UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND
1 CONGRESS STREET
SUITE 1100
BOSTON, MASSACHUSETTS 02203

FACT SHEET

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

NPDES PERMIT NO.: **MA0101290**

NAME AND ADDRESS OF APPLICANT:

Town of Hatfield
Board of Selectmen
Hatfield, MA 01038

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Hatfield Wastewater Treatment Plant
260 Main Street
Hatfield, MA 01038

RECEIVING WATER: **Connecticut River**

CLASSIFICATION: **B: warm water fishery (Connecticut Watershed)**

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

The above named applicant has applied to the U.S. Environmental Protection Agency for the reissuance of its NPDES permit to discharge to the Connecticut River, the designated receiving water. The facility is engaged in the collection and treatment of municipal wastewater and a small amount of industrial and commercial wastewater.

Wastewater Treatment Facility, Sewerage Collection System and other Related Operational Information:

The wastewater collection and treatment system serves 2,600 residents in the community. The system is a separate sewer system with no combined sewers. The collection system is subject to significant amounts of inflow and infiltration (I/I), as evidenced by significant increases in daily maximum flow during the spring. The Town has established an I/I control program as required by the current permit and has removed numerous storm water and groundwater connections.

The wastewater collected is mostly domestic sewage, with a small amount of commercial and industrial sewage. The wastewater treatment facility has an average daily design flow of 0.5 million gallons per day (MGD), a maximum daily design flow of 1 MGD, and a maximum hourly design flow of 1.6 MGD. The actual average daily flow over the past two years has been about 0.2 MGD.

Treatment Plant Process:

Wastewater treatment consists of the following units:

* 1 aerated grit chamber
* 2 fine rotary influent screens (coarse screening at influent pump station)
* 3 parallel rotating biological reactor/contactor units (RBCs)
* 2 secondary clarifiers
* 2 chlorine contact tanks

Sludge processing consists of the following unit processes:

* 2 aerobic digesters
* 1 belt press

Chlorine gas is used for disinfection, which is seasonal, from April 1 through October 31. The disinfection system is flow paced.

Dewatered sludge is sent to the East Fitchburg wastewater treatment plant for incineration. The annual volume of sludge is about 48 dry metric tons (43.5 tons).

II. Description of Discharge

A quantitative description of the discharge, in terms of significant effluent parameters, may be found in Table 1, which summarizes effluent data from October 2004 through September 2005.

III. Permit Limitations and Conditions

The effluent limitations and monitoring requirements of the draft permit may be found in the draft NPDES permit.

IV. Permit Basis and Explanation of Effluent Limitation Derivation

Waterbody Classification and Usage:

The Connecticut River is classified as Class B-warm water fisheries water body by the Massachusetts Department of Environmental Protection (MassDEP) in the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Class B waters are designated as habitat for fish, other aquatic life, and wildlife and for primary and secondary contact recreation. Where designated Class B waters shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for

irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value.

Municipal Waste Water Treatment Facility [also referred to as "Publicly Owned Treatment Works" (POTW Discharges)] Regulatory Basis for Effluent Limits

EPA is required to consider technology and water quality requirements when developing permit effluent limits. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 402 and 301(b) of the Clean Water Act (CWA) (see 40 CFR 125 Subpart A). For publicly owned treatment works, technology based requirements are effluent limitations based on secondary treatment as defined in 40 CFR Part 133.

EPA regulations require NPDES permits to contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve federal or state water quality standards.

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limits based on water quality standards. The Massachusetts Surface Water Quality Standards (314 CMR 4.00) include requirements for the regulation and control of toxic constituents and also require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site-specific criteria is established. The state will limit or prohibit discharge of pollutants to surface waters to assure that water quality of the receiving waters are protected and maintained, or attained.

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that caused, or has reasonable potential to cause, or contributes to an excursion above any water quality criterion. An excursion occurs if the projected or actual in-stream concentrations exceed the applicable criterion. In determining reasonable potential, EPA considers existing controls on point and non-point sources of pollution, variability of the pollutant in the effluent, sensitivity of the species to toxicity and where appropriate, the dilution of the effluent in the receiving water.

A permit may not be renewed, reissued, or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the antibacksliding requirements of the CWA. Anti-backsliding provisions are found in Section 402(o) of the CWA and 40 CFR 122.44 (l) and require that limits in a reissued permit be at least as stringent as those in the previous permit, except under certain limited circumstances. Effluent limitations based on technology standards, water quality, and state certification requirements must all meet anti-backsliding provisions.

Receiving Water Flow:

The stream flow information used to calculate effluent limits is based upon the 7Q10 flow at the United States Geological Survey (USGS) gage located on the Connecticut River in Montague, adjusted for drainage area. The 7Q10 flow at the gage is 1690 cfs and drainage area is 7860 square

miles. The drainage area of the Connecticut River at the outfall of the Hatfield treatment plant is

about 7950 square miles. The adjusted 7Q10 can therefore be calculated as:

7Q10@ Hatfield = 7Q10@Montague (7950/7860)
= 1690(7950/7860)
= 1709 cfs

Dilution Factor

The dilution factor can be calculated as follows:

$$\text{Dilution Factor(DF)} = \frac{\text{7Q10+ design flow}}{\text{design flow}}$$

where 7Q10 = 1709 cfs and design flow = 0.5 MGD (0.77cfs)

$$\text{DF} = \frac{1709+0.77}{0.77} = 2220$$

BOD_5 and Total Suspended Solids: The monthly average, weekly average and percent removal limits for BOD and TSS are based on the secondary treatment requirements found at 40 CFR Part 133. Limits have also been expressed as mass loads pursuant to 40 CFR Part 122.45 (f). The mass loading limits were calculated using the following equation:

L = C x Q x 8.34 where:

L = maximum allowable load in lbs/day
C = maximum allowable concentration in mg/l. Average monthly and average weekly limits were calculated.
Q = design flow of facility in MGD
8.34 = factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.

Monthly average = (30)(0.5)(8.34 = 125 lbs/day
Weekly average = (45)(0.5) 8.34 = 188 lbs/day

pH: The limit is 6.5-8.3 SU based on Massachusetts Surface Water Quality Standards.

Fecal Coliform: The limits reflects the in-stream Class B standard. These are seasonal limits which apply from April 1 through October 31, the months in which primary and secondary contact recreation is expected to occur.

Total Nitrogen: It has been determined that excessive nitrogen loadings are causing significant water quality problems in Long Island Sound, including low dissolved oxygen. The State of Connecticut has begun to impose nitrogen limitations on Connecticut River discharges to Long Island Sound and its tributaries. EPA believes there is a need to determine the loadings of nitrogen from sources in

Massachusetts which are tributary to Long Island Sound (includes tributaries to the Connecticut River), to determine whether these loadings are impacting the water quality in Long Island Sound, and to help determine what limits, if any, should ultimately be imposed on discharges in Massachusetts . Therefore, EPA has included quarterly monitoring for ammonia, nitrite and nitrate, and total kjeldahl nitrogen (TKN) in the draft permit. The information submitted by the permittee will help to establish a database of nitrogen loadings, which can be used to quantitatively assess the impact of loading and transport of nitrogen to Long Island Sound. The data will provide a more sound basis for future decisions relating to nitrogen loadings to the Sound. No numerical limitations for these pollutants are established in the draft permit. This monitoring requirement can be reduced after demonstration of a data base acceptable to determine temporal nitrogen loading to the stream.

Whole Effluent Toxicity Testing

Under Section 301(b)(1) of the CWA, discharges are subject to effluent limitations based on water quality standards. The State Surface Water Quality Standards (314 CMR 4.05(5)(e.)), include the following narrative statements and require that EPA criteria established pursuant to Section 304(a)(l) of the CWA be used as guidance for interpretation of the following narrative criteria:

All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife. Where the State determines that a specific pollutant not otherwise listed in 3.14 CMR 4.00 could reasonably be expected to adversely affect existing or designated uses, the State shall use the recommended limit published by EPA pursuant to 33 U.S.C. 1251 §304(a) as the allowable receiving water concentrations for the affected waters unless a site-specific limit is established. Site specific limits, human health risk levels and permit limits will be established in accordance with 314 CMR 4.05(5)(e)(1)(2)(3)(4).

National studies conducted by the EPA have demonstrated that domestic sources contribute toxic constituents to POTWs as well as those which may be contributed from industrial users. These pollutants include metals, chlorinated solvents, aromatic hydrocarbons and other constituents.

As a result, EPA New England and the MassDEP have developed toxicity control policies. These policies require wastewater treatment facilities to perform toxicity bioassays on their effluent. Discharges having a dilution of greater than 100:1 require acute toxicity limits and testing twice per year.

The principal advantages of biological techniques are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analysis; (2) bioavailability of pollutants after discharge is measured by toxicity testing including any synergistic effect of pollutants; and (3) pollutants for which there are inadequate analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in connection with pollutant-specific control procedures to control the discharge of toxic pollutants.

This permit requires toxicity testing for one specie, the daphnid, (**Ceriodaphnia dubia**) twice per year. Tests are to be conducted the second week in June and September using the protocol in Toxicity Testing attachment.

Chlorine:

Chlorine and chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life. Effluent limits for daily maximum Total Residual Chlorine (TRC) are based on chronic values defined in the EPA Quality Criteria for Water limits as adopted into the State Water Quality Standards, allowing for available dilution. These criteria state that the average TRC in the receiving water should not exceed 11 ug/l and the maximum TRC should not exceed 19 ug/l to protect fresh water aquatic life from chronic and acute toxicity.

The TRC limits in the draft permit are 1.0 mg/l as a daily maximum. This limit is far more stringent than would be required based solely on dilution, and derives from the Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Receiving Waters (February 23, 1990), which states that "Waters shall be protected from unnecessary discharges of excess chlorine. In segments with dilution factors greater than 100, the maximum concentration of chlorine shall not exceed 1.0 mg/l TRC."

Monitoring: The effluent monitoring requirements have been specified in accordance with 40 CFR 122.41(j), 122.44(i) and 122.48 to yield data representative of the discharge.

V. Infiltration/Inflow

The draft permit includes requirements for the permittee to continue to infiltration and inflow (I/I). Infiltration/inflow is extraneous water entering the wastewater collection system through a variety of sources. The permittee shall develop an I/I removal program commensurate with the severity of the I/I in the collection system. Where portions of the collection system have little I/I, the control program will logically be scaled down.

Infiltration is groundwater that enters the collection system though physical defects such as cracked pipes, or deteriorated joints. Inflow is extraneous flow entering the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems.

Significant I/I in a collection system may displace sanitary flow reducing the capacity and the efficiency of the treatment works and may cause bypasses to secondary treatment. It greatly increases the potential for sanitary sewer overflows (SSO) in separate systems, and combined sewer overflows in combined systems.

The permit standard conditions for 'Proper Operation and Maintenance' are found at 40 CFR §122.41(e). These require proper operation and maintenance of permitted wastewater systems and related facilities to achieve permit conditions. Similarly, the permittee has a 'duty to mitigate' as stated in 40 CFR §122.41 (d). This requires the permittee to take all reasonable steps to minimize or

prevent any discharge in violation of the permit which has a reasonable likelihood of adversely effecting human health or the environment. EPA and MassDEP maintain that an I/I removal program is an integral component to insuring permit compliance under both of these provisions.

Mass DEP has stated that inclusion of the I/I conditions in the draft permit shall be a standard State Certification requirement under Section 401 of the Clean Water Act and 40 CFR §124.55(b).

VI. Sludge Information and Requirements

Section 405(d) of the Clean Water Act requires that sludge conditions be included in all POTW permits. The Hatfield Wastewater Treatment Plant has its sludge hauled off-site for treatment. The facility produces 48 dry metric tons of sludge per year which is taken for incineration under contract with a private sludge treatment firm. Sludge requirements for the facility are outlined in the permit and defined in the sludge attachment. If the ultimate sludge disposal method changes, the permit requirements pertaining to sludge monitoring and other conditions would change accordingly.

VII. Unauthorized Discharges

The permittee is authorized to discharge only in accordance with the terms and conditions of the permit and only from outfalls listed in Part I A.1. of the permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) are not authorized by the permit and shall be reported in accordance with Section D.1.e. (1) of the General Requirements of the permit (Twenty-four hour reporting).

VIII. Essential Fish Habitat Determination (EFH):

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16U.S.C. 1801 et seq. (1998)), EPA is required to consult with the National Fisheries Services (NOAA Fisheries) if EPA's action or proposed action that it funds, permits, or undertakes, may adversely impact any essential fish habitat (EFH). The Amendments broadly define essential fish habitat as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. 1802 (10)). Adversely impact means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. 600.910 (a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential fish habitat is only designated for species for which federal fisheries management plans exist (16 U.S.C. 1855 (b) (1)(A)). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

Anadromous Atlantic salmon (*Salmo salar*) is the only managed species with designated EFH within this section of the Connecticut River, which is classified by the State as a warm water fishery. While river conditions in this area may not be suitable as spawning or juvenile rearing habitat for salmonids, Atlantic salmon smolts from waters upstream pass through this area during their migration to the sea. EPA has concluded that the limits and conditions contained in this draft permit minimize adverse effects to Atlantic salmon EFH for the following reasons:

- The design flow of the facility is 0.5 mgd and the dilution factor is 2,220;
- The technology-based limits for chlorine, which are used in this permit, are more stringent and protective of aquatic organisms than those based on EPA water quality criteria;
- Acute whole effluent toxicity tests will be conducted on *Ceriodaphnia dubia.* Current results of the toxicity tests are in compliance with the permit limits;
- The permit will prohibit violations of the state water quality standards.

EPA believes the draft permits adequately protect Atlantic salmon EFH, and therefore additional mitigation is not warranted. NOAA Fisheries 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 our conclusions.

VII. Endangered Species Act (ESA)

Under Section 7 of the ESA, federal agencies are required to ensure that any action they conduct, authorize, or fund is not likely to jeopardize the continued existence of a federally-listed species, or result in the adverse modification of critical habitat. EPA has initiated informal consultation with both NOAA Fisheries and the United States Fish and Wildlife Service (USFWS) concerning listed species under their purviews. Listed species found in this general area may include shortnose sturgeon (*Acipenser brevirostrum*), dwarf wedgemussel (*Alasmidonta heterodon*) and bald eagle (*Haliaeetus leucocephalus*).

EPA believes the authorized discharge from this facility is not likely to adversely affect any federally-listed species, or their habitats. This preliminary determination is based on the location of the outfall, and the reasons provided in the EFH discussion (Section VIII of this Fact Sheet). EPA is seeking concurrence with this opinion from NOAA Fisheries and USFWS through the informal ESA consultation process.

IX. State Certification Requirements

The staff of the Massachusetts Department of Environmental Protection has reviewed the draft permit. EPA has requested permit certification by the State and expects that the draft permit will be certified.

X. Comment Period, 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 the U.S. EPA, Massachusetts Office of Ecosystem Protection (CMP), One Congress Street-Suite 1100 Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA 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 significant comments and make these responses available to the public at EPA'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.

XI. EPA and Mass DEP Contacts

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

Mark Malone (CMP)
Municipal Permits Branch
U.S. Environmental Protection Agency
1 Congress Street, Suite 1100
Boston, MA. 02114-2023
Telephone: (617) 918-1619

Paul Hogan, Chief
Surface Water Permit Program
Division of Water Management
Massachusetts Department of
Environmental Protection
627 Main Street, Second Floor
Worcester, MA 01608
Telephone: (508) 767- 2796

Linda M. Murphy, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency