UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

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

NPDES PERMIT NO.: **MA0101940**

NAME AND ADDRESS OF APPLICANT:

Board of Selectmen
Town of Deerfield
Town Offices, 8 Conway Street
South Deerfield, Massachusetts 01373

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Old Deerfield Municipal Treatment Facility
Little Meadow Road
Deerfield, Massachusetts 01342

RECEIVING WATER: **Deerfield River (33- DEER)**

CLASSIFICATION: **B- warm water fishery**

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

The above named applicant has requested that the U.S. Environmental Protection Agency (EPA) reissue its NPDES permit to discharge into the designated receiving waters. The facility is engaged in the collection and treatment of municipal wastewater. The discharge is effluent from the Deerfield Wastewater Treatment Facility to the Deerfield River.

II. Description of Discharge.

A quantitative description of the discharge in terms of significant effluent parameters based on recent monitoring data is shown on **Attachment A.**

III. Limitations and Conditions.

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

IV. Permit Basis and Explanation of Effluent Limitation Derivation.

A. Description

The Old Deerfield Wastewater Treatment Facility is located on the bank of the Deerfield River west of Deerfield Academy on Little Meadow Road in the Old Deerfield section of the Town of Deerfield, MA. The facility, built in 1970, provides secondary treatment using the extended aeration process. The plant processes only domestic wastewater, with no industrial contributions. Half of the plant's flow and BOD loading come from three residential schools. The plant's design flow is 0.25 mgd and typically processes only half its capacity.

Wastewater entering the plant passes through a bar screen and comminutor and into a wet well. Raw sewage is pumped from the wet well to a distribution box which splits the flow between two aeration tanks. Only one aeration tank is typically used. Wastewater from the aeration tank discharges over a weir to two adjacent rectangular clarifiers. Return sludge is pumped from the final clarifiers to the aeration tanks, while finished wastewater flows over the effluent weirs through a Parshall flume into the chlorine contact chamber prior to discharge to the Deerfield River.

B. Publicly-Owned Treatment Works (POTW) Discharges

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 Act (see 40 CFR 125 Subpart A). For publicly owned treatment works (POTWs), technology based requirements are effluent limitations based on secondary treatment requirements of Section 301 (b) (1) (B) of the Clean Water Act (CWA) as defined in 40 CR 133.102.

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 limitations 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 the 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 discharges of pollutants to surface waters to assure that surface water quality standards 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, has reasonable potential to cause, or contributes to an excursion above any water quality criterion. An excursion occurs if the projected or actual instream concentration 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 anti-backsliding requirement of the CWA. EPA's anti-backsliding provisions found in 40 CFR 122.44 (1) restrict the relaxation of permit limits, standards, and conditions. Effluent limits based on technology, water quality, and state certification requirements must meet anti-backsliding provisions found under Section 402(o) and 303 (d) (4) of the CWA, as described in 40 CFR 122.44 (1).

C. Conventional Pollutants:

***BOD and TSS*:**

Under Section 301 (b) (1) (B) of the Clean Water Act (CWA), POTW's must have achieved effluent limitations based upon secondary treatment by July 1, 1977. The secondary treatment requirements are set forth at 40 CFR Part 133. The regulations describe the secondary treatment requirements for biochemical oxygen demand (BOD), total suspended solids (TSS). The "Average Monthly" and " Average Weekly" BOD and TSS limitations are based on the requirements of 40 CFR Section 133.102.

***pH and Fecal Coliform*:**

The numerical limitations for pH and fecal coliform (seasonal) are based on state certification requirements under Section 401 (a) (1) of the CWA, as described in 40 CFR 124.53 and 124.55.

***Total Chlorine Residual*:**

Limitations for chlorine residual were calculated using EPA' s National Recommended Water Quality criteria: 2002. (See **Attachment B** of the Fact Sheet for these calculations.) The calculated limits were greater than the limits allowed by MADEP's Implementation Policy for the Control of Toxic Pollutants in Surface Waters, which allows a maximum effluent concentration of 1.0 mg/l for any discharge. The permit therefore contains a maximum daily limit of 1.0 mg/l in accordance with the MADEP policy.

Toxicity:

The receiving water has been classified as a class B waterway by the state. The designated uses for Class B waters are: 1) the protection and propagation of fish, other aquatic life, and wildlife

and 2) for primary and secondary contact recreation.

Under Section 301 (b) (1) (C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The MA surface Water Quality Standards require the EPA criteria established pursuant to Section 304 (a) (1) 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.*

National studies conducted by the EPA have demonstrated that industrial and domestic sources contribute toxic constituents such as metals, chlorinated solvents, aromatic hydrocarbons, and other to POTWs. The impact of such complex mixtures is often difficult to assess. Therefore, the toxicity of several constituents in a single effluent can only be accurately examined by whole effluent toxicity (WET) testing. In addition, 40 CFR 122.44 (d) requires whole effluent toxicity limits in NPDES permits when the permittee has a "reasonable potential" to cause toxicity.

Therefore, the draft permit includes acute whole effluent toxicity limitations and monitoring requirements. (See, e.g., "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants", to Federal Register 30,784- July 24, 1985. See also EPA's Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001). The LC50 limitation prohibits acute effects (lethality), to more than 50% of the test organisms when exposed to POTW 50% effluent and 50% dilution water for 48 hours.

The acute toxicity tests shall be performed using Ceriodaphnia dubia . These tests will be conducted twice per year during second week of June and September. See the Toxicity Testing Protocol, which is included as **Attachment A** of the draft permit for a more complete description of the testing requirements. The results from these tests will be used to assure that the discharge is free from pollutants is concentrations or combinations which are toxic to aquatic life. Results are to be submitted by July 31st and October 31st.

IV. Sewage Sludge.

The Section 405 (d) of the Clean Water Act requires that sludge conditions be included in all NPDES permits. Technical sludge standards required by Section 405 of the Clean Water Act (CWA) were finalized on November 25, 1992 and were published on February 19, 1993. The regulations went into effect on March 21, 1993. The permit contains conditions to implement Section 405 (d) of the CWA and 40 CFR part 503. Section 405 (f) of the CWA requires that these regulations be implemented through permits. This permit is intended to implement section 405 (d) of the CWA and 40 CFR part 503.

.

Currently, the Old Deerfield Municipal Treatment Facility has its sludge transported once a month to the East Fitchburg Wastewater treatment facility where it is dewatered and incinerated. Backup sites include Upper Blackstone WPAD in Millbury, MA and Mattabasset Waste District

in Cromwell, CT. Currently the Town of Deerfield is under a contract for all its sludge hauling needs with Casella Waste Management of Montpelier, VT.

Sludge production estimates for Old Deerfield are seasonal. Because Deerfield Academy and the other schools contribute a major portion of the flow and the BOD loadings to the Old Deerfield WWTP, sludge generation rates are normally lower in the summer and during vacations when the school is not in full session. Waste sludge volumes to the holding tank average around 1,000 gallons per day, containing about 100 lbs per day of dry solids, and are not expected to increase appreciably in the future.

The permit specifies that the permittee comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices with the Clean Water Act (CWA) Section 405 (d) technical standards. The permit further specified that the permittee give prior notice to EPA of any change (s) planned in its sludge use or disposal practice.

V. State Certification Requirements.

EPA may not issue a permit unless the state agency, with jurisdiction over the receiving waters, 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. The staff of the MA DEP has reviewed the draft permit. EPA has requested permit certification by the state pursuant to 40 CFR 124.53 and expects that the draft permit will be certified.

VI. Public Comment Period, Public Hearing, and Procedures for Final Decision.

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 comments period, to the U.S. EPA, Massachusetts Office of Ecosystem Protection, One Congress Street, Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for public hearing to consider the draft permit to EPA and MADEP. 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 the 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's Boston office. Following the close of the comment period, and after a public hearing if such a 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.

VII. EPA Contact

Additional information concerning the draft permit may be obtained between the hours of 9:00 AM and 5:00 PM, Monday through Friday, excluding holiday from:

H.M. Chikkalingaiah, P.E.
Massachusetts NPDES Permits Program Unit
U.S. Environmental Protection Agency
New England, 1 Congress Street, Suite 1100
Boston, MA. 02114-2023
Telephone: (617) 918-1574

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

June 11, 2003

Attachment A
NPDES Permit No. MA0101940
Old Deerfield Municipal Treatment Facility
Deerfield, Massachusetts

DESCRIPTION OF DISCHARGE: Treated Municipal Wastewater

DISCHARGE: Outfall 001

The reported monthly average values and the reported daily maximum values between September 2001 thru September 2002 were separately averaged to yield the data listed below about each parameter.

AVERAGE EFFLUENT CHARACTERISTICS AT POINT OF DISCHARGE:

Parameter	Monthly Average	Daily Maximum
Flow, mgd	0.09	0.126, 0.107
BOD, mg/l	12	18,17
TSS, mg/l	8	22, 13
SS, ml/l	0.00	0.00
Minimum & Maximum pH,	6.8-7.4	
Fecal Coliform, cfu/100 ml	18	109, 71
Total Residual Chlorine, mg/l		0.9
BOD, % removal	92.9%	
TSS, % removal	94.3%	

Attachment B
NPDES Permit No. MA0101940
Old Deerfield Treatment Facility
Deerfield, Massachusetts

Dilution Factor at Outfall:

WWTP design flow = **0 .25 MGD = 0.39 cfs**

Receiving Stream = Deerfield River

7Q10 of Deerfield River = **57.3 cfs**
7Q10 dilution factor = (WWTP design flow + Deerfield River 7Q10)/ WWTP design flow
= (0.39 cfs + 57.3 cfs) /0.39 cfs = **148**

Total Chlorine Residual:

EPA Recommended Instream Criteria
Chronic : 11ug/l
Average Monthly Value = 11 x 148 = **1.63 mg/l**
Acute : 19 ug/l
Maximum Daily Value = 19 x 148 = 1628 ug/l= **2.81 mg/l**

Allowable Maximum Daily Value = 1.0 mg/l