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.: **MA0022446**

NAME AND ADDRESS OF APPLICANT:

East Bridgewater Public Schools
11 Plymouth Street
East Bridgewater, MA 02333

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

East Bridgewater High School
11 Plymouth Street
East Bridgewater, MA 02333

RECEIVING WATER: **Unnamed Tributary to the Matfield River**
(Taunton River Watershed -MA62)

CLASSIFICATION: **Class B - Warm Water**

I. PROPOSED ACTION

The above named applicants have applied to the U.S. Environmental Protection Agency for re-issuance of their National Pollutant Discharge Elimination System (NPDES) permit to discharge into the designated receiving water. The current permit expired on September 15, 1992. An application was submitted on May 19, 1992 and an update to that application was submitted on December 12, 2003. This permit, after it becomes effective, will expire four (4) years from the effective date. The four year permit term makes this permit expiration coincide with other NPDES facilities in the Taunton River Watershed.

II. TYPE OF FACILITY, AND DISCHARGE LOCATION

The facility is engaged in the collection and treatment of wastewater from two schools. The discharge is from the wastewater treatment system. The effluent is discharged to an unnamed tributary of the Matfield River (See Figure 1).

The facility's discharge outfall is listed below:

Outfall	Description of Discharge	Outfall Location
001	Treated Effluent	Unnamed Tributary to the Matfield River

III. DESCRIPTION OF THE DISCHARGE

A quantitative description of the effluent parameters based on recent discharge monitoring reports (DMRs) is shown on Attachment A of this fact sheet.

IV. LIMITATIONS AND CONDITIONS

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

V. PERMIT BASIS AND EXPLANATION OF EFFLUENT LIMITATION DERIVATION

A. PROCESS DESCRIPTION

Wastewater from East Bridgewater High School is treated in a 40,000 gallon septic tank located next to the school. Effluent from the High School septic tank flows to a distribution box which distributes flow to a 36,400 square foot sub-surface sand filter bed. Additional treated effluent from two (2) separate septic tanks, one at the Central Elementary School (20,000 gallon tank) and another located at the field house (15,000 gallon tank), are also is tied-in to the distribution box. Outflow from the filter bed flows to a chlorine contact chamber with a "v" notch weir for flow measurement. Chlorine is manually controlled and added via a drip system. The chlorinated effluent then flows into another manhole where effluent monitoring samples are collected. Stormwater from the High School property then ties into the line downstream of the sampling manhole. The discharge is to the headwaters of the unnamed tributary.

The septic tanks are pumped annually and the solids are transferred offsite by an outside contractor. Quotes are solicited and work awarded on a price per truck load for disposal at an approved disposal facility, therefore, the contractor is subject to change.

EPA is issuing this permit with the understanding that the Town of East Bridgewater is currently undergoing a comprehensive evaluation of wastewater treatment options under the guidance of MADEP and that the permittee will work with the MADEP to develop a schedule of compliance to achieve the effluent limits in the permit. EPA anticipates that the schedule will include interim limits achievable by the existing facility. If the ultimate disposal option for this discharge continues to be a surface water discharge, EPA reserves the right to reopen this permit and re-evaluate monitoring frequency.

B. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Overview of Federal and State Regulations

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) to meet Best Practicable Control Technology Currently Available (BPT), Best Conventional Control Technology (BCT) for conventional pollutants and Best Available Technology Economically Achievable (BAT) for toxic pollutants.

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 Clean Water Act (CWA), discharges are subject to effluent limitations based on Water Quality Standards. The Massachusetts Surface Water Quality Standards include the 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 site specific criteria are 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.

In the absence of technology-based guidelines, EPA is authorized to use Best Professional Judgement (BPJ) to establish effluent limitations, in accordance with Section 402 (a)(1) of the CWA and 40 CFR Section 125.3.

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 [40 CFR §122.44(d)]. An excursion occurs if the projected or actual instream 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.

2. Water Quality Standards; Designated Uses; Outfall 001

The receiving water, an unnamed tributary of the Matfield River, is classified as Class B - Warm Water in the Massachusetts Surface Water Quality Standards, 314 CMR 4.05(4)(a). Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. The waters should have consistently good aesthetic value.

A warm water fishery is defined in the Massachusetts Surface Water Quality Standards (314 CMR 4.02) as waters in which the maximum mean monthly temperature generally exceeds 20° Celsius during the summer months and are not capable of supporting a year-round population of cold water stenothermal aquatic life.

Section 303(d) of the Federal Clean Water Act (CWA) requires states to identify those waterbodies that are not expected to meet surface water quality standards after the implementation of technology-based controls and, as such require the development of total maximum daily loads (TMDL). The Massachusetts Year 2002 Integrated List of Waters (Section 303(d) List), states that the Matfield River is not attaining water quality standards and is listed as impaired by pathogens.

Available Dilution

Water quality based limitations are established with the use of a calculated available dilution. The design flow is 12,000 gallons per day (0.012 mgd) or 0.0186 cubic feet per second.

On February 10, 2004, a site visit was conducted by EPA DEP-SERO, along with East Bridgewater representatives, to tour the facility and locate the effluent discharge outfall. It was found that the discharge was into the headwaters of a small stream. There was no flowing or

standing water upstream of the discharge, however there was flow from a small wetland adjacent to the point of discharge. The receiving water flow used to calculate effluent limits is therefore zero, resulting in a dilution factor of one.

FLOW

The design flow rate for the facility is 12,000 gpd (0.012 million gallons per day). Flow is currently reported based on water records for the High School and the Elementary School which contribute to the system. The draft permit maintains the average monthly flow limit of 12,000 gallons per day (gpd) from the previous permit. Reported flows are water meter readings.

OUTFALL 001 - CONVENTIONAL POLLUTANTS

Biological Oxygen Demand (BOD_5) - Publically Owned Treatment Works (POTWs) are subject to the secondary treatment requirements set forth at 40 CFR 133.102 (b)(1), (2) and 40 CFR 122.45 (f). The secondary treatment limitations are monthly average BOD_5 concentration of 30 mg/l, weekly average concentration of 45 mg/l. However, given the absence of dilution, effluent limitations of 10 mg/l monthly average and 15 mg/l average weekly for BOD_5 are included in the draft permit based on water quality considerations. The maximum daily concentration shall be reported. The mass limitations for BOD_5 are based on 12,000 gallon per day design flow.

Total Suspended Solids (TSS) - Publically Owned Treatment Works (POTWs) are subject to the secondary treatment requirements set forth at 40 CFR 133.102 (b)(1), (2) and 40 CFR 122.45 (f). The secondary treatment limitations are monthly average TSS concentration of 30 mg/l, weekly average concentration of 45 mg/l. However, given the absence of dilution, effluent limitations of 10 mg/l monthly average and 15 mg/l average weekly for TSS are included in the draft permit based on water quality considerations. The maximum daily concentration shall be reported. The mass limitations for TSS are based on 12,000 gallon per day design flow.

BOD_5 and TSS Mass Loading Calculations:

Calculations of maximum allowable loads for average weekly, and average monthly BOD_5 and TSS are based on the following equation:

L = C x DF x 8.34 or L = C x DF x 3.79 where:

L = Maximum allowable load in lbs/day.
C = Maximum allowable effluent concentration for reporting period in mg/l. Reporting periods are average monthly and average weekly.
DF = Design flow of facility in MGD.
8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.
3.79 = Factor to convert effluent concentration in mg/l and design flow in MGD to kgs/day.

(Concentration limit) [15] X 8.34 (Constant) X 0.012 (design flow) = 1.5 lb/day

(Concentration limit) [15] X 3.79 (Constant) X 0.012 (design flow) = 0.68 kg/day

(Concentration limit) [10] X 8.34 (Constant) X 0.012 (design flow) = 1.0 lb/day

(Concentration limit) [10] X 3.79 (Constant) X 0.012 (design flow) = 0.45 kg/day

Eighty-Five Percent (85%) BOD_5 and TSS Removal Requirement - the provisions of 40 CFR §133.102(3) requires that the 30 day average percent removal for BOD and TSS be not less than 85%.

pH - The draft permit includes proposed pH limitations which are required by state water quality standards, and are at least as stringent as pH limitations set forth at 40 CFR 133.102(c). Class B waters shall be in a range of 6.5 through 8.3 standard units and not more than 0.5 standard units outside of the background range. There shall be no change from background conditions that would impair any use assigned to this class.

Fecal Coliform Bacteria - The numerical limitations for fecal coliform are based on state certification requirements under Section 401(a)(1) of the CWA, as described in 40 CFR 124.53 and 124.55. These limitations are also in accordance with the Massachusetts Surface Water Quality Standards 314 CMR 4.05 (3)(b) 4.

The proposed limits in the draft permit are 200 colony forming units (cfu)/100 ml average monthly and 400 colony forming units (cfu)/100 ml maximum daily. The monitoring frequency for fecal coliform has been increased to once (1) per week and must be collected concurrent with sampling for Total Residual Chlorine. Samples shall be collected at the sewer manhole, immediately downstream of the chlorine contact chamber and prior to commingling with other sources.

Settleable Solids - The monitoring requirements for settleable solids have been removed from this permit. They are no longer required as a condition for state certification under Section 403 of the CWA.

OUTFALL 001 - NON-CONVENTIONAL POLLUTANTS

Total Residual Chlorine (TRC) - Chlorine is a toxic chemical. DMRs show a chlorine residual ranging between 0.05 and 0.7 mg/l over a 24-month period.

The draft permit includes total residual chlorine limitations which are based on state water quality standards [Title 314 CMR 4.05(5)(e)] and *the State's Implementation Policy for the Control of Toxic Pollutants in Surface Waters, February 23, 1990*. Chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life. As such, the permittee should evaluate chlorination alternatives such as ultraviolet disinfection, as well as state of the art chlorination facilities which enable adequate control over chlorine dosing levels. Given the limitation of grab samples for ensuring that chlorine limits are complied with at all times, future permits may require continuous chlorine monitoring to assure that toxic levels are not discharged to the receiving water.

The water quality standards for chlorine defined in the 2002 EPA National Recommended Water Quality Criteria for freshwater are 19 ug/l daily maximum and 11 ug/l monthly average in the receiving water. Given the dilution factor of 1, total residual chlorine limits have been calculated as 19 ug/l maximum daily and 11 ug/l average monthly. Sampling frequency has been changed to five (5) times per week from once (1) per day since the facility is a school. One (1) total residual chlorine sample per week must be collected concurrently with the once per week Fecal Coliform Bacteria sample.

Total Residual Chlorine Limitations:

(acute criteria * dilution factor) = Acute (Maximum Daily)
(19 ug/l x 1)= 19 ug/l

(chronic criteria * dilution factor) = Chronic (Monthly Average)
(11 ug/l x 1) = 11 ug/l

Total Ammonia Nitrogen, as N - Ammonia is a toxic pollutant which may be harmful to aquatic organisms. EPA is required to limit any pollutant that is or may be discharged at a level that caused, or has reasonable potential to cause, or contribute to an excursion above any water quality criterion [40 CFR 122.44 (d)(1)(vi)]. The water quality standards for ammonia are referenced in the National Recommended Water Quality Criteria: 2002 and are defined in the 1999 Update of Ambient Water Quality for Ammonia. Based on an average pH of 7.0 and a maximum anticipated temperature of 28 degrees Celsius, the criteria for freshwater are 24.1 daily maximum and 2.5 mg/l average monthly. Based on water quality considerations, an average monthly limit of 2.5 mg/l has been included in the permit.

Total Phosphorus - The Massachusetts Surface Water Quality Standards (314 CMR 4.00) do not contain numerical criteria for total phosphorus. The criteria for nutrients is found at 314 CMR 4.05(5)(c), which states that nutrients "shall not exceed the site specific limits necessary to control accelerated or cultural eutrophication". The Water Quality Standards also require that "any existing point source discharges containing nutrients in concentrations which encourage eutrophication or the growth of weeds or algae shall be provided with the highest and best practicable treatment to remove such nutrients (314 CMR 4.04). MADEP has established that a monthly average total phosphorus limit of 0.2 mg/l represents highest and best practical treatment for POTWs.

EPA has produced several guidance documents which contain recommended total phosphorus criteria for receiving waters. The 1986 Quality Criteria of Water ("the Gold Book") recommends in-stream phosphorus concentrations of 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly to lakes or impounds, and 0.025 mg/l within the lake or reservoir.

More recently, EPA has released "Ecoregional Nutrient Criteria", established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published criteria represent conditions in waters in each specific ecoregion which are minimally impacted by human activities, and thus representative of waters without cultural eutrophication. East Bridgewater is within Ecoregion XIV, Eastern Coastal Plains. The total phosphorus criteria for this Ecoregion XIV is 24 ug/l (0.024 mg/l) and can be founded in the Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV, published in December 2000.

Instream water quality data for the unnamed tributary and the Matfield River in the vicinity of the discharge is absent. The Taunton River Watershed Alliance (TRWA), in association with Trout Unlimited and the Bridgewater State College Watershed Access Lab, conducted extensive overnight nutrient and flow studies. The studies included a station on the Matfield River, but the site is significantly downstream of the East Bridgewater discharge. However, it should be noted that a very high percentage (78%-87%) of phosphorus discharged to the Taunton River is from the Matfield River. Since there was very limited rainfall during the study period, the phosphorus

sources are theorized to be point sources and possibly sediments. Some algae growth was noted on the discharge pipe during a site visit in February 2004.

Given the above facts, EPA has included an average monthly effluent limit of 1 mg/l in this permit. The permittee shall sample and report total phosphorus concentrations monthly. If the effluent monitoring results indicate that the total phosphorus concentration exceed criteria and contribute to eutrophication a limit of 0.2 mg/l may be included in the next permit issuance.

OUTFALL 001 - WHOLE EFFLUENT TOXICITY (WET)

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 include the following narrative statement and requires that 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 domestic sources contribute toxic constituents. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and others. The Region's current policy is to include toxicity testing requirements in all permits, while Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts.

Based on the potential for toxicity resulting from domestic sewage, and in accordance with EPA national and regional policy, the draft permit includes chronic and acute toxicity limitations and monitoring requirements. (See e.g. "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants", 50 Fed. Reg. 30,784 (July 24, 1985); see also, EPA's "Technical Support Document for Water Quality-Based Toxics Control", September, 1991.)

Pursuant to EPA Region I policy, a minor discharge having a dilution ratio of less than 10:1 requires 7-day chronic and modified acute toxicity testing four (4) times 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 analyses; (2) bioavailability of pollutants after discharge is best measured by toxicity testing including any synergistic effects of pollutants; and (3) pollutants for which there are inadequate chemical analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in conjunction with pollutant specific control procedures to control the discharge of toxic pollutants.

The draft permit requires that the permittee conduct 7-day chronic and modified acute WET testing for the Outfall 001 effluent four (4) per year (quarterly) and that each test include the use of two species, Ceriodaphnia and Pimphales promelas, in accordance with EPA Region I protocol to be found in permit Attachment A.

As a condition of this permit, the testing requirements may be reduced if certain conditions are met. The permit provision anticipates that the permittee may wish to request a reduction in the WET testing. After one year of consecutive WET tests, demonstrating compliance with the permit limits for whole effluent toxicity, the permittee may submit a written request to the EPA seeking a review of toxicity test results. The EPA will review the test results and pertinent information to make a determination. The permittee is required to continue testing at the frequency and species specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA indicating a change in the permit conditions.

VI. SLUDGE CONDITIONS

Section 405(d) of the CWA requires that EPA develop technical regulations regarding the use and disposal of sewage sludge. These regulations are found at 40 CFR part 503 and apply to any facility engaged in the treatment of domestic sewage. The CWA further requires that these conditions be implemented through permits.

The East Bridgewater School Wastewater Treatment System is composed of three of septic tanks. Each of the tanks are pumped annually. The septage is trucked off-site for disposal at an approved location.

VII. ANTI-BACKSLIDING

Anti-backsliding as defined at 40 CFR §122.44(l)(1) requires reissued permits to contain limitations as stringent or more stringent than those of the previous permit unless the circumstances allow application of one of the defined exceptions to this regulation. Anti-backsliding does not apply when changes to limits are based on new information not available at the time of the previous permit reissuance [40 CFR §122.44(l)(2)(i)(B)(1)] or when limits are changed as a result of material and substantial additions or alterations to the permitted facility which occurred after permit issuance which justify the application of less stringent limitations, as defined at 40 CFR § 122.44(l)(2)(i)(A).

VIII. ANTI-DEGRADATION

The Massachusetts Anti-degradation Policy is found at Title 314 CMR 4.04. All existing uses of the unnamed tributary of the Matfield River must be protected. This draft permit has discharge limits as or more stringent than the current permit with the exception of a maximum daily limit for BOD and TSS, which is now a report-only requirement and a limit for settleable solids which has been eliminated from the permit because MADEP no longer requires it as a condition for obtaining state certification. There has been no change in the outfall location.

IX. STATE PERMIT CONDITIONS

The NPDES Permit is issued jointly by the U. S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection under federal and state law, respectively. As such, all the terms and conditions of the permit are, therefore, incorporated into and constitute a discharge permit issued by the MADEP Commissioner who designates signature authority to the Director of the Division of Watershed Management pursuant to M.G.L. Chap. 21, §43.

X. STATE CERTIFICATION REQUIREMENTS

The staff of the Massachusetts Department of Environmental Protection ("MADEP") 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.

XI. PUBLIC COMMENT PERIOD 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 comment period, to the U.S. EPA, Office of Ecosystem Protection, MA Unit, One Congress Street, Suite-1100, Boston, Massachusetts 02114. 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. Public hearings may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates a 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.

XII. EPA CONTACT

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:

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April 7, 2004
Date

Linda M. Murphy, Director
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