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**EPA NEW ENGLAND**
**OFFICE OF ECOSYSTEM PROTECTION**
**ONE CONGRESS STREET**
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**BOSTON, MASSACHUSETTS 02114-2023**

# FACT SHEET

**DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES**

**CONTENTS:** 28 pages including 4 Attachments A through D.

**NPDES PERMIT NO.:** NH0100145

**NAME AND MAILING ADDRESS OF APPLICANT:**

Town of Lancaster
Town Offices, 25 Main Street
P.O. Box 151
Lancaster, New Hampshire 03584-0151

**NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:**

Lancaster Wastewater Treatment Facility
Water Street
Lancaster, New Hampshire 03584

**RECEIVING WATER:** Connecticut River (Hydrologic Basin Code: 01080101)

**CLASSIFICATION:** B

**TABLE OF CONTENTS**

## I. Proposed Action, Type of Facility and Discharge Location.

The Lancaster Wastewater Treatment Facility (WWTF) is a publicly owned treatment works (POTW) owned by the Town of Lancaster. The Town applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its NPDES permit to discharge treated effluent into the Connecticut River. The facility collects and treats domestic wastewater, domestic septage (treatment only) and storm water runoff from the portion of Town having a combined sewer system. The treatment plant has a design flow of 1.2 million gallons per day (mgd) and provides secondary treatment using a 4-celled lagoon treatment system followed by chlorination. Incoming wastewater flows into two 5-acre primary lagoons equipped with aerators, and then into two 5-acre secondary lagoons before being discharged to the Connecticut River. The collection system contains no combined sewer overflow structures.

The discharge outfall is not located in the vicinity of a designated beach area.

The most recent permit was issued to the facility on September 11, 2000, and expired on September 12, 2005. This permit (hereafter referred to as the "existing permit") has been administratively extended as the applicant filed a complete application for permit reissuance within the prescribed time period as per 40 Code of Federal Regulations (CFR) §122.6.

The location of the treatment facility, Outfall 001, and the receiving water are shown in Attachment A.

## II. Description of Discharge.

A quantitative description of significant effluent parameters based on discharge monitoring data submitted during the five year period from January 2002 to December 2006 are shown in Attachment B.

## III. Limitations and Conditions.

The draft permit contains limitations for five-day Biochemical Oxygen Demand ($BOD_5$), Total Suspended Solids (TSS), pH, *Escherichia coli* (*E. Coli*) bacteria, Total Residual Chlorine (TRC), Total Recoverable Aluminum and Whole Effluent Toxicity (WET). It also contains monitoring requirements for flow, ammonia nitrogen as nitrogen, hardness, and total recoverable metals (aluminum, cadmium, chromium, copper, lead, nickel, and zinc). The effluent limitations and monitoring requirements are found in PART I of the draft NPDES permit. The basis for each limit and condition is discussed below in Section IV of this Fact Sheet.

## IV. Permit Basis and Explanation of Effluent Limitations Derivation.

### A. General Regulatory Background

Congress enacted the Clean Water Act (CWA), “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” CWA §101(a). To achieve this objective, the

CWA makes it unlawful for any person to discharge any pollutant into waters of the United States from any point source, except as authorized by specified permitting section of the CWA, one of which is Section 402. See CWA §§301(a), 402(a). Section 402 establishes one of the CWA's principal permitting programs, the National Pollutant Discharge Elimination System (NPDES). Under this section of the CWA, EPA may "issue a permit for the discharge of any pollutant, or combination of pollutants" in accordance with certain conditions. See CWA §402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. See CWA §402(a)(1)-(2).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: "technology-based" limitations and "water quality based" limitations. See CWA §§ 301, 303, 304(b); 40 C.F.R. Parts 122, 125, and 131. Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant reducing technology available and economically achievable for the type of facility being permitted. See CWA §301(b). As a class, POTWs must meet limitations based on secondary treatment. CWA §301(b)(1)(B). Secondary treatment is expressed in terms of $BOD_5$, TSS, and pH. 40 C.F.R. Part 133.

Water quality based effluent limits are designed to ensure that state water quality standards are met regardless of the decision made with respect to technology and economics in establishing technology based limitations. In particular, Section 301(b)(1)(C) requires achievement of, "any more stringent limitation, including those necessary to meet water quality standards…..established pursuant to any state law or regulation….". See 40 C.F.R. §§122.4(d), 122.44(d)(1) (providing that a permit must contain effluent limits as necessary to protects state water quality standards, "including state narrative criteria for water quality") (emphasis added) and 122.45(d)(5) (providing in part that a permit incorporate any more stringent limits required by Section 301(b)(1)(C) of the CWA).

The CWA requires that states develop water quality standards for all water bodies within the state. CWA § 303. These standards have three parts: (1) one or more "designated uses" for each water body or water body segment in the state; (2) water quality "criteria", consisting of numerical concentration levels and/or narrative statements specifying the amounts of various pollutants that may be present in each water body without impairing the designated uses of that water body; and (3) and antidegradation provision, focused on protecting high quality waters and protecting and maintaining water quality necessary to protect existing uses. CWA §303(c)(2)(A); 40 C.F.R. §131.12. The limits and conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards.

The applicable New Hampshire water quality standards can be found in Surface Water Quality Regulations, Chapter Env-Ws 1700 et seq. See generally, Title 50, Water and Management and Protection, Chapter 485A, Water Pollution and Waste Disposal Section 485-A.

Receiving stream requirements are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from the state's water quality standards to develop permit limits, both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable in stream

pollutant concentrations. Acute aquatic life criteria are generally implemented through maximum daily limits and chronic aquatic life criteria are generally implemented through average monthly limits. Where a state has not established a numeric water quality criteria for a specific chemical pollutant that is present in the effluent in a concentration that causes or has a reasonable potential to cause a violation of narrative water quality standards, the permitting authority must establish effluent limits in one of three ways: based on a "calculated numeric criteria for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use"; on a "case-by-case basis" using CWA Section 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, in certain circumstances, based on an "indicator parameter". 40 C.F.R. §122.44(d)(1)(vi)(A-C).

All statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired. When technology-based effluent limits are included in a permit, compliance with those limitations is the date the issued permit becomes effective. See 40 C.F.R. §125.3(a)(1). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by an NPDES permit. The regulations governing EPA's NPDES program are generally found in 40 CFR Parts 122, 124, 125, and 136.

### B. Introduction

The permit must limit any pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality criterion, see 40 C.F.R. §122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

i. Reasonable Potential

In determining reasonable potential, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) pollutant concentration and variability in the effluent and receiving water as determined from the permit's reissuance application, DMRs, and State and Federal Water Quality Reports; 3) sensitivity of the species to toxicity testing; 4) the statistical approach outlined in *Technical Support Document for Water Quality-Based Toxics Control*, March 1991, EPA/502/2-90-001 in Section 3; and, where appropriate, 5) dilution of the effluent in the receiving water. In accordance with the New Hampshire statutes and administrative rules [RSA 485-A:8, VI, Env-Ws 1705], available dilution is based on a known or estimated value of the lowest average annual receiving water flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10) for aquatic life or the harmonic mean flow for human health (carcinogens only) . Furthermore, 10 percent of the assimilative capacity of the receiving water is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations, Env-Ws 1705.01.

ii. Anti-Backsliding

Section 402(o) of the CWA generally provides that the effluent limitation of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the previous permit. EPA has also promulgated anti-backsliding regulations which are found at 40 C.F.R. §122.44(l). Unless applicable anti-backsliding requirements are met, the limits and conditions in the reissued permit must be at least as stringent as those in the previous permit.

iii. State Certification

Section 401(a)(1) of the CWA requires all NPDES permit applicants to obtain a certification from the appropriate state agency stating that the permit will comply with all applicable federal effluent limitations and state water quality standards. See CWA §401(a)(1). The regulatory provisions pertaining to state certification provide that EPA may not issue a permit until a certification is granted or waived by the state in which the discharge originates. 40 C.F.R. §124.53(a). The regulations further provide that, "when certification is required…no final permit shall be issued…unless the final permit incorporates the requirements specified in the certification under §124.53(e)." 40 C.F.R. 124.55(a)(2). Section 124.53(e) in turn provides that the state certification shall include "any conditions more stringent than those in the draft permit which the state finds necessary" to assure compliance with, among other things, state water quality standards, see 40 C.F.R. §124.53(e)(2), and shall also include "[a] statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of state law, including water quality standards," see 40 C.F.R. §124.53(e)(3).

However, when EPA reasonably believes that a state water quality standard requires a more stringent permit limitation than that reflected in a state certification, it has an independent duty under CWA §301(b)(1)(C) to include more stringent permit limitations. See 40 C.F.R. §§ 122.44(d)(1) and (5). It should be noted that under CWA §401, EPA's duty to defer to considerations of state law is intended to prevent EPA from relaxing any requirements, limitations, or conditions imposed by state law. Therefore, "[a] State may not condition or deny a certification on the grounds that state law allows a less stringent permit condition." 40 C.F.R. §124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." Id. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 C.F.R. §122.4(d) and 40 C.F.R. §122.44(d).

**C. Conventional Pollutants**

i. Five-Day Biological Oxygen Demand ($BOD_5$) and Total Suspended Solids (TSS)

The average monthly and average weekly concentration-based limits for $BOD_5$ and TSS are based on requirements under Section 301(b)(1)(B) of the CWA as defined by Secondary Treatment Standards in 40 CFR Section 133.102(a) and (b). The average monthly and average weekly mass-based limits for $BOD_5$ and TSS are based on 40 CFR Section 122.45(f) which requires the Agency to apply these Secondary Treatment Standards (concentration-based) as mass-based limits. The mass-based (load) limitations for $BOD_5$ and TSS shown in the draft

permit are based on the POTW's daily design flow of 1.2 MGD and the appropriate constituent concentration for the respective time period being limited. See Attachment C for the equation used to calculate each of these mass-based limits

The percent removal limits for $BOD_5$ and of TSS are based on the requirements of 40 CFR Section 133.102 (a) (3) and (b)(3), respectively.

All the concentration and mass-based effluent limits as well as the percent removal limits for $BOD_5$ and TSS in the draft permit are the same as the limits in the existing permit and, therefore, are consistent with the antibacksliding requirements found in 40 CFR §122.44(1). The permittee has been able to achieve consistent compliance with those limits.

ii. Escherichia coli

The effluent limits are based on Class B water quality standards established by the State of New Hampshire in RSA 485-A:8.II. The average monthly limit for Escherichia coli is determined by calculating the geometric mean. The monitoring frequency for *E. Coli* in the draft permit is 2/week and samples for compliance monitoring must be taken concurrently with samples for total residual chlorine.

iii. pH

The pH limit of 6.5 – 8.0 S.U. in the draft permit remains unchanged from the existing permit. Language under State Permit Conditions (PART I.G.5) allows for a change in the pH limit under certain conditions. A change would be considered if the applicant can demonstrate to the satisfaction of NHDES-WD that the pH standard of the receiving water will be protected when the discharge is outside the permitted range, then the applicant or NHDES-WD may request (in writing) that the permit limits be modified by EPA to incorporate the results of the demonstration. Anticipating the situation where NHDES-WD grants a formal approval changing the pH limit to outside 6.5 to 8.0 Standard Units (S.U.), EPA has added a provision to the draft permit (see SPECIAL CONDITIONS section). That provision will allow EPA to modify the pH limit using a certified letter approach. This change will be allowed only if it is demonstrated that the revised pH limit range does not alter the naturally occurring receiving water pH. However, the pH limit range cannot be less restrictive than 6.0 to 9.0 S.U. found in the applicable National Effluent Limitation Guideline (Secondary Treatment Regulations in 40 C.F.R. Part 133) for the facility.

### D. Available Dilution and Nonconventional and Toxic Pollutants

Water-quality based limits for specific toxic pollutants such as chlorine, ammonia, metals, etc. are determined from chemical-specific numeric criteria derived from extensive scientific studies. EPA-recommended criteria for specific toxic pollutants are known as the "Gold Book Criteria" which EPA summarized and published in Quality Criteria for Water, 1986, EPA 440/5-86-001 (as amended). The State of New Hampshire adopted these "Gold Book Criteria", with certain exceptions, and included them as part of the State's Surface Water Quality Regulations adopted

on December 3, 1999. EPA-New England uses these pollutant-specific criteria, along with available dilution in the receiving water, to determine effluent limitations for these pollutants.

i. Available Dilution

The dilution factor is an estimate of the dilution afforded the POTW's effluent by the receiving water. The dilution factor used to calculate the water quality-based effluent limitations in the existing permit was 108, based on a POTW design flow of 1.25 mgd and an estimated 7Q10 low flow at Outfall 001 of 222 cfs, and 90 percent of the Assimilative Capacity Reserve (saving 10 percent for future needs in accordance with NH Regulation Env-Ws 1705.01).

The dilution factor was recalculated for this draft permit based on an updated calculation of the 7Q10 for the receiving water. In accordance with the NHDES 7Q10 policy, the 7Q10 at the Lancaster WWTF was derived using U.S. Geological Survey (USGS) gage data, and also using an empirical equation developed by Dingman[1]. The Dingman equation gives estimates of 7Q10 flow in un-gaged, unregulated streams based upon watershed (basin) area, mean basin elevation, and the percent of the basin underlain by coarse-grained stratified drift in contact with streams.

The USGS gage data used are as follows:

- 01129500: Connecticut River at North Stratford, NH. Period of record 1986-2006. **281.65 cfs**
- 01130000: Upper Ammonoosuc River Near Groveton, NH. Period of record 1985-2004. **40.51 cfs**
- 01131500: Connecticut River Near Dalton, NH. Period of record 1985-2006. **445.48 cfs**

The Lancaster WWTF is located between the gage in Dalton and the gage in North Stratford. The Upper Ammonoosuc River converges with the Connecticut River near Groveton (upstream from the Lancaster WWTF) and the gage is located approximately six miles up the Upper Ammonoosuc. The calculation of the 7Q10 at the Lancaster WWTF is as follows:

- Using gage data from the three gages, subtract the North Stratford and Upper Ammonoosuc gaged flow from the Dalton gaged flow (445.48 - 40.51 - 281.65 = 123.32 cfs).
- Next, the flow contribution from the small watershed area between the Lancaster WWTF and the Dalton gage is estimated. This is done using a ratio of the Dingman 7Q10s in the watershed area between the Lancaster WWTF and USGS at North Stratford and the area between the Dalton gage and the North Stratford gage.
- Finally, that ratio is multiplied to 123.32 cfs calculated above, and added to the 7Q10 flows at the North Stratford and Upper Ammonoosuc Gages to derive the final 7Q10 of 413.8 cfs at the Lancaster WWTF. (See Attachment C).

[1] Dingman, S.L., and S.C. Lawlor, 1995. Estimating Low-Flow Quantiles from Drainage-Basin Characteristics in New Hampshire and Vermont, American Water Resources Association, Water Resources Bulletin, pp. 243-256.

The dilution factor of 200.5 is applicable to this draft permit and was calculated as follows:

$$\frac{DF = 0.9 \times [(0.646\ mgd/cfs \times 413.8\ cfs)]}{1.2\ mgd} = \mathbf{200.5}$$

This assumes Lancaster's water supply is upstream from outfall 001.

See Attachment C for the calculations of 7Q10 flow and the dilution factor.

ii. Total Residual Chlorine

The TRC average monthly and maximum daily limitations in the existing permit (1.0 mg/L for both) were carried forward from the existing permit in accordance with the antibacksliding requirements found in 40 CFR §122.44. The existing TRC limitations were based on Best Professional Judgement (BPJ) which is allowed under the authority granted in Section 402(a)(1) of the CWA and 40 CFR 125.3. In this situation, the 1.0 mg/L maximum limitation for both average monthly and maximum daily effluent limitations are more stringent than the 2.2 and 3.8 mg/L respectively, limitations that would be allowed based on available dilution and the NH Standards for chronic and acute aquatic-life respective criterion of 0.011 and 0.019 mg/L. See Attachment C for the equation used for calculating TRC limits.

iii. Nitrogen

In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New Hampshire, and Vermont wastewater facilities discharging to the Connecticut, Housatonic, and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL.

The baseline total nitrogen point source loadings estimated for the Connecticut, Housatonic, and Thames River watersheds were 21,672 lbs/day, 3,286 lbs/day, and 1,253 lbs/day, respectively (see table below). The estimated current point source total nitrogen loadings for the Connecticut, Housatonic, and Thames Rivers respectively are 13,836 lbs/day, 2,151 lbs/day, and 1,015 lbs/day. The following table summarizes the estimated baseline loadings, TMDL target loadings, and estimated current loadings:

| Basin | Baseline Loading[1] (lbs/day) | TMDL Target[2] (lbs/day) | Current Loading[3] (lbs/day) |
|---|---|---|---|
| Connecticut River | 21,672 | 16,254 | 13,836 |
| Housatonic River | 3,286 | 2,464 | 2,151 |
| Thames River | 1,253 | 939 | 1,015 |
| **Totals** | **26,211** | **19,657** | **17,002** |

1. Estimated loading from TMDL, (see Appendix 3 to CT DEP "Report on Nitrogen Loads to Long Island Sound", April 1998)
2. Reduction of 25% from baseline loading.

3. Estimated current loading from 2004-2005 DMR data. Detailed summary shown in Attachment D.

The TMDL target of a 25% aggregate reduction from baseline loadings is currently being met, and the overall loading from MA, NH, and VT wastewater treatment plants discharging to the Connecticut River watershed has been reduced by about 36%.

In order to ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of a 25% reduction over baseline loadings, EPA has included a permit condition for existing treatment facilities in Massachusetts and New Hampshire that discharge to the Connecticut, Housatonic, and Thames River watersheds, requiring the permittees to evaluate alternative methods of operating their treatment plants to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Facilities not currently engaged in optimization efforts will also be required to implement optimization measures sufficient to ensure that their nitrogen loads do not increase, and that the aggregate 25% reduction is maintained. Such a requirement has been included in this draft permit.

Specifically, the permit requires an evaluation of alternative methods of operating the existing wastewater treatment facility in order to control total nitrogen levels, including, but not limited to, operational changes designed to enhance nitrification (seasonal or year round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. This evaluation is required to be completed and submitted to EPA and the NHDES within one year of the effective date of the permit, along with a description of past and ongoing optimization efforts. The permit also requires implementation of optimization methods sufficient to ensure that there is no increase in total nitrogen compared to the existing average daily load. The annual average total nitrogen load from this facility (2004 – 2005) is estimated to be 79.8 lbs/day. The permit requires annual reports to be submitted that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the facility, and track trends relative to previous years.

The agencies will annually update the estimate of all out-of-basin nitrogen loads and may incorporate total nitrogen limits in future permit modifications or reissuances as may be necessary to address increases in discharge loads, a revised TMDL, or other new information that may warrant the incorporation of numeric permit limits. There have been significant efforts by the New England Interstate Water Pollution Control Commission (NEIWPCC) work group and others since completion of the 2000 TMDL, which are anticipated to result in revised wasteload allocations for in-basin and out-of-basin facilities. Although, not a permit requirement, it is recommended that any facilities planning that might be conducted for this facility should consider alternatives for further enhancing nitrogen reduction.

iv. Total Recoverable Aluminum

The chronic freshwater criteria listed in New Hampshire's Surface Water Quality Regulations for aluminum is 87 micrograms per liter (ug/L). Effluent sampling conducted for the Whole Effluent Toxicity (WET) test showed that Lancaster's effluent contained elevated levels (greater than 87 ug/l) of total recoverable aluminum once out of five sampling events. However, data collected by the New Hampshire Ambient River Monitoring Program (ARMP) show that 35 out of 43 samples from the Connecticut River contained total recoverable aluminum greater than 87

ug/L over a six year time period 2000 – 2006. The Connecticut River upstream of Lancaster's discharge is included on the NHDES "303(d) list" of impaired waters due to elevated aluminum levels. Yet, immediately upstream of Lancaster's discharge there is no documented impairment. Also, there is no documented impairment in the Israel River tributary that converges with the Connecticut immediately upstream of Lancaster's discharge.

Because of the upstream impairment and the one time exceedance of aluminum criteria in the effluent, this draft permit establishes a total recoverable aluminum monthly average (chronic) monitoring requirement.

### E. Whole Effluent Toxicity (WET)

EPA's **Technical Support Document for Water Quality-based Toxics Control**, **EPA/505/2-90-001, March 1991**, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges from entering the nation's waterways. EPA-New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect aquatic life and human health. Pollutant-specific approaches such as those in the Gold Book and State regulations address individual chemicals, whereas, Whole Effluent Toxicity (WET) approaches evaluate interactions between pollutants, thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the "additivity" and/or "antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not, thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

New Hampshire law states that, "all surface waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;...." (N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Ws 1730.21(a)(1)). The federal NPDES regulations at 40 CFR §122.44(d)(1)(v) require whole effluent toxicity limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an excursion above the State's narrative criterion for toxicity. Furthermore, results of these toxicity tests will demonstrate compliance of the POTW's discharge with the "no toxic provision of the NH Standards."

Accordingly, to fully implement the "integrated strategy" and to protect the "no toxic provision of the NH Standards," EPA-New England requires toxicity testing in all municipal permits with the type of toxicity test(s) (acute and/or chronic) and effluent limitation(s) (LC50 and/or C-NOEC) based on the available dilution as shown in the Toxicity Strategy for Municipal Permits (Attachment D).

The existing permit contains a WET testing requirement of one time per year with an LC50 limit of ≥50%. The permittee is required to collect and test effluent samples during the calendar quarter ending September 30$^{th}$ using two species, Ceriodaphia dubia (Daphnia) and Pimephales promelas (Fathead Minnow).

The LC50 is defined as the percentage of effluent that would be lethal to 50% of the test organisms during an exposure of 48 hours. Therefore, a ≥50% limit means that a sample of 50% effluent shall cause no greater than a 50% mortality rate in that effluent sample.

In accordance with EPA-New Toxicity Strategy for Municipal Permits (Attachment D), for facilities with dilution factors greater than 100:1, the frequency of testing is 2 times per year. Any permittee which has consistently demonstrated on a maximum daily basis that its discharge, based on data for the most recent one year period, or four sampling events, whichever yields the greater time period, causes no acute and chronic toxicity at the permitted limits will be considered eligible for a reduced frequency of toxicity testing. If these criteria are met, monitoring frequency and testing requirements may be reduced through a permit modification (40 CFR S122.62), but never to less than one test per year. Late in 1991, the permittee completed a satisfactory demonstration with these criteria and a toxicity reduction was effected by permit modification dated February 11, 1992. Since then the permittee has demonstrated satisfactory toxicity test results and has been in compliance with its permitted whole effluent toxicity limit. Therefore, the frequency of testing one time per year is carried forward to this permit.

The WET limits in the draft permit include conditions to allow EPA-New England to modify, or alternatively, revoke and reissue to incorporate additional toxicity testing requirements, including chemical specific limits, if the results of the toxicity tests indicate the discharge causes an exceedance of any State water quality criterion. Results from these toxicity tests are considered "New Information" and the permit may be modified as provided in 40 CFR §122.62(a)(2).

This draft permit, as in the existing permit, requires the permittee to continue reporting selected parameters from the chemical analysis of the WET tests' 100 percent effluent sample. Specifically, hardness, total ammonia nitrogen as nitrogen, and total recoverable aluminum, cadmium, copper, chromium, lead, nickel and zinc are to be reported on the appropriate DMR for entry into EPA's data base. EPA-New England does not consider these reporting requirements an unnecessary burden as reporting these constituents is already required with the submission of each toxicity testing report.

### F. Sludge

Section 405(d) of the Clean Water Act (CWA) requires that EPA develop technical standards regulating the use and disposal of sewage sludge. These regulations were signed on November 25, 1992, published in the Federal Register on February 19, 1993, and became effective on March 22, 1993. Domestic sludge which is land applied, disposed of in a surface disposal unit, or fired in a sewage sludge incinerator is subject to Part 503 technical and to State Env-Wq 800 standards. Part 503 regulations have a self-implementing provision, however, the CWA requires implementation through permits. Domestic sludge which is disposed of in municipal solid waste landfills are in compliance with Part 503 regulations provided the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 CFR Part 258.

The draft permit has been conditioned to ensure that sewage sludge use and disposal practices meet the CWA Section 405(d) Technical Standards. In addition, EPA-New England has included

with the draft permit a 72-page document entitled "EPA Region I NPDES Permit Sludge Compliance Guidance, November 1999" for use by the permittee in determining the appropriate sludge conditions for the chosen method of sewage sludge use or disposal practices.

The permittee is required to submit an annual report to EPA-New England and NHDES- WD, by February 19th each year, containing the information specified in the Sludge Compliance Guidance document for their chosen method of sewage sludge use or disposal practices. Lancaster is not currently generating any sludge for disposal from the four lagoons.

### G. Industrial Users (Pretreatment Program)

The permittee is not required to administer a pretreatment program based on the authority granted under 40 CFR §122.44(j), 40 CFR §403 and Section 307 of the Act. However, the draft permit contains conditions that are necessary to allow EPA and NHDES-WD to ensure that pollutants from industrial users will not pass through the facility and cause water quality standards violations and/or sludge use and disposal difficulties or cause interference with the operation of the treatment facility. The permittee is required to notify EPA and NHDES-WD whenever a process wastewater discharge to the facility from a primary industrial category (see 40 CFR §122 Appendix A for list) is planned or if there is any substantial change in the volume or character of pollutants being discharged into the facility by a source that was discharging at the time of issuance of the permit. The permit also contains the requirements to: 1) report to EPA and NHDES-WD the name(s) of all Industrial Users subject to Categorical Pretreatment Standards (see 40 CFR §403 Appendix C for list) who commence discharge to the POTW after the effective date of the finally issued permit, and 2) submit copies of Baseline Monitoring Reports and other pretreatment reports submitted by industrial users to EPA and NHDES-WD.

### H. Operation and Maintenance

Regulations regarding proper operation and maintenance are found at 40 C.F.R. § 122.41(e). These regulations require, "that the permittee shall at all times operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit." The treatment plant and the collection system are included in the definition "facilities and systems of treatment and control" and are therefore subject to proper operation and maintenance requirements.

Similarly, a permittee has a "duty to mitigate" pursuant to 40 C.F.R. § 122.41(d), which requires the permittee to "take all reasonable steps to minimize or prevent any discharge in violations of the permit which has a reasonable likelihood of adversely affecting human health or the environment."

General requirements for proper operation and maintenance, and mitigation have been included in Part II of the permit. Specific permit conditions have also been included in Part I.B., I.C., and I.D. of the draft permit. These requirements include mapping of the wastewater collection system, reporting of unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, controlling inflow and infiltration to

the extent necessary to prevent SSOs and I/I related effluent violations at the wastewater treatment plant, and maintaining alternate power where necessary.

### I. Antidegradation

This draft permit is being reissued with allowable wasteloads and parameter coverages which are the same as, or more stringent than the existing permit and with no change in outfall location. The State of New Hampshire has indicated that there is no lowering of water quality and no loss of existing water uses and that no additional antidegradation review is warranted at this time.

### J. Additional Requirements and Conditions

In the draft permit, compliance monitoring frequency and sample type for Flow, $BOD_5$, TSS, pH, TRC, and Escherichia coli bacteria are consistent with the latest version of EPA/NHDES-WD's Effluent Monitoring Guidance (EMG) mutually agreed upon and first implemented in March 1993 and last revised on July 19, 1999. In addition, the WET test monitoring requirements are consistent with EPA-New England's Municipal Toxicity Policy. It is the intent of EPA-New England and NHDES-WD to establish minimum monitoring frequencies in all NPDES permits that (1) are reasonable from environmental and human health perspective; and, (2) are in accordance with the EMG. The effluent monitoring requirements in the draft permit have been established to yield data representative of the discharge under the authority of Section 308(a) of the CWA in accordance with 40 CFR §122.41(j), §122.44(i) and §122.48. The remaining conditions of the permit are based on the NPDES regulations 40 CFR, Parts 122 through 125, and consist primarily of management requirements common to all permits.

### K. Essential Fish Habitat and Endangered Species

i. Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104267), established a new requirement to describe and identify (designate) "essential fish habitat" (EFH) in each federal fishery management plan. Only species managed under a federal fishery management plan are covered. Fishery Management Councils determine which areas will be designated EFH. The Councils have prepared written descriptions and maps of EFH, and include them in fishery management plans or their amendments. EFH designations for New England were approved by the Secretary of Commerce on March 3, 1999.

The 1999 Sustainable Fisheries Act broadly defineds EFH as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical, and biological properties. Substrate includes sediment, hard bottom, and structures underlying the waters. Necessary means the habitat required to support a sustainable fishery and managed species contribution to a healthy ecosystem. Spawning, breeding, feeding, or growth to maturity covers all habitat types utilized by a species throughout its life cycle. Adversely affect means any impact which reduces the quality and/or quantity of EFH. Adverse impacts may include direct (i.e. contamination, physical disruption), indirect (i.e.

loss of prey), site specific or habitat wide impacts including individual, cumulative, or synergistic consequences of actions.

According to the National Marine Fisheries Service (NMFS), the Connecticut River is EFH for Atlantic salmon (*Salmo salar*). There is an ongoing stocking program for Atlantic salmon in the main stem of the Connecticut River that encompasses the discharge area and in tributaries upstream of the treatment plant. Areas around the outfall are used by juvenile salmon for downstream migration to the sea.

EPA has concluded that the limits and conditions contained in the draft permit minimize adverse effects to EFH for the following reasons:

- The permit requires once per year toxicity testing to ensure that the discharge does not present toxicity problems.
- The dilution factor has increased from 108 to 200.5 due to a recalculation of the 7Q10 based on new data.
- The permit prohibits the discharge to cause a violation of state water quality standards.

EPA believes the draft permit adequately protects EFH and therefore additional mitigation is not warranted. NMFS will be notified and an EFH consultation will be reinitiated if adverse impacts to EFH are detected as a result of this permit action or if new information is received that changes the basis for these conclusions.

ii. Endangered Species

The Endangered Species Act (16 U.S.C. 1451 et seq), Section 7, requires the EPA to ensure, in consultation with the U.S. Fish and Wildlife Service (USFWS) and/or NMFS, as appropriate, that any action authorized by EPA is not likely to jeopardize the continued existence of any endangered or threatened species, or adversely affect its critical habitat**.**

EPA believes that the authorized discharge from this facility is not likely to adversely affect and federally listed species or their habitats. EPA has informally consulted with USFWS who has concurred with this conclusion.

## V. State Certification Requirements.

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards or waives its right to certify as set forth in 40 CFR §124.53.

State water quality standards contain three major elements: Beneficial uses; Water Quality Criteria; and an Antidegradation Policy, all of which are part of the State's Water-Quality Certification under Section 401 of the Act. The only exception to this is that sludge conditions/requirements are not part of the Section 401 State Certification**.** The staff of the

NHDES-WD has reviewed the draft permit and advised EPA-New England that the limitations are adequate to protect water quality. EPA-New England has requested permit certification by the State and expects that the draft permit will be certified. Regulations governing state certification are set forth in 40 CFR §§124.53 and §124.55.

**VI. Comment Period, Hearing Requests, and Procedures for Final Decisions.**

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period to:

Dan Arsenault
NPDES Municipal Permits Branch
U.S. Environmental Protection Agency
One Congress Street, Suite 1100 (Mail Code: CMP)
Boston, Massachusetts 02114-2023
Telephone No.: (617) 918-1562
FAX No.: (617) 918-1505

Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA-New England and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA-New England's Boston office.

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

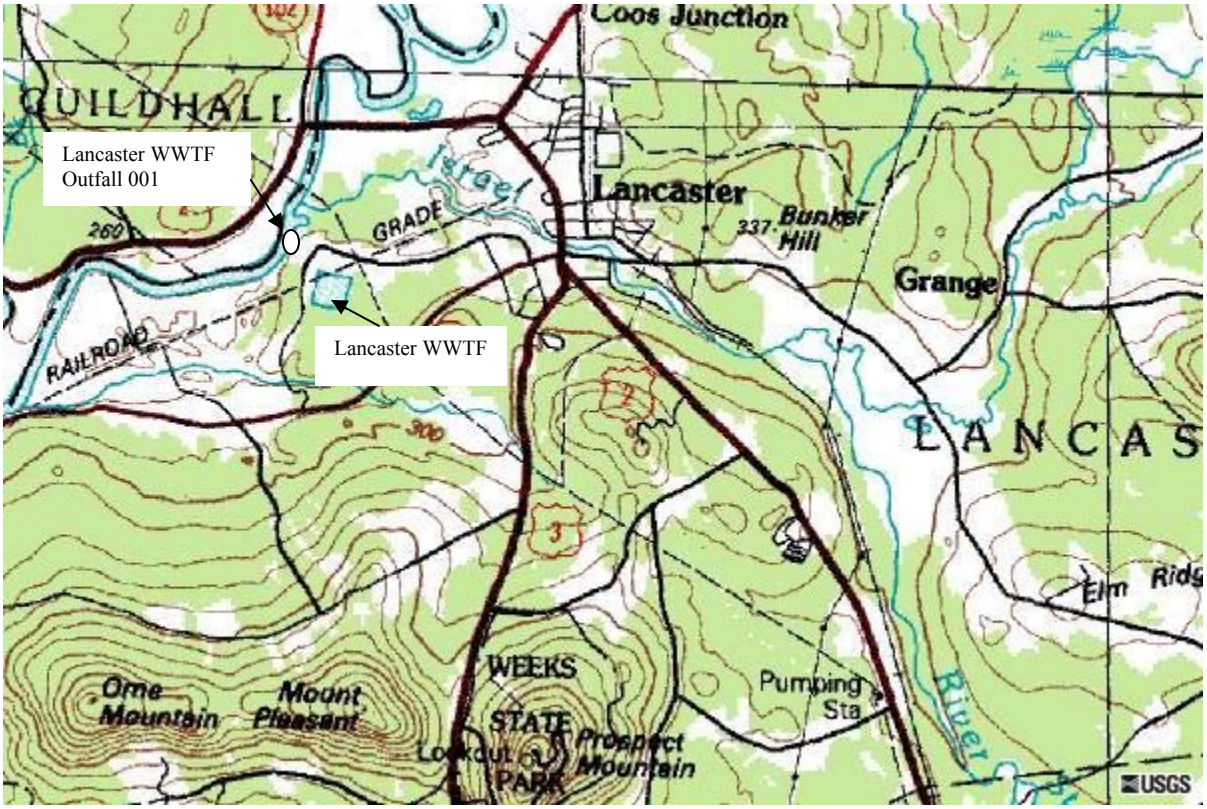
Additional information concerning the draft permit may be obtained between the hours of 9:00 A.M. and 5:00 P.M. (8:00 A.M. and 4:00 P.M. for the state), Monday through Friday, excluding holidays.

_____
**Date:**

**Stephen S. Perkins, Director**
**Office of Ecosystem Protection**
**U.S. Environmental Protection Agency**

# ATTACHMENT A

## Location of Lancaster Wastewater Treatment Facility



## ATTACHMENT B

EFFLUENT CHARACTERISTICS AT OUTFALL 001

The following effluent characteristics were derived from analysis of discharge-monitoring data collected from Outfall 001 during the five year period January 2002 through December 2006. Data were extracted from the monthly Discharge Monitoring Reports submitted by the Lancaster Wastewater Treatment Facility. The effluent values characterize treated sanitary wastewater discharged from this facility.

| Parameter | Average of Monthly Averages | Range of Monthly Averages | Maximum Daily |
|---|---|---|---|
| Effluent Flow (mgd) | 0.88 | 0.35-1.6 | 1.7 |
| Effluent $BOD_5$ (mg/l) | 13.3 | 4.4 – 32.0 | 77.0 |
| Effluent $BOD_5$ (lb/day) | 91.9 | 33.7 – 229.5 | 488.7 |
| Effluent TSS (mg/l) | 11.8 | 2.9 – 32.0 | 38.0 |
| Effluent TSS (lb/day) | 86.5 | 14.9 – 456.7 | 688.0 |
| Escherichia coli (counts/100 ml) | 11.5 | 2 - 43 | 406 |
| Effluent pH (s.u.) | NA | NA | 9.0 |

***Range of WET Test Results (January 2002 – December 2006)***

| | ACUTE | |
|---|---|---|
| LC50 (% Effluent) | Ceriodaphnia | Pimephales |
| | Survival | Survival |
| | 70% - 100% | 100% - 100% |

| | |
|---|---|
| Total Recoverable Aluminum (mg/L) | Range of values from WET: 0.01 – 0.13 |

# ATTACHMENT C
CALCULATIONS OF MASS-BASED LIMITS

Calculations of maximum allowable loads for average monthly $BOD_5$ and TSS are based on the following equation.

$$L = 8.345 * Q * C$$

Where:

L = Maximum allowable load, in lbs/day, rounded to nearest 1 lbs/day.
C = Maximum allowable effluent concentration for average monthly reporting period, in mg/L.
Q = Treatment plant's design flow, in MGD
8.345 = Factor to convert effluent concentration, in mg/L, and plant's design flow, in MGD, to lbs/day.

## DERIVATION OF 7Q10 LOW-FLOW AT OUTFALL 001

**$Q_{001} = [ (Q_{\text{Dalton gage}} - Q_{\text{U. Ammonoosuc gage}} - Q_{\text{N. Stratford gage}}) \times (\text{Dingman 7Q10}_{\text{Upstream Gages to Lancaster POTW}} / \text{Dingman 7Q10}_{\text{Upstream Gages to Dalton Gage}})] + (7Q10_{\text{U. Ammonoosuc gage}} + 7Q10_{\text{N. Stratford gage}})$**

where:

| | | |
|---|---|---|
| $Q_{001}$ | = | Estimated 7Q10 flow at Outfall 001, in cubic feet per second (cfs) |
| $Q_{\text{Dalton Gage}}$ | = | 7Q10 flow of Connecticut River at the Dalton gage No. 01131500, in cfs |
| $Q_{\text{U. Ammonoosuc Gage}}$ | = | 7Q10 flow at the Upper Ammonoosuc gage No. 01130000, in cfs |
| $Q_{\text{N. Stratford gage}}$ | = | 7Q10 flow of Connecticut River at the N. Stratford gage No. 01129500 |
| Dingman 7Q10 | = | Estimates of 7Q10 flow in un-gaged, unregulated streams based upon watershed (basin) area, mean basin elevation, and the percent of the basin underlain by coarse-grained stratified drift in contact with streams |

where:

Connecticut River gage at Dalton, USGS No. 01131500
7Q10 = 445.48 cfs
Period of Record: 1986 – 2006

Connecticut River gage at N. Stratford, USGS No. 01129500:
7Q10 = 281.65 cfs
Period of Record: 1986 – 2006

Upper Ammonoosuc River gage near Groveton, USGS No. 01130000
7Q10 = 40.51 cfs
Period of Record: 1985 – 2004

Dingman 7Q10 Upstream Gages to Lancaster POTW:
Drainage Area = 351.56 $mi^2$
7Q10 = 58.98 cfs

Dingman 7Q10 Upstream Gages to Dalton gage:
Drainage Area = 485.08 $mi^2$

7Q10 = 79.35

## DILUTION FACTOR

Equation used to calculate available dilution factor at Outfall 001:

$$DilutionFactor = \frac{(Qs \times 0.646)}{Q_{PDF}} \times 0.9$$

where:

$Q_{001}$ = Estimated downstream7Q10 flow at Outfall 001, in cfs;
$Q_{PDF}$ = Treatment plant's design flow, 1.2 mgd;
Qs = 7Q10 of receiving water
0.646 = Factor to convert cfs to mgd
0.9 = Factor to reserve 10% of river's assimilative capacity.

$$DilutionFactor = \frac{((413.81cfs \times 0.646)}{1.2mgd} \times 0.9 = 200.5$$

## WATER-QUALITY BASED LIMIT

Equation used to calculate Average Monthly and Maximum Daily Total Residual Chlorine limits, if applicable:

Chlorine Limit = Dilution Factor x Water Quality Criteria

Where Water Quality Criteria for chlorine are:

0.011 = Chronic Aquatic-Life Criteria, mg/L
0.019 = Acute Aquatic-Life Criteria, mg/L

**ATTACHMENT D**

# Nitrogen Loads

## NH, VT, MA Discharges to Connecticut River Watershed

| FACILITY NAME | PERMIT NUMBER | DESIGN FLOW (MGD)[1] | AVERAGE FLOW (MGD)[2] | TOTAL NITROGEN (mg/l)[3] | TOTAL NITROGEN - Existing Flow(lbs/day)[4] |
|---|---|---|---|---|---|
| **NEW HAMPSHIRE** | | | | | |
| Bethlehem Village District | NH0100501 | 0.340 | 0.220 | 19.600 | 35.962 |
| Charlestown WWTF | NH0100765 | 1.100 | 0.360 | 19.600 | 58.847 |
| Claremont WWTF | NH0101257 | 3.890 | 1.610 | 14.060 | 188.789 |
| Colebrook WWTF | NH0100315 | 0.450 | 0.230 | 19.600 | 37.597 |
| Groveton WWTF | NH0100226 | 0.370 | 0.290 | 19.600 | 47.405 |
| Hanover WWTF | NH0100099 | 2.300 | 1.440 | 30.000 | 360.288 |
| Hinsdale WWTF | NH0100382 | 0.300 | 0.300 | 19.600 | 49.039 |
| Keene WWTF | NH0100790 | 6.000 | 3.910 | 12.700 | 414.139 |
| Lancaster POTW | NH0100145 | 1.200 | 1.080 | 8.860 | 79.804 |
| Lebanon WWTF | NH0100366 | 3.180 | 1.980 | 19.060 | 314.742 |
| Lisbon WWTF | NH0100421 | 0.320 | 0.146 | 19.600 | 23.866 |
| Littleton WWTF | NH0100153 | 1.500 | 0.880 | 10.060 | 73.832 |
| Newport WWTF | NH0100200 | 1.300 | 0.700 | 19.600 | 114.425 |
| Northumberland Village WPCF | NH0101206 | 0.060 | 0.060 | 19.600 | 9.808 |
| Sunapee WPCF | NH0100544 | 0.640 | 0.380 | 15.500 | 49.123 |
| Swanzey WWTP | NH0101150 | 0.167 | 0.090 | 19.600 | 14.712 |

| | | | | | |
|---|---|---|---|---|---|
| Troy WWTF | NH0101052 | 0.265 | 0.060 | 19.600 | 9.808 |
| Wasau Paper (industrial facility) | NH0001562 | | 5.300 | 4.400 | 194.489 |
| Whitefield WWTF | NH0100510 | 0.185 | 0.140 | 19.600 | 22.885 |
| Winchester WWTP | NH0100404 | 0.280 | 0.240 | 19.600 | 39.231 |
| Woodsville Fire District | NH0100978 | 0.330 | 0.230 | 16.060 | 30.806 |
| **New Hampshire Total** | | **24.177** | **19.646** | | **2169.596** |

| **VERMONT** | | | | | |
|---|---|---|---|---|---|
| Bellows Falls | VT0100013 | 1.405 | 0.610 | 21.060 | 107.141 |
| Bethel | VT0100048 | 0.125 | 0.120 | 19.600 | 19.616 |
| Bradford | VT0100803 | 0.145 | 0.140 | 19.600 | 22.885 |
| Brattleboro | VT0100064 | 3.005 | 1.640 | 20.060 | 274.373 |
| Bridgewater | VT0100846 | 0.045 | 0.040 | 19.600 | 6.539 |
| Canaan | VT0100625 | 0.185 | 0.180 | 19.600 | 29.424 |
| Cavendish | VT0100862 | 0.155 | 0.150 | 19.600 | 24.520 |
| Chelsea | VT0100943 | 0.065 | 0.060 | 19.600 | 9.808 |
| Chester | VT0100081 | 0.185 | 0.180 | 19.600 | 29.424 |
| Danville | VT0100633 | 0.065 | 0.060 | 19.600 | 9.808 |
| Lunenberg | VT0101061 | 0.085 | 0.080 | 19.600 | 13.077 |
| Hartford | VT0100978 | 0.305 | 0.300 | 19.600 | 49.039 |
| Ludlow | VT0100145 | 0.705 | 0.360 | 15.500 | 46.537 |
| Lyndon | VT0100595 | 0.755 | 0.750 | 19.600 | 122.598 |
| Putney | VT0100277 | 0.085 | 0.080 | 19.600 | 13.077 |
| Randolph | VT0100285 | 0.405 | 0.400 | 19.600 | 65.386 |
| Readsboro | VT0100731 | 0.755 | 0.750 | 19.600 | 122.598 |
| Royalton | VT0100854 | 0.075 | 0.070 | 19.600 | 11.442 |
| St. Johnsbury | VT0100579 | 1.600 | 1.140 | 12.060 | 114.662 |

# NH, VT, MA Discharges to Connecticut River Watershed

| FACILITY NAME | PERMIT NUMBER | DESIGN FLOW (MGD)[1] | AVERAGE FLOW (MGD)[2] | TOTAL NITROGEN (mg/l)[3] | TOTAL NITROGEN - Existing Flow(lbs/day)[4] |
|---|---|---|---|---|---|
| Saxtons River | VT0100609 | 0.105 | 0.100 | 19.600 | 16.346 |
| Sherburne Fire Dist. | VT0101141 | 0.305 | 0.300 | 19.600 | 49.039 |
| Woodstock WWTP | VT0100749 | 0.055 | 0.050 | 19.600 | 8.173 |
| Springfield | VT0100374 | 2.200 | 1.250 | 12.060 | 125.726 |
| Hartford | VT0101010 | 1.225 | 0.970 | 30.060 | 243.179 |
| Whitingham | VT0101109 | 0.015 | 0.010 | 19.600 | 1.635 |
| Whitingham Jacksonville | VT0101044 | 0.055 | 0.050 | 19.600 | 8.173 |
| Cold Brook Fire Dist. | VT0101214 | 0.055 | 0.050 | 19.600 | 8.173 |
| Wilmington | VT0100706 | 0.145 | 0.140 | 19.600 | 22.885 |
| Windsor | VT0100919 | 1.135 | 0.450 | 19.600 | 73.559 |
| Windsor-Weston | VT0100447 | 0.025 | 0.020 | 19.600 | 3.269 |
| Woodstock WTP | VT0100757 | 0.455 | 0.450 | 19.600 | 73.559 |
| Woodstock-Taftsville | VT0100765 | 0.015 | 0.010 | 19.600 | 1.635 |
| **Vermont Totals** | | **15.940** | **10.960** | | **1727.302** |

| **MASSACHUSETTS** | | | | | |
|---|---|---|---|---|---|
| Amherst | MA0100218 | 7.100 | 4.280 | 14.100 | 503.302 |
| Athol | MA0100005 | 1.750 | 1.390 | 17.200 | 199.393 |
| Barre | MA0103152 | 0.300 | 0.290 | 26.400 | 63.851 |
| Belchertown | MA0102148 | 1.000 | 0.410 | 12.700 | 43.426 |
| Charlemont | MA0103101 | 0.050 | 0.030 | 19.600 | 4.904 |
| Chicopee | MA0101508 | 15.500 | 10.000 | 19.400 | 1617.960 |
| Easthampton | MA0101478 | 3.800 | 3.020 | 19.600 | 493.661 |

| | | | | | |
|---|---|---|---|---|---|
| Erving #1 | MA0101516 | 1.020 | 0.320 | 29.300 | 78.196 |
| Erving #2 | MA0101052 | 2.700 | 1.800 | 3.200 | 48.038 |
| Erving #3 | MA0102776 | 0.010 | 0.010 | 19.600 | 1.635 |
| Gardner | MA0100994 | 5.000 | 3.700 | 14.600 | 450.527 |
| Greenfield | MA0101214 | 3.200 | 3.770 | 13.600 | 427.608 |
| Hadley | MA0100099 | 0.540 | 0.320 | 25.900 | 69.122 |
| Hardwick G | MA0100102 | 0.230 | 0.140 | 14.600 | 17.047 |
| Hardwick W | MA0102431 | 0.040 | 0.010 | 12.300 | 1.026 |
| Hatfield | MA0101290 | 0.500 | 0.220 | 15.600 | 28.623 |
| Holyoke | MA0101630 | 17.500 | 9.700 | 8.600 | 695.723 |
| Huntington | MA0101265 | 0.200 | 0.120 | 19.600 | 19.616 |
| Monroe | MA0100188 | 0.020 | 0.010 | 19.600 | 1.635 |
| Montague | MA0100137 | 1.830 | 1.600 | 12.900 | 172.138 |
| N Brookfield | MA0101061 | 0.760 | 0.620 | 23.100 | 119.445 |
| Northampton | MA0101818 | 8.600 | 4.400 | 22.100 | 810.982 |
| Northfield | MA0100200 | 0.280 | 0.240 | 16.800 | 33.627 |
| Northfield School | MA0032573 | 0.450 | 0.100 | 19.600 | 16.346 |
| Old Deerfield | MA0101940 | 0.250 | 0.180 | 9.200 | 13.811 |
| Orange | MA0101257 | 1.100 | 1.200 | 8.600 | 86.069 |
| Palmer | MA0101168 | 5.600 | 2.400 | 18.800 | 376.301 |
| Royalston | MA0100161 | 0.040 | 0.070 | 19.600 | 11.442 |
| Russell | MA0100960 | 0.240 | 0.160 | 19.600 | 26.154 |
| Shelburne Falls | MA0101044 | 0.250 | 0.220 | 16.900 | 31.008 |
| South Deerfield | MA0101648 | 0.850 | 0.700 | 7.900 | 46.120 |
| South Hadley | MA0100455 | 4.200 | 3.300 | 28.800 | 792.634 |
| Spencer | MA0100919 | 1.080 | 0.560 | 13.600 | 63.517 |
| Springfield | MA0103331 | 67.000 | 45.400 | 4.300 | 1628.135 |
| Sunderland | MA0101079 | 0.500 | 0.190 | 8.700 | 13.786 |
| Templeton | MA0100340 | 2.800 | 0.400 | 26.400 | 88.070 |

# NH, VT, MA Discharges to Connecticut River Watershed

| FACILITY NAME | PERMIT NUMBER | DESIGN FLOW (MGD)[1] | AVERAGE FLOW (MGD)[2] | TOTAL NITROGEN (mg/l)[3] | TOTAL NITROGEN - Existing Flow(lbs/day)[4] |
|---|---|---|---|---|---|
| Ware | MA0100889 | 1.000 | 0.740 | 9.400 | 58.013 |
| Warren | MA0101567 | 1.500 | 0.530 | 14.100 | 62.325 |
| Westfield | MA0101800 | 6.100 | 3.780 | 20.400 | 643.114 |
| Winchendon | MA0100862 | 1.100 | 0.610 | 15.500 | 78.855 |
| Woronoco Village | MA0103233 | 0.020 | 0.010 | 19.600 | 1.635 |
| **Massachusetts Totals** | | **166.010** | **106.950** | | **9938.820** |

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.
4. Current total nitrogen load.

**Total Nitrogen Load = 13,836 lbs/day**
MA (41 facilities) = 9,939 lbs/day (72%)
VT (32 facilities) = 1,727 lbs/day (12%)
NH (21 facilities) = 2170 lbs/day (16%)

TMDL Baseline Load = 21,672 lbs/day

TMDL Allocation = 16,254 lbs/day (25% reduction)

## MA Discharges to Housatonic River Watershed

| FACILITY NAME | PERMIT NUMBER | DESIGN FLOW (MGD)[1] | AVERAGE FLOW (MGD)[2] | TOTAL NITROGEN (mg/l)[3] | TOTAL NITROGEN - Existing Flow(lbs/day)[4] |
|---|---|---|---|---|---|
| **MASSACHUSETTS** | | | | | |
| Crane | MA0000671 | | 3.100 | 8.200 | 212.003 |
| Great Barrington | MA0101524 | 3.200 | 2.600 | 17.000 | 368.628 |
| Lee | MA0100153 | 1.000 | 0.870 | 14.500 | 105.209 |
| Lenox | MA0100935 | 1.190 | 0.790 | 11.800 | 77.745 |
| Mead Laurel Mill | MA0001716 | | 1.500 | 6.400 | 80.064 |
| Mead Willow Mill | MA0001848 | | 1.100 | 4.600 | 42.200 |
| Pittsfield | MA0101681 | 17.000 | 12.000 | 12.400 | 1240.992 |
| Stockbridge | MA0101087 | 0.300 | 0.240 | 11.100 | 22.218 |
| West Stockbridge | MA0103110 | 0.076 | 0.018 | 15.500 | 2.327 |
| **Massachusetts Totals** | | | **22.218** | | **2151.386** |

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is

assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.

4. Current total nitrogen load.

**Total Nitrogen Load = 2151.386 lbs/day**

TMDL Baseline Load = 3,286 lbs/day

TMDL Allocation = 2,464 lbs/day (25% reduction)

## MA Discharges to Thames River Watershed

| FACILITY NAME | PERMIT NUMBER | DESIGN FLOW (MGD)[1] | AVERAGE FLOW (MGD)[2] | TOTAL NITROGEN (mg/l)[3] | TOTAL NITROGEN - Existing Flow(lbs/day)[4] |
|---|---|---|---|---|---|
| **MASSACHUSETTS** | | | | | |
| Charlton | MA0101141 | 0.450 | 0.200 | 12.700 | 21.184 |
| Leicester | MA0101796 | 0.350 | 0.290 | 15.500 | 37.488 |
| Oxford | MA0100170 | 0.500 | 0.230 | 15.500 | 29.732 |
| Southbridge | MA0100901 | 3.770 | 2.900 | 15.500 | 374.883 |
| Sturbridge | MA0100421 | 0.750 | 0.600 | 10.400 | 52.042 |
| Webster | MA0100439 | 6.000 | 3.440 | 17.400 | 499.199 |
| **Massachusetts Totals** | | **11.820** | **7.660** | | **1014.528** |

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen

values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.

4. Current total nitrogen load.

**Total Nitrogen Load = 1014.528 lbs/day**

TMDL Baseline Load = 1,253 lbs/day

TMDL Allocation = 939 lbs/day (25% reduction)