

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
ONE CONGRESS STREET
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT
TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO
THE CLEAN WATER ACT (CWA)

NPDES PERMIT NO.: MA0102598

PUBLIC NOTICE DATES: July 3, 2008 through August 1, 2008

NAME AND ADDRESS OF APPLICANT:

Charles River Pollution Control District
66 Village Street
Medway, Massachusetts 02053

The Towns of Franklin, Medway, Millis, and Bellingham are co-permittees for specific activities required in Sections I.B - Unauthorized Discharges and I.C - Operation and Maintenance of the Sewer System of the draft permit. Sections B - Unauthorized Discharges and C - Operation and Maintenance of the Sewer System include conditions regarding the operation and maintenance of the collection systems. The responsible municipal departments are:

Town of Franklin
Department of Public Works
150 Emmons Street
Municipal Building, Lower Level
Franklin, MA 02038

Town of Medway
Department of Public Services
155 Village Street
Medway, MA 02053

Town of Millis
Department of Public Works
Veterans Memorial Building
900 Main Street
Millis, MA 02054

Town of Bellingham
Department of Public Works
26 Blackstone Street
Bellingham, MA 02019

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Charles River Pollution Control District
Water Pollution Abatement Facility
66 Village Street
Medway, Massachusetts 02053

RECEIVING WATER: Charles River (MA 72 - 05)

CLASSIFICATION: B (warm water fishery)

EXHIBIT 40

I. PROPOSED ACTION

The above named applicant has requested that the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) reissue its NPDES permit to discharge into the designated receiving water, the Charles River. The current permit was issued on September 29, 2000, modified October 25, 2000, November 13, 2000, and April 22, 2002. The permit expired September 29, 2004, and was administratively continued. This permit will expire five (5) years from the effective date of the reissued permit.

The applicant filed a complete application for permit reissuance as required by 40 Code of Federal Regulations (CFR) § 122.6.

II. TYPE OF FACILITY AND DISCHARGE LOCATION

The facility is engaged in the collection and treatment of wastewater from the towns of Franklin, Medway, Millis, and central and north Bellingham and serves approximately 28,000 people and four significant industrial users.

The existing permit authorizes a discharge from Outfall 001 to the Charles River as shown on **Figure 1**. The draft permit has been written to reflect the current operation and conditions at the facility.

III. DESCRIPTION OF THE DISCHARGE

The Charles River Pollution Control District Water Pollution Abatement Facility (CRPCD WPAF) (**Figures 2 and 3**) is an advanced plant providing treatment to domestic, commercial, and industrial wastewater. The plant was expanded and upgraded in 2000 to increase the capacity of the flow from 4.5 to 5.7 MGD. The upgrades included an anoxic biological selector for filamentous bacteria control, two fine bubble diffused aeration basins to increase the aeration capacity, four 12-cloth disk filters to supplement the existing sand filters, and an upgrade to the plants electrical system. In 2003, new piping and pumps for the ferric chloride, ferrous sulfate, and lime systems were installed, and a hydrated lime mixing system was installed to replace the quick lime slaking system.

The unit processes and equipment at the plant now consist of a Parshall flume, two automatic bar racks, three influent pumps (lead/lag/standby), two aerated grit tanks where lime is added for pH control and ferric chloride for phosphorus control, two primary clarifiers, an anoxic selector, two fine bubble aeration chambers, eight mechanical aeration tanks, four secondary clarifiers, and four cloth filter basins. Solids are captured on the filter cloth and backwashed to the headworks, and the filtered water continues to the chlorine contact chamber. There are additional gravity sand filters for high flow periods. The effluent is disinfected in two chlorine contact chambers (Cl_2 gas), dechlorinated with sodium bisulfate, passes down effluent cascade steps, and flows 3,375 feet through the outfall pipe to the Charles River.

The facility receives approximately 25,000 gallons of septage per day from Franklin, Medway, Millis, Bellingham, Norfolk, Sherborn, Dover, and Wrentham. There are two septage tanks, which are filled and batch discharged by gravity into the headworks. One septage tank is typically all that is needed however, the other tank is available for haulers to discharge into if it is needed. The facility checks the pH of each septage delivery and conducts micro-toxicity testing of the septage tank once per week. Ferrous chloride is added to the wet wells for odor control.

Primary sludge is pumped to a gravity belt thickener. Secondary sludge flows to the wet well and is pumped to the gravity thickener with polymer added to aid thickening. The 7% solids sludge is held in

wet wells and then trucked to the incinerator at Synagro in Woonsocket, RI.

A quantitative description of the discharge in terms of significant effluent parameters based on recent monitoring data is shown in **Fact Sheet Tables 1 and 2**.

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 LIMITS DERIVATION

The Clean Water Act (CWA or the Act) prohibits the discharge of pollutants to waters of the United States without an NPDES permit unless such a discharge is otherwise authorized by the Act. An NPDES permit is used to implement technology based and water quality based effluent limitations as well as other requirements including monitoring and reporting. This draft NPDES permit was developed in accordance with statutory and regulatory authorities established pursuant to the Act. The regulations governing the NPDES program are found in 40 CFR Parts 122, 124, and 125.

Regulatory Basis.

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 (POTWs), technology based requirements are the effluent limits based on secondary treatment 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 [40 CFR 122.44(d)(1)]. 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.

Waterbody Classification and Usage

The Charles River is classified as a Class B warm water fishery by the Massachusetts Surface Water Quality Standards [314 CMR 4.05(3)(b)]. Class B waters are designated as habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. Where designated, they 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.

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 implementation of technology-based controls and as such require the development of total maximum daily loads (TMDL). The CRPCD WPAF discharges into Charles River segment MA 72-05, which extends from below Populatic Pond on the Norfolk/Medway line to the South Natick Dam. The Massachusetts Year 2006 Integrated List of Waters [Section 303(d) list] identifies segment MA-72-05 and segments downstream from the facility as not attaining water quality standards. Segment 72-05 is listed as impaired by unknown toxicity, metals, nutrients, organic enrichment/low dissolved oxygen, pathogens, noxious aquatic plants, and turbidity.

EPA and MassDEP have awarded grants to the Charles River Watershed Association (CRWA) for the Upper Charles River Watershed Total Maximum Daily Load Project (# 2001-03/104). Under these grants, CRWA has collected wet and dry weather water quality and flow data, is estimating pollutant loads from sources such as land use, septic systems, atmospheric deposition, sediment resuspension, and point sources, and is determining receiving water concentrations, estimating loading capacity; and establishing load allocations by source category. This information will be used to establish load allocations by source category and will be used by MassDEP to develop a TMDL and to evaluate Water Management Act and groundwater discharge permits for the Charles River watershed.

Plant Design Flow

The design flow of the plant is now 5.7 MGD. Plant flow is measured at the influent Parshall flume. The annual average flow rate was 5.16 MGD in 2005, 5.03 MGD in 2006 and 4.36 MGD in 2007. The range of the maximum daily flow rate between January 2005 and December 2007 was 3.55 MGD and 14.38 MGD.

During the 2000 public notice period, the District commented that they would not need the design capacity during the term of the permit in the summer months. The permit issued in 2000 included a monthly average flow limit of 4.5 MGD from July through September and the effluent limits for those months were calculated based on a flow of 4.5 MGD. The table below compares the monthly minimum river flow at the USGS station in Dover and the plant discharge.

Charles River Minimum Mean Daily Discharge at USGS Gage in Dover and Average Monthly Plant Effluent Flow

Year	July		August		September	
	River Flow, MGD	Plant Flow, MGD	River Flow, MGD	Plant Flow, MGD	River Flow, MGD	Plant Flow, MGD
2000	15.48	3.76	14.19	3.67	9.03	3.62
2001	46.44	4.17	29.67	3.51	19.35	3.35
2002	21.93	3.43	5.87	3.31	10.32	3.51
2003	72.89	4.17	38.70	3.85	36.12	3.74
2004	34.83	3.72	27.74	3.86	34.83	3.98
2005	25.80	3.79	14.19	3.48	11.61	3.55
2006	92.90	4.56	36.77	3.78	30.96	3.77

Because the monthly average flows typically remain below 4.5 MGD during the critical July through September period, EPA and MassDEP have retained the seasonal flow limits in this draft permit. The flow

limits in the draft permit are therefore 5.7 MGD as an annual average flow, and 4.5 MGD as a monthly average flow from July 1 to September 30. The monthly average and daily maximum flows shall be reported for all months.

River Flow and Dilution Calculation

The receiving water 7Q10, or the 7-day mean stream low flow with 10-year recurrence interval and the treatment plant design flow are used to calculate a dilution factor. A dilution factor is used to establish water quality based effluent limits in the draft permit.

EPA and MassDEP calculated the dilution factor in 2000 using the 7Q10 flow measured at the USGS gage in Dover¹ (01103500), average flows from the wastewater treatment plants discharging into the Charles and Stop Rivers upstream of the Dover gage during the week of August 7 through August 13, 1999, and the drainage areas upstream of the Dover gage and upstream of the CRPCD discharge. The treatment plant flows from this week were used because flows in the Charles River were approximately equal to the 7Q10 flows during this period so the plant discharge flows are representative of flows during a 7Q10 low flow period. EPA and MassDEP believe that this approach is still valid for use in this draft permit. The dilution factor was calculated using 4.5 MGD as the design flow. The dilution factor is 1.59. The calculations are as follows:

Dilution Factor Calculation:

7Q10 at USGS station 0110350 Charles River at Dover = 12.2 cfs

Contributing flows from WWTPs upstream of the USGS gage (August 7 - 13, 1999):

Milford WWTP	3.64 cfs
CRPCD	5.38 cfs
Medfield WWTP	1.11 cfs
Wrentham Developmental Ctr	0.114 cfs
Caritas Southwood Community Hospital ²	0.015 cfs
<u>MCI-Norfolk WPCF</u>	<u>0.569 cfs</u>
Total	10.83 cfs

Base flow at USGS Dover = (7Q10) - (contributing flows) = 12.2 cfs - 10.83 cfs = 1.37 cfs

Base flow per square mile of drainage area:

The total drainage area upstream of the Dover gage is 183 sq mi, therefore the flow factor for the watershed is:

$$(1.37 \text{ cfs}) / (183 \text{ sq mi}) = 0.0075 \text{ cfs/sq mi}$$

Base Flow at CRPCD:

Using the calculated flow factor for the watershed and the drainage area upstream of CRPCD discharge

¹ Current 7Q10 at the Dover gage is estimated at 12.9 cfs, only a small change from the estimate in 1999.

² Caritas Southwood Community Hospital is included in this calculation of upstream WWTP flow, but the discharge has since been terminated. The calculation has not changed given the minimal flow from this facility.

(66.7 sq mi), the base flow in the Charles River at the discharge point is:

$$(0.0075 \text{ cfs/sq mi}) (66.7 \text{ sq mi}) = 0.5 \text{ cfs}$$

7Q10 Flow at CRPCD (Base flow at CRPCD plus Milford WWTP flow):

Adding the base flow and the flow discharged from the Milford WWTP, the only discharge upstream of CRPCD:

$$7Q10 = (0.5 \text{ cfs}) + (3.64 \text{ cfs}) = 4.14 \text{ cfs}$$

Dilution factor:

$$\text{CRPCD flow} = 4.5 \text{ MGD} = 6.96 \text{ cfs}$$

$$\text{DF} = \frac{7Q10 + \text{design flow}}{\text{design flow}} = \frac{4.14 \text{ cfs} + 6.96 \text{ cfs}}{6.96 \text{ cfs}} = 1.59$$

Conventional Pollutants

CBOD₅ and TSS

The seasonal concentration and mass-based effluent limitations for CBOD₅ and TSS are the same limits as the current permit and are based on previous waste load allocations³, water quality considerations, and state certification requirements. The summer average monthly and average weekly limits are 7 mg/l and 10 mg/l, respectively. The winter average monthly and average weekly limits are 15 mg/l and 25 mg/l, respectively. The monitoring frequency remains the same. These limits were established to achieve the Class B water quality standards in the Charles River.

CBOD₅ and TSS Mass Loading Calculations:

Average monthly limits = (concentration) (design flow) (8.34) = lbs/day

CBOD₅ and TSS (summer) = (7 mg/l) (4.5 MGD) (8.34) = 265 lbs/day

CBOD₅ and TSS (winter) = (15 mg/l) (4.5 MGD) (8.34) = 570 lbs/day

Average weekly limits = (concentration) (design flow) (8.34) = lbs/day

CBOD₅ and TSS (summer) = (10 mg/l) (4.5 MGD) (8.34) = 380 lbs/day

CBOD₅ and TSS (winter) = (25 mg/l) (4.5 MGD) (8.34) = 950 lbs/day

Between January 2005 and December 2007, the average monthly CBOD₅ ranged from 1.1 to 5.9 mg/l, and the maximum daily ranged from 1.5 to 28 mg/l (Table 1). There were no exceedances of the CBOD₅ average monthly concentration limit.

During the same period, the average monthly TSS concentration ranged from 0.8 to 76 mg/l, and the maximum daily ranged from 1.5 to 509 mg/l. There were four exceedances of the TSS average monthly limit during this period.

The monthly average 85 percent removal requirements for CBOD₅ and TSS are based on the provisions of 40 CFR §133.102(a)(3) and (b)(3). The limit is carried forward from the current permit. There were no exceedances for the CBOD₅ 85% removal requirement between January 2005 and December 2007. There was one exceedance for the TSS 85% removal requirement in June 2006.

³ Massachusetts Department of Environmental Protection, Charles River Basin 1976 Water Quality Management Plan, Report 72 - D-1.

Fecal Coliform, Escherichia coli (E. coli), Dissolved Oxygen (DO) and pH

The numerical limitations for fecal coliform, E.coli, dissolved oxygen (DO) and pH are based on state certification requirements under Section 401(a) of the CWA, as described in 40 CFR 124.53 and 124.55, and the Massachusetts Surface Water Quality Standards at 314 CMR 4.05(3)(b). The limits for pH, dissolved oxygen, and fecal coliform will remain unchanged from the limits in the existing permit.

Massachusetts adopted revisions to the State Water Quality Standards on March 26, 2007, which were approved by EPA on September 19, 2007. For Class B waters, the bacteria indicator changed from fecal coliform to E.coli for non-bathing beaches and other waters.

Accordingly, the draft permit contains effluent limits for E.coli. The proposed limits include a monthly geometric mean of 126 colony forming units (cfu)/100 ml and a daily maximum of 409 cfu/100 ml (the daily maximum value is the 90% distribution of the geometric mean of 129 cfu/100 ml).

Because the E.coli limits are new water quality based limits, the Massachusetts Water Quality Standards allow a compliance schedule for achieving them. (see 314 CMR 4.03(1)(b) and Section H in the draft permit). The draft permit includes a compliance schedule requiring that the E.coli limit be achieved by March 2010. The current permit limits for fecal coliform are continued as interim limitations until the E.coli limits become effective. The bacteria limits are seasonal, and the seasons remain the same as in the current permit (March-November).

The fecal coliform and E.coli samples are to be collected at the same time as the total residual chlorine samples.

During the period of January 2005 through December 2007 there were two exceedances of the maximum fecal coliform limits, no exceedances of the maximum pH limit, and one exceedance of the DO requirement.

Non-Conventional Pollutants

Phosphorus

The existing permit includes a seasonal monthly average effluent limit for total phosphorus of 0.2 mg/l (April 1 through October 31) and a reporting requirement for the remainder of the year (November 1 through March 31). From January 2005 through December 2007, the monthly average phosphorus concentration ranged from 0.07 to 2.9 mg/l in the summer with seven exceedances and 0.09 to 1.4 mg/l in the winter (Table 2).

As discussed earlier, the segment of the Charles River receiving the facility's discharge is not attaining water quality standards and is listed as impaired by unknown toxicity, metals, nutrients, organic enrichment/low dissolved oxygen, pathogens, noxious aquatic plants, and turbidity. The Charles River has been included on the 2006 Massachusetts Section 303(d) CWA lists for nutrients because of cultural eutrophication. Phosphorus is an essential nutrient for plant growth and is the limiting nutrient in fresh water ecosystems. Phosphorus discharged by the CRPCD and other sources into the Charles River has the potential to accelerate eutrophication.

MassDEP has not adopted numeric nutrient criteria for phosphorus, but its water quality standards include narrative criteria for nutrients at 314 CMR 4.05(5)(c) specifying that "unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses" and "any existing point source discharge containing nutrients in

concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae, in any surface waters shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs....". MassDEP construes "highest and best practical treatment" for POTWs as treatment achieving a monthly average total phosphorus concentration of 0.2 mg/l.

In the absence of a numeric criterion for phosphorus, EPA looks to nationally recommended criteria, supplemented by other relevant materials, such as EPA technical guidance and information published under Section 304(a) of the CWA, peer-reviewed scientific literature and site-specific surveys and data. See 40 CFR §122.44(d)(1)(vi)(B). EPA has produced several guidance documents which set forth total ambient phosphorus concentrations that are sufficiently stringent to control cultural eutrophication and other adverse nutrient-related impacts. These guidance documents present protective in-stream phosphorus concentrations based on two different analytical approaches. An effects-based approach provides a threshold value above which adverse effects (*i.e.*, water quality impairments) are likely to occur. It applies empirical observations of a causal variable (*i.e.*, phosphorus) and a response variable (*i.e.*, chlorophyll *a*) associated with designated use impairments. Alternatively, reference-based values are statistically derived from a comparison within a population of rivers in the same eco-region class. They are a quantitative set of river characteristics (physical, chemical and biological) that represent conditions in waters in that ecoregion that are minimally impacted by human activities (*i.e.*, reference conditions), and thus by definition representative of water without cultural eutrophication. Thus, while reference conditions, which reflect minimally disturbed conditions, will meet the requirements necessary to support designated uses, they may also exceed the water quality necessary to support such requirements.

The 1986 Quality Criteria of Water (commonly known as the "Gold Book") follows an effects-based approach. It recommends maximum threshold concentrations designed to prevent or control adverse nutrient-related impacts from occurring. Specifically, the Gold Book recommends in-stream phosphorus concentrations of no greater than 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 impoundments, and 0.025 mg/l within the lake or reservoir. A more recent technical guidance manual, the Nutrient Criteria Technical Guidance Manual: Rivers and Streams (EPA 2000) ("Nutrient Criteria Technical Guidance Manual"), cites a range of values drawn from the peer-reviewed scientific literature to control periphyton and plankton, two types of aquatic plant growth commonly associated with eutrophication. This guidance recommends an in-stream phosphorus concentration from 0.01 mg/l to 0.09 mg/l to control periphyton growth and concentrations from 0.035 mg/l to 0.070 mg/l to control plankton (see Table 4 on page 101).

EPA has also released recommended 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 that ecoregion that are minimally impacted by human activities, and thus free from cultural eutrophication. The CRPCD discharge is within sub-ecoregion 59 of Ecoregion XIV, Eastern Coastal Plains. The total phosphorus criterion for this sub-ecoregion, found in Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV (2000), is 24 ug/l (0.024 mg/l). The recommended chlorophyll *a* criterion for aggregate Ecoregion XIV streams is 3.75 ug/l.

Phosphorus concentrations in the Charles River Basin

The impacts associated with the excessive loading of phosphorus are well documented in three recent reports on the Charles River Watershed Basin. The Charles River Basin 2002-2006 Water Quality

Assessment Report published by MassDEP in April 2008 and its Appendix B, Technical Memorandum TM 72-9; the Upper Charles River Watershed Total Maximum Daily Load Project, project # 2001-03/104, Volume I: Phase I Final Report, dated May 2004, and the Upper Charles River Watershed Total Maximum Daily Load, Project # 2001-03/104, Volume I: Phase II Final Report and Phase III Data Report, dated July 2006.

The Charles River Watershed Basin 2002-2006 Water Quality Assessment Report provides data from nine samples collected by the Charles River Watershed Association for total phosphorus both upstream and downstream of the treatment plant's outfall (segment MA72-05) for the months of April through September. The range of phosphorus concentration upstream of the outfall is between 0.0386 to 0.0836 mg/l and the range downstream of the outfall is between 0.043 to 0.0717 mg/l.

The MassDEP Technical Memorandum T72-9, Charles River Watershed DWM Year 2002 Water Quality Monitoring Data – Rivers includes data from sampling locations on the Charles River, upstream of CRPCD's discharge and downstream of the discharge. A range of total phosphorus concentration from April through September measured below the detection limit to 0.055 mg/l upstream of the discharge and below the detection limit to 0.061 mg/l downstream of the discharge.

The Upper Charles River Watershed Total Maximum Daily Load, Project # 2001-03/104, Volume I: Phase I Final Report, and Volume I: Phase II Final Report and Phase III Data Report states that every tributary, wastewater treatment plant and, all but two main stem sites on the Charles River, (one in Milford and one in Millis) exceed the USEPA recommended action limit for total phosphorus of 0.024 mg/l. Data from dry weather sampling events conducted in August 2002 show that instream concentration of phosphorus downstream from the treatment plant is higher than upstream of the treatment plant and also shows elevated concentrations of chlorophyll a, dissolved oxygen, and pH, which are indicative of excessive plant growth. See the Table below.

Charles River TMDL Water Quality Monitoring Data (mg/l)

Dry Sampling Date	Total Phosphorus	Orthophosphate	Chlorophyll a	DO	Percent Saturation
Station 184S: USGS Gage Station, upstream of Populatic Pond, Medway					
8/13/2002	0.0472	0.0141	4.92 ¹	9.54 - 9.63 ²	----
8/24/2005	0.0259	0.016	ND	8.84	99.7
Station 201S³: Outlet of Populatic Pond, Medway					
8/13/2002	0.0632	0.0201	0.0416	9.2	110
8/24/2005	0.0562	0.0134	0.022	10.10	119
Station 202W: CRPCD Discharge					
8/13/2002	0.106	0.116	0.0416	----	----
8/24/2005	0.0992	0.0897	0.022	7.7	----
Station 207S: One-half mile downstream of CRPCD outfall, Norfolk					

8/13/2002	0.0717	0.0312	38 ¹	9.85	115
8/24/2005	0.0536	0.0233	12	8.8	106.5
Station 229S: Two miles downstream of CRPCD, Millis					
8/13/2002	0.0230	0.0219	0.00804 ¹	7.9	----
8/24/2005	0.0375	0.0188	0.007	7.1	82.5
Station 290S: Nine miles downstream of CRPCD, Medfield (above Medfield WWTP)					
8/13/2002	0.0395/0.0378 ⁴	0.00928/0.00943 ⁴	0.00946/0.00928 ⁴	7.9	----
8/24/2005	0.0415	0.011	0.015	7.2	90
Station 294S: Immediately below Medfield WWTP					
8/13/2002	0.100	0.0622	12.4	8.2	----
8/24/2005	0.041	0.0122	15	7.5	90
Station 318S: Route 27 Bridge, Medfield/Sherborn town line					
8/13/2002	0.0616	0.0187	1.93 ¹	8.83	----
8/24/2005	0.0377	0.0115	9	5.7	68.3
Station 387S: Cheney Bridge, Wellesley, downstream of South Natick					
8/13/2002	0.0307	0.182	7.48 ¹	5.37	----
8/24/2005	0.0462/0.0504 ⁴	0.0137/0.0141 ⁴	9/9 ⁴	5.3	64.2
Station 407S: Claybrook Road, Dover					
8/13/2002	0.0384/0.0346 ⁴	0.00614/0.00384 ^{4,5}	30.8/27.4 ^{1,4}	8.26	----
8/24/2005	0.043	0.0118	13	5.9	75
Station 447S: USGS Gage, Dover					
8/13/2002	0.0372	0.00476	10.7	6.42	----
8/24/2005	0.0572	0.00996	21	6.8	----

¹Chlorophyll *a* equipment blanks for 8/13/02 are 0.00215 and 0.00301 mg/l.

²Unstable.

³Station 201S is located at the outlet of Populatic Pond upstream of the discharge

⁴Field Duplicate.

⁵Field Duplicate Relative Percent Difference is greater than acceptable range.

In addition to the data in the tables above, continuous dissolved oxygen data collected in Populatic Pond, just upstream of the discharge, and from the first sampling site downstream of the CRPCD discharge (207S) show large diurnal variations in dissolved oxygen and very high levels of supersaturation (see

Figures 2-27 and 2-28, from *Upper Charles River Watershed Total Maximum Daily Load Project, Volume I: Phased I Final Report*. This data is indicative of significant photosynthesis-driven fluctuations in dissolved oxygen, an indication large quantities of plant biomass are in the receiving water.

The Charles River Watershed 2002-2006 Water Quality Assessment Report notes a bloom of cyanobacteria algae in this segment of the Charles River in September 2004 and also notes large mats of filamentous algae downstream of Populatic Pond in July 2002.

In summary, the available data shows extremely high productivity in the receiving water upstream and downstream of the discharge as evidenced by high chlorophyll *a*, large diurnal variation in dissolved oxygen concentration and visible algae mats as noted in field observations.

As discussed previously, the existing permit includes a monthly average total phosphorus limit of 0.2 mg/l, which was based on MADEP's interpretation of highest and best practical treatment for POTWs. However, the receiving water data collected for the TMDL shows that this limit is not sufficiently stringent to achieve water quality standards. Pursuant to 40 CFR 122.44(d)(1)(v), where a State has not established a water quality criterion for a specific chemical pollutant that is present in the effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits using one or more of the following options:

- (A) – Establish effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use. Such a criterion may be derived using a proposed state criterion, or an explicit State policy or regulation interpreting its narrative criterion, supplemented with other relevant information which may include: EPA's Water Quality Standards Handbook, October 1983, risk assessment data, exposure data, information about the pollutant from the Food and Drug Administration, and current EPA criteria documents; or
- (B) – Establish effluent limits on a case-by-case basis, using EPA's water quality criteria, published under section 304(a) of the CWA, supplemented where necessary by other relevant information; or
- (C) – Establish effluent limitations on an indicator parameter for the pollutant of concern.

EPA has produced several guidance documents which contain recommended total phosphorus criteria for receiving waters to which this data may be compared. The 1986 Quality Criteria for Water (EPA 440/5/86-001), commonly known as the "Gold Book", recommends a desired goal of 0.1 mg/l total phosphorus for the prevention of plant nuisances in streams or other flowing waters not discharging directly into lakes or impoundments.

More recently, EPA has released "Ecoregional Nutrient Criteria," established as part of an effort to reduce problems associated with excess nutrients in water in specific areas of the country. The published criteria represent conditions in waters in an ecoregion minimally impacted by human activities, and thus representative of water without cultural eutrophication. CRPCD WPAF is within Ecoregion XIV, Eastern Coastal Plains, Level III Northeastern Coastal Zone. The total phosphorus criteria for this ecoregion, found in Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV (EPA-822-B-00-022, December 2000), is 24 ug/l (0.024 mg/l). The chlorophyll *a* criteria for the aggregate ecoregion is 3.75 ug/l (0.004 mg/l).

The report emphasizes that these values represent a starting point for states to develop more refined nutrient criteria for local conditions.

The current limit is not sufficiently stringent to achieve the Gold book criteria under 7Q10 conditions, or the Ecoregion Criteria under average summer conditions. A more stringent limit, based on the Gold Book criteria is proposed in the draft permit and was calculated as follows:

Calculation of Summer Phosphorus Effluent Limits based on 1986 Quality Criteria for Water (EPA 440/5/86-001):

Average monthly summer total phosphorus limit:

The effluent limit was calculated to assure that the instream total phosphorus concentration does not exceed 0.1 mg/l under 7Q10 low flow conditions with the treatment plant discharging at a flow of 4.5 MGD (6.96 cfs). A background concentration of 0.06 mg/l was assumed based on the instream data collected at sampling site 201S, just upstream of the discharge. The calculation of the limit is shown below

$$Q_r C_r = Q_d C_d + Q_s C_s$$

Where

- Q_r = receiving water flow downstream of the discharge ($Q_d + Q_s$), 11.1 cfs
- C_r = total phosphorus concentration in the receiving water downstream of the discharge, 0.1 mg/l
- Q_d = discharge flow from the facility, 6.96 cfs
- C_d = total phosphorus concentration in the discharge
- Q_s = receiving water flow upstream of the discharge, 4.14 cfs
- C_s = total phosphorus concentration upstream of the discharge, 0.06 mg/l

Solving for C_d yields:

$$C_d = \frac{Q_r C_r - Q_s C_s}{Q_d}$$

$$C_d = \frac{(11.1)(0.1) - (4.14)(0.06)}{6.96}$$

$$C_d = 0.12 \text{ mg/l}$$

The draft permit therefore includes a monthly average summer phosphorus limit of 0.12 mg/l. In the future, should MassDEP adopt numeric phosphorus criteria, or a TMDL be approved by EPA, or should additional water quality information shows that a different (more or less stringent) phosphorus limit will result in attainment of water quality standards, the permit may be modified to include the appropriate limit.

The draft permit also includes a total phosphorus limitation of 1.0 mg/l for the period from November 1 through March 31. The basis for the limit is to protect the Charles River from cultural eutrophication. The discharge of particulate phosphorus from the facility during the winter months to the Charles River has the potential to settle and become incorporated into the bottom sediments within the Charles River system. The potential for particulate phosphorus being stored in the Charles River system is high because of the physical characteristics of the downstream river system, which include low gradient segments, adjacent

wetland/marshy areas, and impounded sections along the river (areas upstream of dams). These characteristics result in low flow velocities and long travel times which, allows particulate matter to settle from the water column and become part of the bottom sediments.

The primary concern with phosphorus being stored in the bottom sediments is that it may become available for algal and macrophyte growth during the summer growing season. Depending on water column conditions, sediment-bound phosphorus may be released to the water column. This is particularly true for impounded portions of the river that become stratified during the summer months and have low DO in the lower water column. Low DO at the sediment water interface promotes mobilization of phosphorus from the sediments to the water column. A limit of 1.0 mg/l from November 1 through March 31 will require removal of most of the particulate-bound phosphorus in the discharge. This will presumably allow the dissolved portion to pass out of the system during the winter and spring when flows are higher and plant uptake is low. Orthophosphorus will be monitored during the winter months to determine the bioavailable concentration of phosphorous in the water column.

In summary, the draft permit total phosphorus limit for the summer months is 0.12 mg/l and the winter limit is 1.0 mg/l. The monitoring frequency for the summer is 3/week, and the winter monitoring frequency is 1/month.

Ammonia

Ammonia can impact the receiving stream's dissolved oxygen concentration and can be toxic at elevated levels. The ammonia limits are based on previous waste load allocations and water quality considerations. These limits have been established to achieve dissolved oxygen water quality standards for a Class B receiving water. The effluent limitations in the draft are the same as the limits in the existing permit. The average monthly, average weekly, and maximum daily concentration limits for the month of April are 10 mg/l, 15 mg/l, and 20 mg/l and for May the limits are 5 mg/l, 7.5 mg/l and 10 mg/l. The average monthly, average weekly, and maximum daily concentration limits for the months of June through October are 1 mg/l, 1.5 mg/l, and 2 mg/l.

During the winter months, ammonia limits may not be necessary to ensure compliance with water quality standards given the higher receiving water flows, reduced rates of biological degradation of ammonia and, higher instream concentrations of dissolved oxygen. However, winter limits may be necessary to ensure that ammonia toxicity does not cause or contribute to violations of water quality standards. The facility reports average monthly and maximum daily ammonia limits from November 1 through March 31 once per month. See Table 2 for total ammonia data reported on the facility's discharge monitoring report from January 2005 through December 2007.

In order to determine if there is a reasonable potential for the CRPCD discharge to cause a violation of the water quality standards, the potential winter limits were calculated as follows:

Winter Ammonia Limits Calculations:

The winter ammonia instream criteria is dependent on pH and temperature, as explained in 1999 Update of Ambient Water Quality Criteria for Ammonia (EPA-822-R-99-014), and Federal Register Vol. 64, No. 245, pgs. 71973 - 71980, December 22, 1999. The recommended chronic ammonia criteria is established as a 30-day concentration, therefore the monthly average limit has been calculated using a dilution factor based on 30-day mean low flow with a recurrent interval of 10 years (30Q10) and the discharge design flow.

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §§1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

Charles River Pollution Control District

is authorized to discharge from the facility located at

**Charles River Pollution Control District
Water Pollution Abatement Facility
66 Village Street
Medway, Massachusetts 020053**

to receiving water named

Charles River (MA 72-05)

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

The Towns of Franklin, Medway, Millis, and Bellingham are co-permittees for specific activities required in Sections I.B -Unauthorized Discharges and I.C - Operation and Maintenance of the Sewer System, which include conditions regarding the operation and maintenance of the collection systems. The responsible municipal Departments are:

**Town of Franklin
Department of Public Works
150 Emmons Street
Municipal Building, Lower Level
Franklin, MA 02038**

**Town of Medway
Department of Public Services
155 Village Street
Medway, MA 02053**

**Town of Millis
Department of Public Works
Veterans Memorial Building
900 Main Street
Millis, MA 02054**

**Town of Bellingham
Department of Public Works
26 Blackstone Street
Bellingham, MA 02019**

This permit shall become..... (See ** below)

This permit and the authorization to discharge expire at midnight on the last day of the month, five (5) years from the effective date.

This permit supersedes the permit issued on September 29, 2000 and modified on April 22, 2002.

This permit consists of 14 pages in Part I including effluent limitations, monitoring requirements, Attachment A, Toxicity Tests Procedures and Protocols; Attachment B, Reassessment of Technically Based Industrial Discharge Limits; Attachment C, Industrial Pretreatment Annual Report; Attachment D, EPA Sludge Guidance; and 25 pages in Part II including General Conditions and Definitions.

Signed this day of

Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

** This permit will become effective on the date of signature if no comments are received during public notice. If comments are received during public notice, this permit will become effective 60 days after signature.

PART I

A.1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number 001 to the Charles River. Such discharges shall be limited and monitored as specified below.

EFFLUENT CHARACTERISTIC PARAMETER	EFFLUENT LIMITS				MONITORING REQUIREMENTS			
	AVERAGE MONTHLY	AVERAGE WEEKLY	AVERAGE MONTHLY	AVERAGE WEEKLY	MAXIMUM DAILY	MEASUREMENT FREQUENCY	SAMPLE ³ TYPE	
FLOW (October 1 - June 30)	*****	*****	5.7 MGD ²	*****	Report MGD	Continuous	Recorder	
FLOW (July 1 - September 30)	*****	*****	4.5 MGD ²	*****	Report MGD	Continuous	Recorder	
CBOD ₅ (November 1 - April 30)	570 lbs/day	950 lbs/day	15 mg/l	25 mg/l	Report mg/l ¹	3/week ⁴	24-Hour Composite ⁵	
CBOD ₅ (May 1 - October 31)	265 lbs/day	380 lbs/day	7 mg/l	10 mg/l	Report mg/l ¹	3/week ⁴	24-Hour Composite ⁵	
TSS (November 1 - April 30)	570 lbs/day	950 lbs/day	15 mg/l	25 mg/l	Report mg/l ¹	3/week ⁴	24-Hour Composite ⁵	
TSS (May 1 - October 31)	265 lbs/day	380 lbs/day	7 mg/l	10 mg/l	Report mg/l ¹	3/week ⁴	24-Hour Composite ⁵	
pH RANGE ¹	6.5 - 8.3 SU See Permit Page 6, Paragraph I.A.1.b.							
TOTAL CHLORINE RESIDUAL ^{1,6,7} (March 1 - November 30)	*****	*****	17 ug/l	*****	30 ug/l	2/day	Grab	
FECAL COLIFORM ^{1,6,7} (March 1 - November 30)	*****	*****	200 cfu/100 ml	*****	400 cfu/100 ml	3/week	Grab	
ESCHERICHIA COLI BACTERIA ^{1,6,7} (March 1 - November 30)	*****	*****	126 cfu/100 ml	*****	409 cfu/100 ml	3/week	Grab	
DISSOLVED OXYGEN (April 1 - October 31)	Not less than 6 mg/l							
WHOLE EFFLUENT TOXICITY SEE FOOTNOTES 8, 9, 10, and 11	Acute LC ₅₀ ≥ 100% Chronic C-NOEC > 63%							
							4/year	24-Hour Composite ⁵

CONTINUED FROM PREVIOUS PAGE

EFFLUENT CHARACTERISTIC		EFFLUENT LIMITS			MONITORING REQUIREMENTS		
PARAMETER	AVERAGE MONTHLY	AVERAGE WEEKLY	AVERAGE MONTHLY	AVERAGE WEEKLY	MAXIMUM DAILY	MEASUREMENT FREQUENCY	SAMPLE ³ TYPE
A.1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number 001 to the Charles River. Such discharges shall be limited and monitored as specified below.							
TOTAL AMMONIA-NITROGEN, as N (November 1 - March 31)	Report lbs/day	Report lbs/day	Report mg/l	*****	Report mg/l	1/month	24-Hour Composite ⁵
TOTAL AMMONIA-NITROGEN, as N (April 1 - April 30)	380 lbs/day	570 lbs/day	10 mg/l	15 mg/l	20 mg/l	1/month	24-Hour Composite ⁵
TOTAL AMMONIA-NITROGEN, as N (May 1 - May 31)	190 lbs/day	285 lbs/day	5 mg/l	7.5 mg/l	10 mg/l	3/week	24-Hour Composite ⁵
TOTAL AMMONIA-NITROGEN, as N (June 1 - October 31)	38 lbs/day	57 lbs/day	1.0 mg/l	1.5 mg/l	2.0 mg/l	3/week	24-Hour Composite ⁵
TOTAL PHOSPHORUS (November 1 - March 31)	*****	*****	1.0 mg/l	*****	*****	1/month	24-Hour Composite ⁵
TOTAL PHOSPHORUS (April 1 - October 31)	*****	*****	0.12 mg/l	*****	*****	3/week	24-Hour Composite ⁵
TOTAL COPPER	*****	*****	13 ug/l	*****	23 ug/l	1/month	24-Hour Composite ⁵

Footnotes:

1. Required for State Certification.
2. For flow, report annual average, monthly average, maximum and minimum daily rates and total flow for each operating date. This is an annual average limit, which shall be reported as a rolling average. The annual average shall be calculated as the arithmetic mean of the monthly average flow from the reporting month and the monthly average flow from the previous 11 months.
3. All sampling shall be representative of the influent and of the effluent discharged through outfall 001, except whole effluent toxicity samples, shall be collected at the bottom of the cascade steps. Whole effluent toxicity samples shall be collected after filtration and prior to chlorination. A routine sampling program shall be developed in which samples are taken at the same location, same time, and same days of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report submitted to EPA. All samples shall be tested using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136. All samples shall be 24-hour composites unless specified as grab or meter sample in 40 CFR §136.
4. Sampling required for influent and effluent.
5. A 24-hour composite sample will consist of at least twenty four (24) grab samples taken during a consecutive 24-hour period (e.g. 0700 Monday to 0700 Tuesday).
6. The average monthly limits for fecal coliform and E.coli are expressed as geometric means. Samples for fecal coliform bacteria and E.coli shall be taken at the same time as the total residual chlorine sample.

The bacteria limits and monitoring requirements are in effect from March 1 to November 30 after the effective date of this permit. The seasonal monitoring and reporting requirements for E.coli are in effect on the effective date of this permit; the monitoring frequency for E.coli during the first year is 1/month. The following season beginning March 1, the fecal coliform limit and monitoring requirement will end and the E.coli limits will be in effect and the monitoring frequency for E.coli will be 3/week.

Fecal coliform and total residual chlorine monitoring will be conducted during the period March 1 to November 30 to reflect the seasonal chlorination period. Fecal coliform discharges shall not exceed a monthly geometric mean of 200 colony forming units (cfu) per 100 ml, nor shall they exceed 400 cfu per 100 ml as a daily maximum. E.coli discharges shall not exceed a monthly geometric mean of 126 colony forming units (cfu) per 100 ml, nor shall they exceed 409 cfu per 100 ml as a daily maximum. This monitoring shall be conducted concurrently with the TRC sampling described below.

7. The minimum level (ML) for total residual chlorine is defined as 20 ug/l. This value is the minimum level for chlorine using EPA approved methods found in the most currently approved version of Standard Methods for the Examination of Water and Wastewater, 20th Edition, Method 4500 CL-E and G, or USEPA Manual of Methods of Analysis of Water and Wastes, Method 330.5. One of these methods must be used to determine total residual chlorine.

For effluent limitations less than 20 ug/l, compliance/non-compliance will be determined based on the ML. Sample results of 20 ug/l or less shall be reported as zero on the discharge monitoring report.

8. The permittee shall conduct chronic (and modified acute) toxicity tests four times per year. The chronic test may be used to calculate the acute LC50 at the 48 hour exposure interval. The permittee shall test the fathead minnows, *Pimephales promelas* and the daphnid, *Ceriodaphnia dubia*. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A, Toxicity Test Procedure and Protocol** of this permit. If the results of any acute or chronic tests fail to comply with the LC₅₀ and Chronic NOEC limits, the permittee must perform an additional tests on an effluent sample obtained within fourteen days of the date on which the failed test sample was collected. Toxicity test samples shall be collected and the results submitted according to the following schedule:

Test Dates second week of	Submit Results By:	Test Species	Acute Limit LC50	Chronic Limit C-NOEC
January	February 28	<i>Ceriodaphnia dubia</i> (daphnid)	≥100%	≥ 63%
April	May 31			
July	August 31	<i>Pimephales promelas</i> (fathead minnows)		
October	November 30			
See Attachment A				

9. The LC50 is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.
10. C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life-cycle or partial life-cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing where the test results exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, the permittee must report the lowest concentration where there is no observable effect. The "63% or greater" limit is defined as a sample which is composed of 63% (or greater) effluent, the remainder being dilution water. This is a maximum daily limit derived as a percentage of the inverse of the dilution factor of 1.59.
11. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall either follow procedures outlined in **Attachment A, Toxicity Test Procedure and Protocol, Section IV., Dilution Water** in order to obtain an individual approval for use of an alternate dilution water, or the permittee shall follow the Self-Implementing Alternative Dilution Water Guidance which maybe used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found in Attachment G of NPDES Permit Program Instructions for the Discharge Monitoring Forms (DMR) which is sent to all permittees with their annual set of DMRs and may also be found on the EPA Region 1 web site at

<http://www.epa.gov/region1/enforcementandassistance/dmr2007.pdf>. If this guidance is revoked, the permittee shall revert to obtaining approval as outlined in **Attachment A, Toxicity Test Procedure and Protocol**.

Any modification or revocation to this guidance will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A, Toxicity Test Procedure and Protocol**.

Part I.A.1. (Continued)

- a. The discharge shall not cause a violation of the water quality standards of the receiving waters.
- b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 SU at any time, unless these values are exceeded as a result of an approved treatment process.
- c. The discharge shall not cause objectionable discoloration of the receiving waters.
- d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
- e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values.
- f. The permittee shall minimize the use of chlorine while maintaining adequate bacterial control.
- g. Sample results using EPA approved methods for any parameter above its required frequency must also be reported.
- h. If the average annual flow in any calendar year exceeds 80 percent of the facility's design flow, **the permittee shall submit a report to MassDEP by March 31 of the following calendar year** describing its plans for further flow increases and describing how it will maintain compliance with the flow limit and all other effluent limitations and conditions.

2. All POTWs must provide adequate notice to the Director of the following:

- a. Any new introduction of pollutants into that POTW from an indirect discharger in a primary industry category discharging process water; and
- b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
- c. For purposes of this paragraph, adequate notice shall include information on:
 - (1) The quantity and quality of effluent introduced into the POTW; and
 - (2) Any anticipated impact of the change on the quantity or quality of effluent to

be discharged from the POTW.

3. Prohibitions Concerning Interference and Pass-Through:

- a. Pollutants introduced into POTW's by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.
- b. **If, within 30 days after notice of an interference or pass-through violation has been sent by EPA to the POTW, and to persons or groups who have requested such notice, the POTW fails to commence appropriate enforcement action to correct the violation, EPA may take appropriate enforcement action.**

4. Toxics Control

- a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.
- b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

5. Numerical Effluent Limitations for Toxicants

EPA or MassDEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including but not limited to those pollutants listed in Appendix D of 40 CFR Part 122.

B. UNAUTHORIZED DISCHARGES

The permit only authorizes discharges in accordance with the terms and conditions of this permit and only in accordance with the terms and conditions of this permit and only from the outfall listed in Part I A.1. of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) are not authorized by this permit and shall be reported in accordance with Section D.1.e. (1) of the General Requirements of this permit (24-Hour Reporting). Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes MassDEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at <http://www.mass.gov/dep/water/approvals/surffms.htm#sso>.

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions:

1. Maintenance Staff

The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

2. Preventative Maintenance Program

The permittee shall maintain an ongoing preventative maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges.

3. Infiltration/Inflow Control

The permittee shall develop and implement a plan to control infiltration and inflow (I/I) to the separate sewer system. The plan shall be submitted to EPA and MassDEP within six months of the effective date of this permit (see page 1 of this permit for the effective date) and shall describe the permittee's and co-permittees programs for preventing infiltration/inflow related effluent limit violations, and all unauthorized discharges of wastewater, including overflows and by-passes due to excessive infiltration/inflow.

The plan shall include:

- An ongoing program to identify and remove sources of infiltration and inflow. The program shall include the necessary funding level and the source(s) of funding.
- An inflow identification and control program that focuses on disconnecting and redirecting illegal sump pumps, roof downspouts, and storm drains. Priority should be given to removal of public and private inflow sources that are upstream from and potentially contribute to known areas of sewer system backups and/or overflows.
- Identification and prioritization of areas that will provide increased aquifer recharge as the result of reduction/elimination of infiltration and inflow to the system.
- An educational public outreach program for all aspects of I/I control, particularly private inflow.
- The permittee shall require, through appropriate agreements, that all member communities develop and implement infiltration and inflow control plans sufficient to ensure that high flows do not cause or contribute to a violation of the permit effluent limitations, or cause overflows from the permittee's collection system.

Reporting Requirements:

A summary report of all actions taken to minimize I/I during the previous calendar year shall be submitted to EPA and the MassDEP by March 31 each year. The summary report shall, at a minimum, include:

- A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year.
- Expenditures for any infiltration/inflow related maintenance activities and corrective actions taken during the previous year.
- A map with areas identified for I/I-related investigation/action in the coming year.
- A calculation of the annual average I/I and the maximum month I/I for the reporting year.
- A report of any infiltration/inflow related corrective actions taken as a result of unauthorized discharges reported pursuant to 314 CMR 3.19(20) and reported pursuant to the Unauthorized Discharges section of this permit.

4. **Alternative Power Source**

In order to maintain compliance with the terms and conditions of this permit, the permittee shall continue to provide an alternative power source with which to sufficiently operate its treatment works (as defined at 40 CFR §122.2).

D. CHLORINATION SYSTEM

Chlorination and dechlorination systems shall include an alarm system for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine that were inadequate for achieving effective disinfection or interruptions or malfunctions of the dechlorination system that may have resulted in excessive levels of chlorine in the final effluent shall be reported with the monthly DMRs. The report shall include the date and time of the interruption or malfunction, the nature of the problem, and the estimated amount of time that the reduced levels of chlorine or dechlorination chemicals occurred.

E. LIMITATIONS FOR INDUSTRIAL USERS

1. Pollutants introduced into POTWs by a non-domestic source (user) shall not pass-through the POTW or interfere with the operation or performance of the works.
2. The permittee shall develop and enforce specific effluent limits (local limits) for Industrial User(s), and all other users, as appropriate, which together with appropriate changes in the POTW treatment plant facilities or operation, are necessary to ensure continued compliance with the POTW's NPDES permit or sludge disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice to respond. Within 120 days of the effective date of this permit, the permittee shall prepare and submit a written technical report to EPA analyzing local limits. As part of the evaluation, the permittee shall assess how the POTW performs with respect to influent and effluent of pollutants, water quality concerns, sludge quality, sludge processing concerns/inhibition, activated sludge inhibition, worker health and safety, and collection system concerns. In preparing this evaluation, the permittee shall complete and submit the attached form of **Attachment B** with the technical evaluation to assist in determining whether existing local limits need to be revised. Justifications

and conclusions should be based on actual plant data, if available and should be included in the report. Upon completion of its review, EPA will notify the POTW if the evaluation reveals that the local limits should be revised. Should the local limits need to be revised, the permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval. The permittee shall carry out the local limits analysis in accordance with EPA's Local Limit Development Guidance (EPA 833-R-04-002A, July 2004).

F. INDUSTRIAL PRETREATMENT PROGRAM

1. The permittee shall implement the industrial pretreatment program in accordance with the legal authorities, policies, procedures, and financial provisions described in the permittee's approved Pretreatment Program, and the General Pretreatment Regulations, 40 CFR 403. At a minimum, the permittee must perform the following duties to properly implement the Industrial Pretreatment Program (IPP):
 - a. Carry out the inspection, surveillance, and monitoring procedures which will determine, independent of information supplied by the industrial user, whether the industrial user is in compliance with the Pretreatment Standards. At a minimum, all significant industrial users shall be sampled and inspected at the frequency established in the approved IPP but in no case less than once per year and maintain adequate records.
 - b. Issue or renew all necessary industrial user control mechanisms within 90 days of their expiration date or within 180 days after the industry has been determined to be a significant industrial user.
 - c. Obtain appropriate remedies for non-compliance by any industrial user with any pretreatment standard and/or requirement.
 - d. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.
2. The permittee shall provide the EPA and MassDEP with an annual report in accordance with 40 CFR 403.12(i), describing the permittee's pretreatment program activities for the period from July 1 to June 30. The annual report shall be consistent with the format described in Attachment C of this permit and shall be submitted no later than September 1 of each year.
3. The permittee must obtain approval from EPA prior to making any significant changes to the industrial pretreatment program in accordance with 40 CFR 403.18(c).
4. The permittee must assure that applicable National Categorical Pretreatment Standards are met by all categorical industrial users of the POTW. These standards are published in the Federal Regulations at 40 CFR 405 et. seq.
5. The permittee must modify its pretreatment program to conform to all changes in the Federal Regulations that pertain to the implementation and enforcement of the industrial pretreatment program. The permittee must provide EPA, in writing, within 180 days of this permit's effective date proposed changes, if applicable, to the permittee's pretreatment program deemed necessary to assure conformity with current federal regulations. At a minimum, the permittee must address in its written submission the following areas: (1) enforcement response plan; (2) revised sewer

use ordinances; and (3) slug control evaluations. The permittee will implement these proposed changes pending EPA Region I's approval under 40 CFR 403.18. This submission is separate and distinct from any local limits analysis submission described in Part I.E.2.

6. On October 14, 2005 EPA published in the Federal Register final changes to the General Pretreatment Regulations. The final "Pretreatment Streamlining Rule" is designed to reduce the burden to industrial users and provide regulatory flexibility in technical and administrative requirements of industrial users and POTWs. Within 90 days of the effective date of this permit, the permittee must submit to EPA all required modifications of the Streamlining Rule in order to be consistent with the provisions of the newly promulgated Rule. To the extent that the POTW legal authority is not consistent with the required changes, they must be revised and submitted to EPA for review.

G. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.
2. The permittee shall comply with the more stringent of either the state or federal (40 CFR Part 503) requirements.
3. The requirements and technical standards of 40 CFR Part 503 apply to facilities which perform one or more of the following use or disposal practices.
 - a. Land application - the use of sewage sludge to condition or fertilize the soil.
 - b. Surface disposal - the placement of sewage sludge in a sludge only landfill.
 - c. Sewage sludge incineration in a sludge only incinerator.
4. The 40 CFR Part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions also do not apply to facilities which do not dispose of sewage sludge during the life of the permit but rather treat the sludge (i.e., lagoons-reed beds), or are otherwise excluded under 40 CFR Part 503.6.
5. The permittee shall use and comply with the attached compliance guidance document to determine appropriate conditions. Appropriate conditions contain the following elements:
 - General requirements
 - Pollutant limitations
 - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
 - Management practices
 - Record keeping
 - Monitoring
 - Reporting

Depending upon the quality of material produced by a facility, all conditions may not apply to the facility.

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year:

less than 290	1/ year
290 to less than 1500	1 /quarter
1500 to less than 15000	6 /year
15000 +	1 /month

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR 503.8.
8. The permittee shall submit an annual report containing the information specified in the guidance by February 19. Reports shall be submitted to the address contained in the reporting section of the permit. Sludge monitoring is not required by the permittee when the permittee is not responsible for the ultimate sludge disposal. The permittee must be assured that any third party contractor is in compliance with appropriate regulatory requirements. In such case, the permittee is required only to submit an annual report by February 19 containing the following information:
- * Name and address of contractor responsible for sludge disposal.
 - * Quantity of sludge in dry metric tons removed from the facility by the sludge contractor.

H. COMPLIANCE SCHEDULE

The draft permit includes a compliance schedule requiring that the E.coli limit be achieved by March 1, 2010. The current permit limits for fecal coliform are continued as interim limitations until the E.coli limits become effective. The bacteria are seasonal, and the seasons remain the same as in the current permit (March-November).

I. MONITORING AND REPORTING

1. Reporting
Monitoring results obtained during each calendar month shall be summarized and reported on Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the following month following the effective date of the permit.

Signed and dated originals of these, and all other reports required herein, shall be submitted to the EPA and MassDEP at the following addresses:

United States Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114

The state agency is:

Massachusetts Department of Environmental Protection
Central Regional Office
Bureau of Resource Protection
627 Main Street
Worcester, Massachusetts 01608

Signed and dated Discharge Monitoring Report Forms and toxicity test reports required by this permit shall also be submitted to the state at:

Massachusetts Department of Environmental Protection
Division of Watershed Management
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

Industrial pretreatment reports required in Parts I.E.2 and I.F.2 shall be submitted to the agencies listed above and to:

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention
Industrial Wastewater Section
1 Winter Street
Boston, Massachusetts 02108

and

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention
Industrial Wastewater Section
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

J. STATE PERMIT CONDITIONS

This discharge permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) under federal and state law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MassDEP pursuant to M.G.L. Chap. 21, §43.

Each agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation.

In the event any portion of this permit is declared, invalid, illegal or otherwise issued in violation of state law such permit shall remain in full force and effect under federal law as an NPDES permit issued by the

U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts.