoring equipment will be installed beginning in the fall of 2010 and completed in the first half of 2011 for the facilities that have expressed interest in purchasing the equipment.

#### **IV. Finances**

The principal factor moderating the rate of progress in reducing nitrogen loads is the availability of financing through the Clean Water Fund to complete nitrogen removal upgrades to municipal sewage treatment facilities. The improved performance necessary to achieve future limits will require construction of upgraded treatment technology at a number of facilities in Connecticut.

In 2007, the a Clean Water Fund Advisory Work Group (CWFAWG) established by Governor Rell published its final report titled “The Clean Water Fund Dilemma: Increasing Demands with Diminishing Fiscal Resources” [http://www.ct.gov/dep/lib/dep/water/municipal\\_wastewater/cwf\\_a\\_g\\_report.pdf](http://www.ct.gov/dep/lib/dep/water/municipal_wastewater/cwf_a_g_report.pdf). With respect to funding needs, and essential to progress towards meeting the goals for nitrogen management, the CWFAWG concluded and recommended that:

- Additional general obligation bond authority would be necessary to provide grants for new projects (CSO, denitrification, small community, etc.) financed each year. Best estimates for the next five years are general obligation needs of \$130 million/year.

- Lack of adequate state funding drives up inflationary costs, saps resources, and shifts responsibility onto the municipalities with further reliance on the property tax as the revenue source.
- Lack of adequate subsidized funding results in the overall degeneration of publicly owned facilities and the corresponding ongoing, unaddressed threat to the environment and public health.
- The achievement of water quality goals for Long Island Sound by 2014 will not be met without a significant increase in CWF funding.

The Clean Water Fund Project Priority List for fiscal years 2010 and 2011 was issued in final form on June 25, 2010. The approved funding list includes \$79,995,976 in general obligation bonds, \$200,000,000 in state revenue bonds, and \$33,963,000 in Federal capitalization grants. This falls short of the recommendations of the above-referenced report, and has resulted in a decision to provide partial funding to several denitrification projects (Norwalk and Manchester) in order to maintain some momentum towards reaching the 2014 TMDL goals.

### **Cost of Projects on Line**

Three additional nitrogen removal projects came on line early in 2009 –Milford Beaver Brook (phase 2), Milford Housatonic (Phase 2), Stratford (Phase 2) (Attachment G). These projects cost over \$100 million to construct, with \$21 million going towards nitrogen removal.

Nine additional facilities are expected to be finished in 2010 and will become project facilities for the 2011 trading year: Danbury, Groton Town, Stafford, Southington Interim Project, Windham, Meriden, Glastonbury and New Hartford. Total upgrade cost for these facilities amounts to about \$152 million with the denitrification portion at \$66 million. The complete list of nitrogen removal projects that have been completed or currently approved for funding by the Clean Water Fund is provided as Attachment G.

Through 2010, Connecticut and its municipalities have spent or committed to more than \$0.7 billion in financing upgrade projects at facilities involved in the NCE. Almost \$300 million of that investment has gone towards nitrogen control. Currently, it is estimated that total upgrade costs to meet the nitrogen control target will exceed \$1 billion, with more than \$400 million of that relevant to nitrogen control upgrades. However, the trading of nitrogen credits with its economic efficiencies is estimated to save the state in the range of \$300 - \$400 million compared to a traditional individual permit program where every facility would be required to meet its individual limit.

### **Use of NCE Funds**

As noted above, 2009 was the fifth consecutive year that the limit in the general permit has been exceeded resulting in more credits been purchase than sold into the Nitrogen Credit Exchange over disbursement levels. According to Sec. 22a-524(b)(11) of the Connecticut General Statutes, the Commissioner, in consultation with the NCAB, shall: “Establish accounts of funds created from the purchase and sale of equivalent nitrogen credits to be used for administration of the nitrogen credit exchange program and which may be used for nitrogen removal projects, habitat restoration projects and research”. Further, in Sec. 22a-524(b)(12) of the Connecticut General Statutes, the Commissioner, in consultation with the NCAB, shall: "Establish any other policies or procedures the commissioner may deem necessary to carry out the nitrogen credit exchange program; and Sec. 22a-524(b)(13) “establish a technical assistance program” to educate and assist municipalities in implementing the nitrogen credit exchange program".

Over the past two years, the NCAB recommended that funds be used for:

- Training and providing technical assistance of \$240,000 was assigned in 2007. New England Interstate Water Pollution Control Commission (NEIWPCC) has been retained to work with CT DEP and selected municipalities to train operators on the topics of nitrogen removal, the Biological Nitrogen Removal process, and better management of wet weather/cold weather conditions that have an adverse impact on nitrogen removal. This has helped ensure that the maximum benefit from existing upgrades is attained. The money assigned to this project has not all been spent.
- Providing supplemental funding to the USGS for enhanced Connecticut River monitoring. \$160,000 had been allocated on November 2007, but the Board requested an addition of \$20,000 to continue with monitoring in 2008. Because the Connecticut River is tidal, the loads along the river from Thompsonville to Long Island Sound are poorly understood. Project is ongoing.
- The NCAB is funding enhanced nutrient monitoring statewide by partnering with the USGS. In 2008, \$240,000 was provided for monitoring to be conducted on rivers throughout the state to better determine nitrogen loads from within and outside of Connecticut. Using those data along with their existing database, USGS will comprehensively analyze and report on nitrogen loads and trends to Long Island Sound for 1999 – 2008. Project is ongoing.
- The NCAB has previously set aside \$100,000 in 2007 for a study of combined sewer overflows (CSO), sanitary sewer overflows (SSO) and stormwater separation effects on nitrogen loads and other urban stormwater and sewage pollutants. In 2008, total project funding of \$741,854 was recommended by the Board and approved by the Commissioner. DEP has partnered with the University of Connecticut center for Environmental Science and Engineering (CESE) to evaluate the relative benefits and impacts of sewer separation and delivery of nitrogen to the receiving water via the POTW and direct storm sewer discharge. Project is ongoing.
- The Advisory Board has also recommended a third year's membership (2008-2009) in the Water Environment Research Foundation (WERF) at a cost of \$10,000 per year. WERF keeps members informed on the latest technology, technical discussion groups, seminars, and workshops relevant to treatment plant operations and nitrogen removal. WERF is also embarking on a nitrogen research initiative that will be very useful to nitrogen management in Connecticut and plans to use the NCE's data and experiences in their evaluations.
- The NCAB has recommended \$1,966,500 to be used for funding for the purchase of on-line (automated) or portable analyzer for dissolved oxygen (DO) and nitrogen analyzer equipment for those WPCFs that don't currently have equipment, or adequate equipment. WPCFs will be reimbursed 75% of the purchase price, which is estimated to be \$40,000 for two on-line analyzers and \$3,000 for portable analyzers. Project is ongoing.

The Advisory Board continues to explore ideas for the use of the funds for training and improvements in treatment plants to enhance nitrogen removal and to ensure that the program achieves the TMDL limit.

## **V. Revisions to the TMDL/Upper Connecticut River**

The Total Maximum Daily Load (TMDL) for nitrogen, adopted in 2001, was scheduled for revision in 2003 to include changes related to anticipated changes in Connecticut and New York water quality standards, a new System-wide Eutrophication Model (SWEM) being developed for Long Island Sound, and to include more specific nitrogen reduction targets for Upper Connecticut River Sources in

Massachusetts, New Hampshire and Vermont and for atmospheric deposition. Lengthy delays in the completion of and scenario testing with the SWEM model, as well as implementation of studies of nitrogen loading and delivery in the Upper Connecticut River have put off the TMDL revision, most recently scheduled for completion in 2010.

However, Commissioners from the five states that are in the Long Island Sound watershed recently agreed to collaborate on a five-state TMDL. While this will put the completion of the revised TMDL off for at least another year, it provides all states (Connecticut, New York, Massachusetts, New Hampshire and Vermont) with a better opportunity to contribute to the revision of the TMDL, and a legal commitment to implementing the TMDL.

With coordination by the (NEIWPC), the watershed states have been meeting regularly and evaluating the data being generated by the studies of the Upper Connecticut River to develop an equitable and reasonable nitrogen management plan. In particular, a new watershed model has been developed that allows managers to identify nitrogen loads from all point and nonpoint sources, the delivery efficiency of that nitrogen to Long Island Sound, and the costs and feasibility of reductions. These tools, and continued meeting and engagement of all five states will help maintain a commitment to revising the TMDL.

## **VI. Recommendations for Statutory Change**

Until there is further assessment of the program, and ramifications of the revised TMDL, there were no recommendations to make any statutory changes raised by the Board during 2010.

## **VIII. Attachments**

- A. Nitrogen Credit Advisory Board Members 2009
- B. Total nitrogen Balance Sheet - Monthly Averages by plant 2009
- C. Total nitrogen Balance Sheet 2002 - 2009
- D. Nitrogen Exchange Balance Sheet 2009
- E. Equalized lbs reduced by project facilities 2009
- F. Total Annual Project Costs 2009
- G. Nitrogen Removal Projects Financed by the CWF through 2009
- H. Draft Ruling
- I. Proposed General Permit for Nitrogen Discharges - 2010
- J. Nitrogen Credit Advisory Board 2011 Meeting Schedule

Attachment A  
LIST OF APPOINTEES 2009

Name	Current Appointing Authority	Term	Term Expires*
1. Vacant	Martin M. Looney Senate Majority Leader	3 years	
2. John Mengacci Under Secretary Office of Police Management 450 Capitol Avenue Hartford, CT 06106 Phone: (860) 418-6374	Robert M. Genuario Secretary Office of Policy and Management	No specific Term	
3. Robert Moore The MDC PO Box 800 555 Main St. Hartford, CT 06142-0800 Phone: 278-7850	Donald E. Williams, Jr. Senate President Pro Tem (Sullivan appointee)	3 years	November 2005 *
4. Betsey Wingfield Bureau Chief DEP 79 Elm St Hartford, CT 06016 Phone: (860) 424-3704	Amey Marrella Commissioner Environmental Protection	No specific term	

5.	Sharon Dixon Peay Office of the Treasurer 55 Elm Street Hartford, CT 06106 Phone: (860) 702-3134	Denise Nappier Secretary Office of the Treasurer	No specific Term	
6	Astrid T. Hanzalek 31 Abraham Terrace Suffield, CT 06078 Phone: (860) 668-2739	Lawrence F. Cafero, Jr. House Minority Leader (Ward Appointee)	3 years	September 2010
7.	Brian Armet Executive Director Mattabassett District 245 Main Street Cromwell, CT 06416 Phone: (860) 635-5550	Denise Merrill House Majority Leader (Pudlin Appointee)	3 years	June 2008 *
8.	Richard Cellar 83 Lawrence Road Fairfield, CT 06824-3039 Phone: (203) 255-5017	John McKinney Senate Minority Leader (DeLuca Appointee)	3 years	November 2005 *
9.	Carl Almquist Town of Groton WPCA 134 Groton Long Point Road Groton, CT 06340 - 4873 Phone: (860) 448-4083	M. Jodi Rell Governor	3 years	November 2007*

10.	Jeanette Brown Stamford WPCF Harbor View Avenue Stamford, CT 06902 (203) 977-5809	Denise Merrill House Majority Leader (Donovan Appointee)	3 years	November 2009
11.	William Norton, Director City of West Haven WPCA 355 Main Street West Haven, CT06516 (203) 937-3706	Christopher G. Donovan Speaker of the House (Amann Appointee)	3 years	February 2008*
12.	Vacant	Martin M. Looney Senate Majority Leader	3 years	

\* Appointees remain active until removed by their appointees authority

## Total Nitrogen Balance Sheet - Monthly Averages by Plant, 2009

	<u>Limit '09</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>AVG</u>
<b><u>ZONE: 1</u></b>														
GROTON CITY WPCF	117	124	118	134	93	133	125	125	126	92	87	107	111	114
GROTON TOWN WPCF	180	498	367	458	532	447	235	388	263	214	210	255	365	353
P JEWETT CITY WPCF	18	23	7	7	9	6	4	5	5	4	11	6	11	8
KILLINGLY WPCF	154	194	125	97	154	236	191	59	112	54	46	120	127	126
P LEDYARD WPCF	9	7	6	5	5	3	3	5	3	4	6	7	11	5
MONTVILLE WPCF	139	102	59	96	89	112	180	105	108	52	41	70	75	91
P NEW LONDON WPCF	454	362	430	543	416	400	346	502	367	244	233	332	514	391
NORWICH WPCF	236	833	740	780	683	598	593	762	558	384	505	440	476	612
PLAINFIELD NORTH WPCF	40	125	90	86	81	104	93	67	77	65	69	86	112	88
PLAINFIELD VILLAGE WPCF	28	61	41	46	58	49	42	20	29	33	40	45	49	43
PUTNAM WPCF	62	203	247	207	198	148	209	145	102	79	106	141	101	157
SPRAGUE WPCF	9	20	21	17	12	18	40	26	18	22	19	14	27	21
STAFFORD SPRINGS WPCF	70	179	150	163	143	143	166	159	122	195	174	200	148	162
STONINGTON BOROUGH WP	16	13	8	11	14	7	7	46	20	10	6	5	9	13
STONINGTON MYSTIC WPCF	32	17	19	19	29	29	30	57	29	31	20	12	14	25
STONINGTON PAWCATUCK	28	28	23	19	23	17	18	24	38	16	34	40	24	25
THOMPSON WPCF	12	27	23	12	15	12	8	16	13	21	17	24	29	18
P UCONN WPCF	52	91	106	65	109	53	72	54	65	90	80	89	121	83
WINDHAM WPCF	148	184	225	288	278	184	150	304	466	576	535	581	593	364
<b><u>ZONE: 2</u></b>														
P BRISTOL WPCF	469	530	551	526	468	392	344	327	270	409	562	468	582	452
CANTON WPCF	28	99	112	95	106	101	96	80	86	93	103	109	126	100
P EAST HAMPTON WPCF	64	143	128	123	138	156	103	82	62	103	102	108	201	121
P EAST HARTFORD WPCF	344	434	407	519	473	611	436	405	338	336	341	315	398	418
P EAST WINDSOR WPCF	70	36	17	13	12	21	21	32	30	23	48	25	30	26
P ENFIELD WPCF	328	240	297	435	342	233	255	259	257	217	258	298	294	282
FARMINGTON WPCF	209	318	346	313	225	283	318	282	211	206	219	229	280	269
GLASTONBURY WPCF	115	302	357	359	320	489	312	93	60	64	87	127	112	223
P HARTFORD WPCF	2798	4850	4936	6379	4882	5079	3544	4092	2852	3193	3245	3093	4461	4217
MANCHESTER WPCF	367	954	876	874	877	774	787	761	765	766	863	922	992	851
MATTABASSETT WPCF	982	1224	1248	1503	1354	970	1045	1048	906	893	951	926	1409	1123
MIDDLETOWN WPCF	261	442	483	613	627	534	399	709	353	343	405	420	552	490

P = Project Facility

Report Date: 3/10/2010

## Total Nitrogen Balance Sheet - Monthly Averages by Plant, 2009

	Limit'09	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
P PLAINVILLE WPCF	119	95	71	116	84	75	124	200	109	130	217	227	171	135
PLYMOUTH WPCF	49	76	61	45	93	57	59	94	141	122	95	84	100	85
P PORTLAND WPCF	37	78	34	36	31	33	19	28	29	21	22	26	39	33
ROCKY HILL WPCF	339	547	456	561	501	495	480	681	582	567	473	427	541	526
P SIMSBURY WPCF	126	128	73	88	82	101	70	85	64	82	90	86	67	84
SOUTH WINDSOR WPCF	124	319	275	307	348	347	375	322	290	331	347	345	312	326
P SUFFIELD WPCF	52	101	48	47	65	75	68	93	22	14	14	9	15	47
VERNON WPCF	217	435	349	384	393	411	367	340	285	308	328	333	395	361
P WINDSOR LOCKS WPCF	77	136	135	150	143	131	90	117	118	74	70	84	108	113
WINDSOR POQUONOCK WPCF	115	334	376	382	429	598	463	465	494	494	517	446	410	450
P WINSTED WPCF	75	78	67	79	86	89	64	53	76	52	44	50	53	66
<b>ZONE: 3</b>														
P BRANFORD WPCF	226	136	70	76	75	83	81	86	78	180	51	61	149	94
P CHESHIRE WPCF	121	99	66	64	62	45	51	63	75	51	44	56	81	63
MERIDEN WPCF	528	949	863	900	986	906	1099	1570	1236	1069	1004	1010	1021	1051
P NEW HAVEN EAST WPCF	1845	1665	1449	1390	1622	1689	1697	1429	1556	1678	1555	1476	1896	1592
P NORTH HAVEN WPCF	186	289	206	181	140	216	192	170	205	157	127	202	202	191
SOUTHINGTON WPCF	239	843	943	827	867	952	936	734	701	755	477	284	380	725
P WALLINGFORD WPCF	317	455	474	508	439	344	330	405	288	297	380	557	675	429
P WEST HAVEN WPCF	415	575	671	624	603	490	623	588	459	540	324	491	604	549
<b>ZONE: 4</b>														
ANSONIA WPCF	135	262	289	360	452	301	301	278	249	185	184	195	182	270
BEACON FALLS WPCF	14	76	73	74	76	60	45	45	51	34	46	55	64	58
DANBURY WPCF	520	1795	1958	2090	2208	1920	2106	2063	1983	1984	1923	2068	1589	1974
P DERBY WPCF	84	57	44	65	69	68	81	66	82	53	47	56	83	64
P LITCHFIELD WPCF	27	47	65	59	76	43	33	31	23	23	28	43	45	43
P MILFORD BEAVER BROOK W	111	117	106	131	150	145	142	106	127	130	136	167	193	137
P MILFORD HOUSATONIC WPC	363	356	375	311	339	394	282	243	322	304	280	383	303	324
NAUGATUCK TREATMENT C	290	384	409	255	366	147	367	373	339	434	366	298	400	345
NEW MILFORD WPCF	28	138	141	156	95	108	71	121	100	70	102	82	122	109
P NEWTOWN WPCF	19	30	32	17	12	18	17	12	11	8	11	21	27	18
NORFOLK WPCF	13	22	44	49	26	24	38	38	14	8	11	15	23	26
NORTH CANAAN WPCF	15	25	31	29	26	25	26	29	18	22	23	26	26	25
SALISBURY WPCF	25	28	32	33	34	34	34	34	33	33	29	33	31	32

P = Project Facility

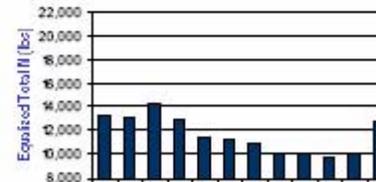
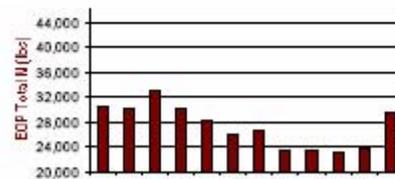
Report Date: 3/10/2010

# Total Nitrogen Balance Sheet - Monthly Averages by Plant, 2009

	Limit '09	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
P SEYMOUR WPCF	72	92	102	99	58	62	74	64	60	35	36	55	88	69
P SHELTON WPCF	125	221	310	358	442	253	109	101	151	293	104	105	187	219
SOUTHURY TR. SCHOOL W	18	7	5	7	7	4	6	3	2	3	2	2	3	4
P STRATFORD WPCF	418	1131	1353	1172	608	364	332	248	297	503	379	378	496	605
P THOMASTON WPCF	49	53	37	35	26	36	48	44	36	32	40	60	32	40
TORRINGTON WPCF	292	252	245	262	262	243	240	268	221	159	162	186	218	226
P WATERBURY WPCF	1188	1080	960	1040	824	828	792	1018	716	611	640	672	1103	857
<b>ZONE: 5</b>														
P BRIDGEPORT EAST WPCF	426	450	262	380	462	287	274	259	257	207	264	212	305	301
P BRIDGEPORT WEST WPCF	1225	976	855	1066	1069	1033	998	949	958	828	823	1097	1572	1019
P FAIRFIELD WPCF	478	838	564	694	626	638	390	226	217	142	216	201	420	431
P WESTPORT WPCF	102	41	34	37	34	30	42	31	38	32	54	37	43	38
<b>ZONE: 6</b>														
P GREENWICH WPCF	564	462	419	448	386	399	578	449	443	483	422	433	605	461
P NEW CANAAN WPCF	75	22	24	47	27	25	15	24	26	29	30	34	56	30
P NORWALK WPCF	845	969	1417	1681	1139	635	717	586	582	570	721	631	920	881
P RIDGEFIELD SOUTH ST. WPC	34	45	41	43	36	44	39	28	34	28	41	29	43	38
P STAMFORD WPCF	1090	623	521	580	491	495	519	497	405	395	437	482	679	510

<b>End-Of-Pipe Total</b>	<b>30,591</b>	<b>29,993</b>	<b>33,142</b>	<b>30,235</b>	<b>28,137</b>	<b>26,072</b>	<b>26,789</b>	<b>23,307</b>	<b>23,389</b>	<b>23,152</b>	<b>23,910</b>	<b>29,428</b>
<b>Equalized Total</b>	<b>13,278</b>	<b>13,083</b>	<b>14,223</b>	<b>12,942</b>	<b>11,564</b>	<b>11,268</b>	<b>11,012</b>	<b>10,010</b>	<b>9,992</b>	<b>9,711</b>	<b>10,156</b>	<b>12,853</b>

<b>End-Of-Pipe Permit = 21,691</b>
<b>End-Of-Pipe Avg. = 27,345</b>
<b>Equalized Permit = 10,746</b>
<b>Equalized Avg. = 11,674</b>



P = Project Facility

Report Date: 3/10/2010

## Attachment C

## Total Nitrogen Balance Sheet - Monthly Averages lbs/day by Plant, 2002 - 2009

	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
<b>ZONE:1</b>								
GROTON CITY WPCF	210	161	179	132	118	129	110	114
GROTON TOWN WPCF	566	465	447	444	470	421	451	353
JEWETT CITY WPCF	36	40	39	13	10	13	13	8
KILLINGLY WPCF	162	147	159	177	152	158	191	126
LEDYARD WPC	5	3	4	5	7	5	7	5
MONTVILLE WPCF	187	153	222	92	98	69	82	91
NEW LONDON WPCF	449	405	332	434	423	414	377	391
NORWICH WPCF	758	986	769	748	828	684	673	612
PLAINFIELD NORTH WPCF	50	87	78	90	119	108	105	88
PLAINFIELD VILLAGE WPCF	32	44	41	49	54	42	42	43
PUTNAM WPCF	163	170	174	193	205	206	206	157
SPRAGUE WPCF	15	7	10	13	22	14	15	21
STAFFORD SPRINGS WPCF	135	131	121	131	114	120	160	162
STONINGTON BOROUGH WPCF	55	55	42	47	37	22	19	13
STONINGTON MYSTIC WPCF	36	43	49	48	51	31	30	25
STONINGTON PAWCATUCK	46	34	46	30	25	18	19	25
THOMPSON WPCF	21	35	29	33	28	28	21	18
UCONN WPCF	78	70	107	65	94	67	103	83
WINDHAM WPCF	265	243	216	165	167	174	258	364
<b>End of Pipe Total</b>	<b>3269</b>	<b>3279</b>	<b>3064</b>	<b>2909</b>	<b>3022</b>	<b>2723</b>	<b>2882</b>	<b>2699</b>
<b>ZONE:2</b>								
BRISTOL WPCF	949	1121	793	567	575	532	511	452
CANTON WPCF	70	87	101	106	113	92	99	100
EAST HAMPTON WPCF	86	119	96	85	140	110	136	121
EAST HARTFORD WPCF	755	749	812	803	902	391	417	418
EAST WINDSOR WPCF	20	34	31	45	32	32	27	26
ENFIELD WPCF	914	839	275	535	331	218	272	282
FARMINGTON WPCF	386	354	401	398	440	433	309	269
GLASTONBURY WPCF	263	307	340	214	290	295	364	223
HARTFORD WPCF	5978	5900	6529	6831	7408	5839	5326	4217
MANCHESTER WPCF	822	762	755	772	785	715	705	851
MATTABASSETT WPCF	2120	1795	1453	1408	1202	1129	1053	1123
MIDDLETOWN WPCF	392	385	424	486	440	397	446	490
PLAINVILLE WPCF	252	304	311	285	301	280	315	135
PLYMOUTH WPCF	73	69	68	76	80	71	87	85
PORTLAND WPCF	24	28	36	33	34	26	33	33
ROCKY HILL WPCF	631	767	780	919	787	610	484	526
SIMSBURY WPCF	344	316	323	368	206	84	70	84
SOUTH WINDSOR WPCF	298	324	317	340	298	322	323	326
SUFFIELD WPCF	34	37	38	72	88	74	88	47
VERNON WPCF	483	663	538	488	580	469	426	361
WINDSOR LOCKS WPCF	131	116	100	143	98	94	110	113
WINDSOR POQUONOCK	427	422	441	467	432	419	457	450
WINSTED WPCF	250	187	201	206	223	120	82	66
<b>End of Pipe Total</b>	<b>15701</b>	<b>15683</b>	<b>15163</b>	<b>15647</b>	<b>15785</b>	<b>12752</b>	<b>12140</b>	<b>10798</b>
<b>ZONE:3</b>								
BRANFORD WPCF	142	79	129	135	103	111	105	94
CHESHIRE WPCF	468	492	536	480	171	74	75	63
MERIDEN WPCF	860	917	882	781	827	810	1008	1051
NEW HAVEN EAST WPCF	1400	1630	1408	1703	2271	2201	1650	1592

## Total Nitrogen Balance Sheet - Monthly Averages lbs/day by Plant, 2002 - 2009

	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
NORTH HAVEN WPCF	534	502	489	424	226	214	249	191
SOUTHINGTON WPCF	819	798	768	754	761	868	911	725
WALLINGFORD WPCF	549	601	627	657	522	340	381	429
WEST HAVEN WPCF	796	668	511	601	546	498	779	549
<b>End of Pipe Total</b>	<b>7570</b>	<b>7690</b>	<b>7353</b>	<b>7540</b>	<b>7433</b>	<b>7123</b>	<b>7166</b>	<b>6703</b>
<b>ZONE:4</b>								
ANSONIA WPCF	273	307	260	287	289	237	260	270
BEACON FALLS WPCF	41	45	38	42	44	50	57	58
DANBURY WPCF	1866	1875	1825	1766	2072	1778	1885	1974
DERBY WPCF	53	64	58	59	65	63	64	64
LITCHFIELD WPCF	67	54	35	49	39	38	45	43
MILFORD BEAVER BROOK	130	180	120	127	130	132	121	137
MILFORD HOUSATONIC	439	429	431	479	574	662	742	324
NAUGATUCK TREATMENT	479	440	234	279	263	250	344	345
NEW MILFORD WPCF	76	52	56	91	86	88	103	109
NEWTOWN WPCF	34	50	32	24	36	26	19	18
NORFOLK WPCF	9	13	12	20	29	32	29	26
NORTH CANAAN WPCF	18	22	21	31	23	25	24	25
SALISBURY WPCF	27	27	23	28	29	28	34	32
SEYMOUR WPCF	55	56	61	69	66	62	58	69
SHELTON WPCF	452	545	509	501	480	413	219	219
SOUTHBURY TR. SCHOOL	17	18	16	14	10	7	8	4
STRATFORD WPCF	535	646	431	539	537	616	1425	605
THOMASTON WPCF	35	51	45	45	44	32	42	40
TORRINGTON WPCF	283	299	287	254	265	247	275	226
WATERBURY WPCF	778	1335	913	965	1001	1034	869	857
<b>End of Pipe Total</b>	<b>5667</b>	<b>6508</b>	<b>5407</b>	<b>5669</b>	<b>6082</b>	<b>5820</b>	<b>6623</b>	<b>5445</b>
<b>ZONE:5</b>								
BRIDGEPORT EAST WPCF	568	615	459	470	468	271	253	301
BRIDGEPORT WEST WPCF	2305	2306	1158	1564	1145	1146	1262	1019
FAIRFIELD WPCF	735	453	417	383	530	408	488	431
WESTPORT WPCF	140	133	152	148	153	70	44	38
<b>End of Pipe Total</b>	<b>3748</b>	<b>3508</b>	<b>2186</b>	<b>2565</b>	<b>2296</b>	<b>1895</b>	<b>2047</b>	<b>1789</b>
<b>ZONE:6</b>								
GREENWICH WPCF	410	459	443	556	520	697	479	461
NEW CANAAN WPCF	21	24	20	30	30	38	29	30
NORWALK WPCF	605	888	784	818	755	1043	766	881
RIDGEFIELD SOUTH ST.	23	27	28	35	28	32	34	38
STAMFORD WPCF	1652	1645	1523	1418	1029	726	550	510
<b>End of Pipe Total</b>	<b>2711</b>	<b>3044</b>	<b>2798</b>	<b>2857</b>	<b>2362</b>	<b>2536</b>	<b>1858</b>	<b>1920</b>
<b>State End of Pipe Total</b>	<b>36664</b>	<b>37708</b>	<b>33966</b>	<b>33182</b>	<b>34974</b>	<b>30842</b>	<b>30702</b>	<b>27345</b>

Attachment D

LIS Total Nitrogen Credit Exchange Final Balance – 2009

**SELLING Credits**

Facility Name	
STAMFORD WPCF	\$961,118
WATERBURY WPCF	\$329,100
BRIDGEPORT WEST WPCF	\$290,158
NEW HAVEN EAST WPCF	\$251,548
BRIDGEPORT EAST WPCF	\$174,658
GREENWICH WPCF	\$170,681
BRANFORD WPCF	\$131,242
WESTPORT WPCF	\$90,146
NEW CANAAN WPCF	\$74,570
FAIRFIELD WPCF	\$66,201
TORRINGTON WPCF	\$64,627
CHESHIRE WPCF	\$47,095
MILFORD HOUSATONIC WPCF	\$43,300
DERBY WPCF	\$22,205
NEW LONDON WPCF	\$18,792
ENFIELD WPCF	\$14,483
MONTVILLE WPCF	\$14,317
EAST WINDSOR WPCF	\$13,853
SIMSBURY WPCF	\$12,229
SOUTHBURY TR. SCHOOL WPCF	\$10,672
THOMASTON WPCF	\$8,948
KILLINGLY WPCF	\$6,032
BRISTOL WPCF	\$5,071
SEYMOUR WPCF	\$3,331
JEWETT CITY WPCF	\$2,817
WINSTED WPCF	\$2,685
STONINGTON MYSTIC WPCF	\$1,790
PORTLAND WPCF	\$1,326
SUFFIELD WPCF	\$1,259
LEDYARD WPCF	\$1,193
STONINGTON BOROUGH WPCF	\$895
STONINGTON PAWCATUCK WPCF	\$845
NEWTOWN WPCF	\$762
GROTON CITY WPCF	\$597

**BUYING Credits**

Facility Name	
DANBURY WPCF	\$1,108,335
HARTFORD WPCF	\$470,285
MERIDEN WPCF	\$424,665
SOUTHINGTON WPCF	\$394,622
STRATFORD WPCF	\$207,618
MANCHESTER WPCF	\$152,387
ANSONIA WPCF	\$149,885
WEST HAVEN WPCF	\$133,231
NORWICH WPCF	\$112,451
WALLINGFORD WPCF	\$111,357
WINDSOR POQUONOCK WPCF	\$105,789
SHELTON WPCF	\$105,474
MIDDLETOWN WPCF	\$75,895
SOUTH WINDSOR WPCF	\$63,914
NEW MILFORD WPCF	\$61,744
ROCKY HILL WPCF	\$61,976
NORWALK WPCF	\$57,999
NAUGATUCK TREATMENT Co.	\$54,684
WINDHAM WPCF	\$53,690
GROTON TOWN WPCF	\$51,602
BEACON FALLS WPCF	\$48,851
MATTABASSETT WPCF	\$46,730
VERNON WPCF	\$45,338
GLASTONBURY WPCF	\$36,125
MILFORD BEAVER BROOK WPCF	\$29,977
EAST HARTFORD WPCF	\$23,299
STAFFORD SPRINGS WPCF	\$22,868
PUTNAM WPCF	\$22,039
CANTON WPCF	\$21,774
EAST HAMPTON WPCF	\$18,891
FARMINGTON WPCF	\$17,897
WINDSOR LOCKS WPCF	\$11,335
PLAINFIELD NORTH WPCF	\$11,136
PLYMOUTH WPCF	\$11,036
LITCHFIELD WPCF	\$9,280
UCONN WPCF	\$7,706
NORFOLK WPCF	\$7,540
RIDGEFIELD SOUTH ST. WPCF	\$6,628
NORTH CANAAN WPCF	\$6,380
NORTH HAVEN WPCF	\$4,971
PLAINVILLE WPCF	\$4,772
SALISBURY WPCF	\$4,060
PLAINFIELD VILLAGE WPCF	\$3,480
SPRAGUE WPCF	\$3,182
THOMPSON WPCF	\$1,790

**TOTAL \$2,838,546**

**TOTAL \$4,384,688**

**Difference: Selling - Buying = (\$1,546,142)**

**BOLD = Clean Water Fund Nitrogen Project Facility**

The final balance (annual dollar amount) for each facility was calculated by subtracting the facility's 2009 TN loading as reported to DEP, from the facility's General Permit 2009 limit; The difference was then multiplied by the E-factor for that facility to determine the number of credits available to sell or needed to purchase. Credits were then multiplied by the value of a credit (\$4.54) to calculate the annual balance shown above.

## E Pounds Reduced by Project Facilities - 2009

Project Facilities	Baseload	Average TN	EOP Reduced	E Factor	E Pounds Reduced
BRANFORD WPCF	526	94	432	0.60	259.20
BRIDGEPORT EAST WPCF	991	302	689	0.85	585.65
BRIDGEPORT WEST WPCF	2852	1019	1833	0.85	1,558.05
BRISTOL WPCF	1091	452	639	0.18	115.02
CHESHIRE WPCF	281	75	206	0.49	100.94
DERBY WPCF	195	64	131	0.67	87.77
EAST HAMPTON WPCF	148	121	27	0.20	5.40
EAST HARTFORD WPCF	801	418	383	0.19	72.77
EAST WINDSOR WPCF	163	26	137	0.19	26.03
ENFIELD WPCF	763	282	481	0.19	91.39
FAIRFIELD WPCF	1113	431	682	0.85	579.70
GREENWICH WPCF	1313	461	852	1.00	852.00
HARTFORD WPCF	6512	4217	2295	0.20	459.00
JEWETT CITY WPCF	42	13	29	0.17	4.93
LEDYARD WPCF	20	5	15	0.18	2.70
LITCHFIELD WPCF	64	43	21	0.35	7.35
MILFORD BEAVER BROOK WPCF	258	138	120	0.67	80.40
MILFORD HOUSATONIC WPCF	844	324	520	0.67	348.40
NEW CANAAN WPCF	175	30	145	1.00	145.00
NEW HAVEN EAST WPCF	4294	1592	2702	0.60	1,621.20
NEW LONDON WPCF	1057	391	666	0.18	119.88
NEWTOWN WPCF	45	18	27	0.46	12.42
NORTH HAVEN WPCF	433	249	184	0.60	110.40
NORWALK WPCF	1967	880	1087	1.00	1,087.00
PLAINVILLE WPCF	277	135	142	0.18	25.56
PORTLAND WPCF	86	33	53	0.20	10.60
RIDGEFIELD SOUTH ST. WPCF	80	38	42	1.00	42.00
SEYMOUR WPCF	167	69	98	0.67	65.66
SHELTON WPCF	290	220	70	0.67	46.90
SIMSBURY WPCF	293	70	223	0.18	40.14
STAMFORD WPCF	2536	510	2026	1.00	2,026.00
STRATFORD WPCF	974	605	369	0.67	247.23
SUFFIELD WPCF	123	88	35	0.19	6.65
THOMASTON WPCF	114	40	74	0.60	44.40
UConn WPCF	120	83	37	0.15	5.55
WALLINGFORD WPCF	737	429	308	0.60	184.80
WATERBURY WPCF	2766	857	1909	0.60	1,145.40
WEST HAVEN WPCF	967	549	418	0.60	250.80
WESTPORT WPCF	238	38	200	0.85	170.00
WINDSOR LOCKS WPCF	180	113	67	0.19	12.73
WINSTED WPCF	175	82	93	0.18	16.74

<b>TOTAL:</b>	<b>12,673.76</b>
---------------	------------------

Projects Cost                      \$21,004,829

Credit	
Cost:	\$4.54

**Attachment F**  
**Total Annual Project Cost**

<b>Project Facilities</b>	<b>Total Annual Capital Cost</b>	<b>Total Annual O&amp;M Cost</b>	<b>Total Annual Project Cost</b>
BRANFORD WPCF	\$168,661	\$508,270	\$676,931
BRIDGEPORT EAST WPCF	\$51,755	\$777,596	\$829,351
BRIDGEPORT WEST WPCF	\$155,266	\$1,228,043	\$1,383,309
BRISTOL WPCF	\$28,759	\$111,383	\$140,142
CHESHIRE WPCF	\$317,316	\$269,180	\$586,496
DERBY WPCF	\$31,785	\$105,702	\$137,487
EAST HAMPTON WPCF	\$30,144	\$157,299	\$187,443
EAST HARTFORD WPCF	\$82,707	\$170,522	\$253,229
EAST WINDSOR WPCF	\$61,136	\$40,676	\$101,812
ENFIELD WPCF	\$0	\$381,086	\$381,086
FAIRFIELD WPCF	\$514,885	\$524,174	\$1,039,059
GREENWICH WPCF	\$0	\$139,689	\$139,689
HARTFORD WPCF*	\$107,555	\$452,770	\$560,325
JEWETT CITY WPCF	\$65,659	\$112,508	\$178,167
LEDYARD WPCF	\$18,062	\$19,986	\$38,048
LITCHFIELD WPCF	\$45,829	\$48,564	\$94,393
MILFORD BEAVER BROOK WPCF	\$9,074	\$148,144	\$157,218
MILFORD HOUSATONIC WPCF	\$0	\$398,466	\$398,466
NEW CANAAN WPCF	\$56,656	\$79,352	\$136,008
NEW HAVEN EAST WPCF	\$151,122	\$1,233,449	\$1,384,571
NEW LONDON WPCF	\$54,978	\$321,005	\$375,983
NEWTOWN WPCF	\$72,954	\$83,367	\$156,321
NORTH HAVEN WPCF	\$54,418	\$252,223	\$306,641
NORWALK WPCF	\$276,853	\$995,707	\$1,272,560
PLAINVILLE WPCF*	\$253,448	\$376,757	\$630,205
PORTLAND WPCF	\$44,740	\$121,744	\$166,484
RIDGEFIELD SOUTH ST. WPCF	\$0	\$54,981	\$54,981
SEYMOUR WPCF	\$14,654	\$96,055	\$110,709
SIMSBURY WPCF	\$211,063	\$305,996	\$517,059
SHELTON WPCF	\$21,642	\$34,610	\$56,252
STAMFORD WPCF	\$2,238,236	\$1,248,202	\$3,486,438
STRATFORD WPCF	\$0	\$397,781	\$397,781
SUFFIELD WPCF	\$0	\$184,347	\$184,347
THOMASTON WPCF	\$56,408	\$150,841	\$207,249
<b>UConn WPCF</b>	<b>\$0</b>	<b>\$42,377</b>	<b>\$42,377</b>
WALLINGFORD WPCF	\$122,125	\$228,109	\$350,234
WATERBURY WPCF	\$737,935	\$506,081	\$1,244,016
WEST HAVEN WPCF	\$0	\$540,674	\$540,674
WESTPORT WPCF	\$1,688,193	\$56,545	\$1,744,738
WINDSOR LOCKS WPCF	\$84,200	\$145,597	\$229,797
WINSTED WPCF	\$43,673	\$83,080	\$126,753
<b>TOTAL</b>	<b>\$7,871,891</b>	<b>\$13,132,938</b>	<b>\$21,004,829</b>
<b>BOLD=ESTIMATED</b>			

## Attachment G

## Nitrogen Removal Projects Financed by the CWF through 2010

City or Town	Total Project Cost (\$)	Nitrogen Cost Portion (\$)	Year project Completed	Baseline lbs/day	2009 lbs/day
Seymour	9,800,000	250,000	1993	167	69
East Windsor	10,000,000	1,000,000	1996	163	26
Fairfield Phase 1	4,700,000	4,700,000	1996	1113	431
Greenwich	500,000	500,000	1996	1313	461
Milford BB Phase 1	1,000,000	1,000,000	1996	258	137
Milford H Phase 1	650,000	650,000	1996	844	324
Norwalk Phase 1	1,100,000	1,100,000	1996	1967	881
Ridgefield	200,000	200,000	1996	80	38
Stratford Phase 1	800,000	800,000	1996	974	162
Univ. of Conn	12,000,000	1,058,000	1996	120	83
West Haven Phase 1	750,000	750,000	1996	967	549
Westport Phase 1	400,000	400,000	1996	238	38
Ledyard	3,500,000	3,500,000	1997	20	5
New Haven Phase 1	8,200,000	8,200,000	1997	4294	1592
Newtown	12,000,000	1,058,000	1997	45	18
Stamford Phase 1	3,500,000	3,500,000	1997	2536	510
Derby	2,763,000	2,763,000	2000	195	64
New Canaan	14,000,000	1,235,000	2000	175	30
Norwalk Phase 2	56,000,000	5,538,000	2000	1967	881
Waterbury	120,000,000	17,359,000	2000	2766	857
East Hampton	690,000	690,000	2001	148	121
Thomaston	9,313,000	1,164,000	2001	114	40
New London	3,069,000	2,889,000	2002	1057	391
Portland	5,200,000	1,047,000	2002	86	33

City or Town	Total Project Cost (\$)	Nitrogen Cost Portion (\$)	Year project Completed	Baseline lbs/day	2009 lbs/day
<b>Branford</b>	21,542,000	3,158,000	2003	526	94
<b>Fairfield Phase 2</b>	40,551,000	12,046,000	2003	1113	431
<b>Windsor Locks</b>	2,349,000	1,841,000	2003	180	113
<b>Bridgeport E Phase 1</b>	2,090,000	2,090,000	2004	991	301
<b>Bridgeport W Phase 1</b>	2,375,000	2,375,000	2004	2852	1019
<b>Bristol Phase 1</b>	584,000	584,000	2004	1091	452
<b>Enfield</b>	2,390,000	2,390,000	2004	763	282
<b>Litchfield</b>	4,000,000	1,000,000	2004	64	43
<b>Jewett City</b>	10,000,000	1,500,000	2005	42	8
<b>Stamford Phase 2</b>	97,223,000	59,500,000	2006	2536	510
<b>North Haven</b>	1,000,000	1,000,000	2006	433	191
<b>Wallingford</b>	2,276,000	2,276,000	2006	737	429
<b>East Hartford</b>	1,965,000	1,965,000	2007	801	418
<b>Cheshire</b>	5,775,000	5,775,000	2007	281	63
<b>Simsbury Phase 1</b>	21,231,000	4,044,000	2007	293	84
<b>Suffield</b>	4,075,000	3,370,000	2007	122	47
<b>Winsted</b>	1,100,000	1,100,000	2007	175	66
<b>Westport Phase 2</b>	37,131,000	8,253,000	2008	238	38
<b>Shelton</b>	21,642,000	4,293,000	2008	290	219
<b>Hartford</b> Interim Project	6,900,000	6,900,000	2008	6512	4217
<b>Plainville</b>	25,541,000	6,217,000	2008	277	135
<b>Milford BB Phase 2</b>	11,700,000	1,613,000	2009	258	137
<b>Milford H Phase 2</b>	34,900,000	10,038,000	2009	844	324
<b>Stratford Phase 2</b>	54,000,000	10,116,000	2009	974	605
<b>Danbury</b>	5,000,000	5,000,000	2010	1211	1974
<b>Groton Town</b>	16,551,000	4,842,000	2010	420	353
<b>Southington</b> Interim Project	13,000,000	13,000,000	2010	433	725

<b>City or Town</b>	<b>Total Project Cost (\$)</b>	<b>Nitrogen Cost Portion (\$)</b>	<b>Year project Completed</b>	<b>Baseline lbs/day</b>	<b>2009 lbs/day</b>
<b>Stafford</b>	12,100,000	1,581,000	2010	164	162
<b>Windham</b>	22,917,000	1,638,583	2010	344	364
<b>Glastonbury</b>	30,611,000	6,671,854	2010	268	223
<b>Meriden</b>	42,455,000	32,517,000	2010	1230	1051
<b>New Hartford</b>	10,000,000	1,000,000	2010	12	12
<b>Hartford</b>	33,589,000	To be Determine	2011	6512	4217
<b>South Windsor</b>	36,000,000	7,300,000	2011	289	326
<b>New Milford</b>	29,900,000	6,080,545	2011	66	109
<b>West Haven</b>	55,000,000	13,200,000	2012	967	549
<b>Ansonia</b>	41,731,000	10,015,000	2012	314	270

Commissioner's Memo on Price of Credit for 2008.



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Notice of Proposed Value of an Equivalent Nitrogen Credit for 2009

To: Connecticut Municipalities with Sewage Treatment Facilities
From: Amey Marrella, Commissioner, Department of Environmental Protection
Betsy Wingfield, Chair, Nitrogen Credit Advisory Board
Date: February 11, 2010

The Connecticut Department of Environmental Protection, working with the Nitrogen Credit Advisory Board, implements a nitrogen credit exchange program and General Permit for nitrogen discharges to reduce nitrogen loadings from sewage treatment plants.

Under the exchange program, the cost of a credit is calculated on an annual basis. Accordingly, pursuant to Section 22a-527(b), the Nitrogen Credit Advisory Board hereby gives notice that it proposes an annual value for an equivalent nitrogen credit of \$4.54 for calendar year 2009. This value was derived, as specified in Section 22a-527(b), by dividing the total annual project cost for nitrogen removal projects at Connecticut sewage treatment facilities by the reduction in equivalent pounds of nitrogen achieved.

The Commissioner of the Department of Environmental Protection hereby issues a draft ruling accepting the Board's proposal of a value of \$4.54 for an equivalent nitrogen credit in calendar year 2009. You have until March 4th to review the last two months data (November and December). Please look over the data for your facility and if you have any questions please contact Iliana Ayala at the number listed below.

Pursuant to Section 22a-527(c), the Commissioner's draft ruling shall become final if no municipality or group of municipalities petition for a review of the proposed value of an equivalent nitrogen credit within 15 business days after the issuance date of the Commissioner's draft ruling.

Enclosed with this notice is a table that lists the facilities that will be buying and selling nitrogen credits under this program for the year 2009. Should you have any questions, please contact Ms. Iliana Ayala of the Department's Water Protection and Land Reuse Bureau at 860-424-3758 or email Ms. Ayala at iliana.ayala@ct.gov.

Sincerely,
Betsy Wingfield
Chairman, Nitrogen Credit Advisory Board

Sincerely,
Amey Marrella
Commissioner

Carl Almquist, Groton
Brian Armet, Mattabassett District
Jeannette Brown, Stamford
Richard Cellar, Fairfield
Astrid T. Hanzalek, Suffield
John Mengacci, Office of Policy and Management
Robert Moore, Metropolitan District Commission
William Norton, West Haven
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**STATE OF CONNECTICUT  
DEPARTMENT OF ENVIRONMENTAL PROTECTION**



**Proposed General Permit for Nitrogen  
Discharges**

June 2010

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# Proposed General Permit for Nitrogen Discharges

## Section 1. Authority

This general permit is issued under the authority of *Sections 22a-521 through 527 and Chapter 446k* of the Connecticut General Statutes.

## Section 2. Definitions

As used in this general permit, and as defined or modified from *Section 22a-521 of the Connecticut General Statutes*:

*"Annual mass loading of total nitrogen"* (expressed in pounds per day) means the sum of monthly mass loading of total nitrogen for each month from January through December divided by 12 and rounded to the nearest whole number.

*"Authorized activity"* means any activity authorized by this general permit.

*"CFR"* means Code of Federal Regulations.

*"Commissioner"* means Commissioner as defined by *Section 22a-2(b)* of the General Statutes.

*"Daily composite"* means a composite sample taken over a full operating day consisting of grab samples collected at equal intervals of no more than sixty (60) minutes and combined proportionally to flow; or, a composite sample continuously collected over a full operating day proportional to flow.

*"Daily mass loading of total nitrogen"* (expressed in pounds per day) means the total nitrogen concentration (expressed in mg/L to the nearest 0.1 mg/L) multiplied by the daily flow volume (expressed as MGD, to the nearest 0.1 MGD for facilities with a design capacity of 1.0 MGD or greater and to the nearest 0.01 MGD for facilities with a design capacity of less than 1.0 MGD) multiplied by 8.34 and rounded to the nearest whole number to convert to pounds per day units.

*"Department"* means the Department of Environmental Protection.

*"Discharge Monitoring Report"* or *"DMR"* means a report form provided or approved by the Commissioner for use by a permittee to submit discharge monitoring data to the Department relating to compliance with limits and conditions established in the individual permit for a facility.

*"Equivalency factor"* means a ratio of the unit response of dissolved oxygen to nitrogen in Long Island Sound for each POTW based on the geographic location of the specific POTW's discharge point divided by the unit response of the geographic area with the highest impact.

1

*"Equivalent nitrogen credit"* means a nitrogen credit multiplied by the equivalency factor.

*"Individual permit"* means a permit issued to a named permittee under Section 22a-430-4 of the Regulations of Connecticut State Agencies.

*"Monthly mass loading of total nitrogen"* (expressed in pounds per day) means the sum of the daily mass loading of total nitrogen for each monitored day during the month divided by the number of monitoring days during the month and rounded to the nearest whole number.

*"Monthly Operating Report"* or *"MOR"* means a report form provided or approved by the Commissioner for use by a permittee in submitting data to the Department related to the operation of a facility.

*"Municipality"* means municipality as defined by Section 22a-423 of the Connecticut General Statutes.

*"Nitrogen Analysis Report"* or *"NAR"* means a report form provided or approved by the Commissioner for use by a permittee in submitting monitoring data to the Department related to the discharge of nitrogen from a facility.

*"Nitrogen credit"* means the difference between the annual mass loading of total nitrogen specified for a POTW in the general permit for treated nitrogen discharges and the monitored annual mass loading of total nitrogen discharged by that POTW expressed as pounds of nitrogen per day.

*"Nitrogen credit exchange program"* means the program within the Department established pursuant to Section 22a-524 of the Connecticut General Statutes.

*"Nitrogen Wasteload Allocation"* means a total load of nitrogen assigned to a discharger expressed in pounds per day of total nitrogen discharged.

*"Permittee"* means a municipality or person discharging nitrogen as authorized by the general permit.

*"Person"* means person as defined by Section 22a-423 of the Connecticut General Statutes.

*"Publicly Owned Treatment Works"* or *"POTW"* means a system used for the collection, treatment or disposal of sewage from one or more parcels of land and that discharges to the waters of the state and is owned by a municipality of the state.

*"TMDL"* means the Total Maximum Daily Load analysis to achieve water quality standards for dissolved oxygen in Long Island Sound as established by the Department and as approved by the United States Environmental Protection Agency on April 3, 2001.

*"Total nitrogen"* means the total of the concentrations of ammonia nitrogen, organic nitrogen, nitrite nitrogen, and nitrate nitrogen expressed as milligrams of nitrogen per liter.

### **Section 3. Authorization Under This General Permit**

(a) *Eligible Activities or Discharges*

This general permit authorizes the discharge of total nitrogen from the POTWs listed in Appendix 1, provided the activities are conducted in accordance with this general permit.

This general permit does not authorize any discharge of water, substance or material into the waters of the state other than the one specified in this section. Any person or municipality which initiates, creates, originates or maintains such a discharge must first apply for and obtain authorization under Section 22a-430 of the General Statutes.

---

(b) *Geographic Area*

This general permit applies throughout the State of Connecticut.

(c) *Effective Date and Expiration Date of this General Permit*

This general permit is effective on *January 1, 2011, and expires on December 31, 2015.*

(d) *Effective Date of Authorization*

An activity is authorized by this general permit on the date the general permit is issued.

### **Section 4. Conditions of this General Permit**

A permittee shall conduct activities authorized by this general permit in accordance with the following conditions:

(a) *Discharge Limits*

- (1) Annual discharge limits applicable to each POTW are set forth in Appendix 1, which is incorporated herein in its entirety, as part of this general permit.
- (2) Each permittee shall limit the discharge of nitrogen to the annual discharge limits set forth in Appendix 1, except as set forth in paragraph (b)(1)(b) of this Section.

(b) *Compliance During Term of Permit*

- (1) A permittee shall be in compliance with its annual discharge limits of this general permit if:

- (a) the POTW's annual mass loading of total nitrogen is less than or equal to the discharge limit set forth in Appendix 1; or,
  - (b) the permittee has secured state-owned equivalent nitrogen credits equal to the amount the POTW exceeded the annual discharge limit set forth in Appendix 1 in accordance with the Nitrogen Credit Exchange Program and *Sections 22a-521 through 527 of the Connecticut General Statutes*.
- (2) A permittee shall be out of compliance with the annual discharge limits of the general permit and subject to the enforcement provisions of chapter 446k of the Connecticut General Statutes if:
- (a) the POTW's annual mass loading of total nitrogen is greater than the discharge limit set forth in Appendix 1; and

- (b) the permittee fails to secure sufficient state-owned equivalent nitrogen credits in a timely manner in accordance with the Nitrogen Credit Exchange Program and *Sections 22a-521 through 527 of the Connecticut General Statutes*.

(c) *Operation of Nitrogen Removal Process Equipment*

The permittee shall not bypass or fail to operate any of the approved nitrogen removal equipment or processes without the written approval of the Commissioner. The permittee shall operate all necessary equipment to optimize nitrogen removal so as to reduce nitrogen discharges to the maximum extent practicable. This includes but is not limited to all recycle pumping systems, aeration equipment, aeration tank cycling, mixing equipment, anoxic basins, chemical feed systems or any other process equipment necessary for the optimal removal of nitrogen.

(d) *Monitoring Requirements*

- (1) Effective upon issuance of this general permit, the permittee shall monitor total nitrogen in the final effluent in accordance with the following frequency:
  - (a) POTWs with a design flow rate specified in the individual permit for the facility of less than 10,000,000 gallons per day shall monitor the final effluent at a minimum frequency of weekly.
  - (b) POTWs with a design flow rate specified in the individual permit for the facility equal to or greater than 10,000,000 gallons per day shall monitor the final effluent at a minimum frequency of twice per week.
- (2) Monitoring requirements shall commence on **January 1, 2011**.

- (3) Final effluent and monitoring location shall be identical to that used to determine compliance with final effluent limitations and monitoring conditions established in the individual permit for the facility.
- (4) All samples analyzed to determine compliance with limits on total nitrogen shall be daily composite samples unless otherwise approved in writing by the Commissioner.
- (5) Chemical analyses to determine compliance with effluent limits and conditions established in this general permit shall be performed using the methods approved in or pursuant to 40 CFR 136 unless an alternative method has been approved in writing pursuant to 40 CFR 136.4.

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- (6) The permittee shall measure average daily volume of flow of wastewater received by the facility at the main flow meter as set forth in the individual permit for the facility.
- (7) In the event of a flow meter malfunction on a day when a sample for total nitrogen analysis is collected, the permittee shall utilize the arithmetic average of the 7 highest daily flows measured during the previous 30-day period to calculate the total daily nitrogen loading unless an alternative procedure has been agreed to by the Commissioner.

(e) *Reporting Requirements*

The results of chemical analyses for the total nitrogen in all samples collected during the month and the average daily flow volume of effluent for each day during the month shall be entered on the Monthly Operating Reports (MOR) and Nitrogen Analysis Reports (NAR) and reported to the Department. Results must also be entered in Discharge Monitoring Reports (DMR) as a calculated monthly mass loading of total nitrogen. The MOR, NAR and DMR must be received at the following address by the 15<sup>th</sup> day of the month following the month samples are collected.

ATTN: Municipal Wastewater Monitoring Coordinator  
Connecticut Department of Environmental Protection  
Bureau of Water Management, Planning and Standards Division  
79 Elm Street  
Hartford, CT 06106-5127

(f) *Record Keeping Requirements*

The permittee shall retain copies of all reports required by this general permit, and records of all data used to compile these reports for a period of at least five years from the date of the report submission to the Department.

(g) *Duty to Correct and Report Violations*

Upon learning of a violation of a condition of this general permit, including any failure of flow monitoring equipment, the permittee shall immediately take all reasonable action to determine the cause of such violation, correct such violation and mitigate its results, prevent further such violation, and report in writing such violation and such corrective action to the Commissioner within five (5) days of the permittee learning of such violation. Such report shall be certified in accordance with subsection 4(i) of this general permit.

(h) *Duty to Provide Information*

If the Commissioner requests any information pertinent to the authorized activity or to compliance with this general permit, the permittee shall provide such information in writing within thirty (30) days of such request. Such information shall be certified in accordance with subsection 4(i) of this general permit.

(i) *Certification of Documents*

Any document, including but not limited to any notice, which is submitted to the Commissioner under this general permit shall be signed by, as applicable, the permittee in accordance with Section 22a-430-3(b)(2) of the Regulations of Connecticut State Agencies, and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

“I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in the submitted information may be punishable as a criminal offense, in accordance with Section 22a-6 of the General Statutes, pursuant to Section 53a-157b of the General Statutes, and in accordance with any other applicable statute.”

(j) *Date of Filing*

For purposes of this general permit, the date of filing with the Commissioner of any document is the date such document is received by the Commissioner. The word “day” as used in this general permit means the calendar day; if any date specified in the general permit falls on a Saturday, Sunday, or legal holiday, such deadline shall be the next business day thereafter.

(k) *False Statements*

Any false statement in any information submitted pursuant to this general permit may be punishable as a criminal offense, in accordance with Section 22a-6, under Section 53a-157b of the General Statutes.

(l) *Correction of Inaccuracies*

Within fifteen days after the date a permittee becomes aware of a change in any information in any material submitted pursuant to this general permit, or becomes aware that any such information is inaccurate or misleading or that any relevant information has been omitted, such permittee shall correct the inaccurate or misleading information or supply the omitted information in writing to the Commissioner. Such information shall be certified in accordance with subsection 4(i) of this general permit.

(m) *Other Applicable Law*

Nothing in this general permit shall relieve the permittee of the obligation to comply with any applicable federal, state and local law, including but not limited to the obligation to obtain and comply with any authorizations required by such law. In the event a POTW is subject to a more stringent nitrogen limitation than set forth in this general permit, the Permittee shall comply with that more stringent limitation and may not purchase or transfer nitrogen credits to comply with that additional limitation.

(n) *Other Rights*

This general permit is subject to and does not derogate any present or future rights or powers of the State of Connecticut and conveys no rights in real or personal property nor any exclusive privileges, and is subject to all public and private rights and to any federal, state, and local laws pertinent to the property or activity affected by such general permit. In conducting any discharge authorized hereunder, the permittee may not cause pollution, impairment, or destruction of the air, water, or other natural resources of this state.

**Section 5. Commissioner's Powers**

(a) *Abatement of Violations*

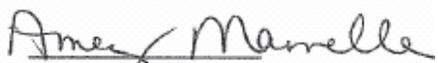
The Commissioner may take any action provided by law to abate a violation of this general permit, including the commencement of proceedings to collect penalties for such violation. The Commissioner may, by summary proceedings or otherwise and for any reason provided by law, including violation of this general permit, revoke a permittee's authorization hereunder in accordance with Sections 22a-3a-2 through 22a-3a-6, inclusive, of the Regulations of Connecticut State Agencies. Nothing

herein shall be construed to affect any remedy available to the Commissioner by law.

(b) *General Permit Revocation, Suspension, or Modification*

The Commissioner may, for any reason provided by law, by summary proceedings or otherwise, revoke or suspend this general permit or modify it to establish any appropriate conditions, schedules of compliance, or other provisions which may be necessary to protect human health or the environment or to implement the 15 year TMDL.

Issued: 6/28/10

  
Amy W. Marrella  
Commissioner

**APPENDIX 1**

**ANNUAL DISCHARGE LIMITS FOR TOTAL NITROGEN**

Zone	Publicly Owned Treatment Works	Equivalency Factor	TOTAL NITROGEN (POUNDS/DAY)				
			2011	2012	2013	2014	2015
1	JEWETT CITY WPCF	0.17	17	16	16	15	15
1	GROTON CITY WPCF	0.18	109	104	102	99	99
1	GROTON TOWN WPCF	0.18	168	161	157	153	153
1	KILLINGLY WPCF	0.14	144	137	134	131	131
1	LEDYARD WPC	0.18	8	8	7	7	7
1	MONTVILLE WPCF	0.18	130	124	121	118	118
1	NEW LONDON WPCF	0.18	424	404	395	386	386
1	NORWICH WPCF	0.18	221	210	205	201	201
1	STONINGTON PAWCATUCK WPCF	0.17	26	25	25	24	24
1	PLAINFIELD NORTH WPCF	0.14	38	36	35	34	34
1	PLAINFIELD VILLAGE WPCF	0.14	26	25	24	24	24
1	PUTNAM WPCF	0.14	58	55	54	53	53
1	SPRAGUE WPCF	0.16	8	8	7	7	7
1	STAFFORD SPRINGS WPCF	0.15	66	63	61	60	60
1	STONINGTON BOROUGH WPCF	0.18	15	14	14	14	14
1	STONINGTON MYSTIC WPCF	0.18	30	28	28	27	27
1	THOMPSON WPCF	0.14	11	11	10	10	10
1	UCONN WPCF	0.15	48	46	45	44	44
1	WINDHAM WPCF	0.15	138	132	128	125	125
2	BRISTOL WPCF	0.18	437	417	407	398	398
2	CANTON WPCF	0.18	26	25	25	24	24
2	EAST HAMPTON WPCF	0.20	59	57	55	54	54
2	EAST HARTFORD WPCF	0.19	321	306	299	292	292
2	EAST WINDSOR WPCF	0.19	65	62	61	59	59
2	ENFIELD WPCF	0.19	306	292	285	278	278
2	FARMINGTON WPCF	0.18	195	186	181	178	178
2	GLASTONBURY WPCF	0.20	107	103	100	98	98
2	HARTFORD WPCF	0.20	2611	2491	2431	2377	2377
2	MANCHESTER WPCF	0.19	343	327	319	312	312
2	MATTABASSET WPCF	0.20	916	874	853	834	834
2	MIDDLETOWN WPCF	0.20	244	233	227	222	222
2	NEW HARTFORD	0.18	5	5	5	3	3
2	PLAINVILLE WPCF	0.18	111	106	103	101	101
2	PLYMOUTH WPCF	0.18	46	44	43	42	42
2	WINDSOR POQUONOCK WPCF	0.19	107	103	100	98	98
2	PORTLAND WPCF	0.20	34	33	32	31	31
2	ROCKY HILL WPCF	0.20	316	302	295	288	288
2	SIMSBURY WPCF	0.18	117	112	109	107	107

Zone	Publicly Owned Treatment Works	Equivalency Factor	TOTAL NITROGEN (POUNDS/DAY)				
			2011	2012	2013	2014	2015
2	SOUTH WINDSOR WPCF	0.19	116	111	108	106	106
2	SUFFIELD WPCF	0.19	49	47	46	45	45
2	VERNON WPCF	0.19	202	193	188	184	184
2	WINDSOR LOCKS WPCF	0.19	72	69	67	66	66
2	WINSTED WPCF	0.18	70	67	65	64	64
3	BRANFORD WPCF	0.60	211	201	196	192	192
3	CHESHIRE WPCF	0.49	113	107	105	103	103
3	MERIDEN WPCF	0.49	493	471	459	449	449
3	NEW HAVEN EAST WPCF	0.60	1722	1643	1603	1568	1568
3	NORTH HAVEN WPCF	0.60	174	166	162	158	158
3	SOUTHINGTON WPCF	0.49	223	213	208	204	204
3	WALLINGFORD WPCF	0.60	296	282	275	269	269
3	WEST HAVEN WPCF	0.60	388	370	361	353	353
4	ANSONIA WPCF	0.67	126	120	117	115	115
4	BEACON FALLS WPCF	0.67	13	13	12	12	12
4	DANBURY WPCF	0.46	486	463	452	442	442
4	DERBY WPCF	0.67	78	75	73	71	71
4	LITCHFIELD WPCF	0.35	26	24	24	24	24
4	MILFORD BEAVER BROOK WPCF	0.67	103	99	96	94	94
4	MILFORD HOUSATONIC WPCF	0.67	338	323	315	307	307
4	NAUGATUCK TREATMENT Co.	0.60	271	258	252	246	246
4	NEW MILFORD WPCF	0.46	28	28	28	28	28
4	NEWTOWN WPCF	0.48	18	17	17	16	42
4	NORFOLK WPCF	0.35	12	11	11	11	11
4	NORTH CANAAN WPCF	0.35	14	14	13	13	13
4	SALISBURY WPCF	0.35	23	22	22	21	21
4	SEYMOUR WPCF	0.67	67	64	62	61	61
4	SHELTON WPCF	0.67	116	111	108	106	106
4	SOUTHBURY TR. SCHOOL WPCF	0.46	16	16	15	15	15
4	STRATFORD WPCF	0.67	391	373	364	356	356
4	THOMASTON WPCF	0.60	46	44	43	42	42
4	TORRINGTON WPCF	0.60	273	260	254	248	248
4	WATERBURY WPCF	0.60	1109	1058	1033	1011	1049
5	BRIDGEPORT EAST WPCF	0.85	397	379	370	362	362
5	BRIDGEPORT WEST WPCF	0.85	1144	1091	1065	1041	1041
5	FAIRFIELD WPCF	0.85	446	426	416	406	406
5	WESTPORT WPCF	0.85	95	91	89	87	87
6	GREENWICH WPCF	1.00	526	502	490	479	479
6	NEW CANAAN WPCF	1.00	70	67	65	64	64
6	NORWALK WPCF	1.00	789	752	734	718	718
6	RIDGEFIELD SOUTH ST. WPCF	1.00	32	31	30	29	29
6	STAMFORD WPCF	1.00	1017	970	947	926	926



**STATE OF CONNECTICUT  
DEPARTMENT OF ENVIRONMENTAL PROTECTION**



**Notice of Tentative Determination:  
Intent to Renew the Following General Permit for Nitrogen Discharges**

***Tentative Determination***

The Department of Environmental Protection (DEP) hereby gives notice of a tentative determination to renew the following General Permit: General Permit for Nitrogen Discharges. A general permit contains discharge requirements, best management practices, monitoring and treatment requirements specific to the discharge category that are designed to protect the waters of the state from pollution. The Commissioner of DEP is authorized to approve or deny such permit pursuant to Section 22a-430b of the Connecticut General Statutes.

***Public Participation***

This public notice and the current permit are available on the DEP website at [www.ct.gov/dep/publicnotices](http://www.ct.gov/dep/publicnotices). Persons unable to access the information at the website may request a paper copy of the permit by calling (860) 424-3018 from 8:30 a.m. - 4:30 p.m., Monday through Friday, by emailing Lilly Molina at [lilly.molina@ct.gov](mailto:lilly.molina@ct.gov) or by writing to her at the address in the following paragraph. An informational meeting has been scheduled at Connecticut Department of Environmental Protection for July 15, 2010 at 10:00 am in the Russell Hearing Room on the 3<sup>rd</sup> floor at 79 Elm Street, Hartford.

Prior to making a final decision, the Commissioner shall consider written comments on the proposed renewal of this general permit from interested persons that are received within 30 days of the date of publication of this notice. Comments should be directed to Iliana Ayala, Department of Environmental Protection, Bureau of Water and Land Reuse, 79 Elm Street, Hartford, CT, 06106-5127. All comments should be in writing and may be submitted by post, facsimile to (860) 424-4067, or by electronic mail to [Iliana.Ayala@ct.gov](mailto:Iliana.Ayala@ct.gov). The Commissioner may hold a public hearing prior to approving or denying this general permit if in the Commissioner's discretion the public interest will be best served thereby, and shall hold a hearing upon receipt of a petition signed by at least twenty-five persons. Notice of any public hearing shall be published at least 30 days prior to the hearing.

6/28/10  
Date

Amy Marrella  
Amy W. Marrella  
Commissioner

**Attachment J**

**Nitrogen Credit Advisory Board 2011 Meeting Schedule**

All meetings are schedule for 10:00 am in at 79 Elm Street, Hartford

January 26, 2011

February 23, 2011

March 16, 2011

April 20, 2011

May 18, 2011

June 15, 2011

July 20, 2011

August 17, 2011

September 14, 2011

October 19, 2011

November 16, 2011

December 14, 2011