

**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),

**City of New Bedford  
1105 Shawmut Avenue, New Bedford, MA 02740**

is authorized to discharge from the wastewater treatment facility located at

**New Bedford Wastewater Treatment Facility  
1000 South Rodney Blvd.  
New Bedford, MA 02740**

and 27 combined sewer overflows located at

**See Attachment B**

to receiving waters named

**Outer New Bedford Harbor, Clark's Cove and Acushnet River**

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

The Towns of Acushnet and Dartmouth are co-permittees for Part I.C. Unauthorized Discharges and Parts I.D.1-3 Operation and Maintenance of the Sewer System, which include conditions regarding the operation and maintenance of the collection systems owned and operated by the Towns. The responsible Town Departments are :

**Town of Acushnet  
Dept. of Public Works  
122 Main Street  
Acushnet, MA 02743**

**Town of Dartmouth  
Dept. of Public Works  
400 Slocum Road  
N. Dartmouth, MA 02747**

This permit shall become effective on the first day of the calendar month immediately following 60 days after signature.

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

This permit supersedes the permit issued on November 2, 2000.

This permit consists of 16 pages in Part I including effluent limitations, monitoring requirements, Attachments A, B, C, D, E, F, G and H and Part II including General Conditions and Definitions.

Signed this 26<sup>th</sup> day of September, 2008

/s/ SIGNATURE ON FILE

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Director  
Office of Ecosystem Protection  
Environmental Protection Agency  
Boston, MA

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

PART I

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall number 001 (main outfall) and outfall number 002 (auxiliary outfall) listed in Attachment A. Such discharges shall be limited and monitored by the permittee as specified below.

<u>Effluent Characteristic</u>	<u>Units</u>	<u>Discharge Limitation</u>			<u>Monitoring Requirement</u>	
		<u>Average Monthly</u>	<u>Average Weekly</u>	<u>Maximum Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow	mgd	30 <sup>1</sup>	----	----	Continuous	Recorder
Flow	mgd	Report	----	Report <sup>1</sup>	Continuous	Recorder
CBOD <sub>5</sub>	mg/l	25	40	Report	1/Day <sup>2</sup>	24-Hour Composite <sup>3</sup>
	lbs/day	6259	10,014	-----		
TSS	mg/l	30	45	Report	1/Day <sup>2</sup>	24-Hour Composite <sup>3</sup>
	lbs/day	7511	11,266	-----		
pH		(See Condition I.A.1.b.)			1/Day	Grab
Fecal Coliform Bacteria <sup>4a</sup>	cfu/100 ml	14	----	400	1/Day	Grab
Fecal Coliform Bacteria <sup>4a</sup>	cfu/100 ml	(See Footnote 4.b.)			1/Day	Grab
Enterococci <sup>4a</sup>	cfu/100ml	35	----	276	1/Week	Grab
Total Residual Chlorine <sup>5</sup>	ug/l	67.5	----	117	1/Day	Grab
Copper, Total <sup>6</sup>	ug/l	33.6	----	52.0	1/Month	24-Hour Composite <sup>3</sup>

Part 1.A.1. (continued)

<u>Effluent Characteristic</u>	<u>Units</u>	<u>Discharge Limitation</u>			<u>Monitoring Requirement</u>	
		<u>Average Monthly</u>	<u>Average Weekly</u>	<u>Maximum Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
PCBs <sup>6</sup>	ug/l	----	----	----	2/Year (April and Sept.)	24-Hour Composite <sup>3</sup>
Total Nitrogen ( Total of TKN + Nitrite + Nitrate ) (April 1- October 31)	mg/l lbs/day	Report Report	----	Report Report	1/Week	24-Hour Composite <sup>3</sup>
Total Nitrogen ( Total of TKN + Nitrite + Nitrate ) (November 1 - March 31)	mg/l lbs/day	Report Report	----	Report Report	1/Month	24-Hour Composite <sup>3</sup>
LC <sub>50</sub> <sup>7</sup>	%	----	----	≥100	4/year <sup>8</sup>	24-Hour Composite <sup>3</sup>
Chronic NOEC <sup>9</sup>	%	----	----	≥12.5	4/year <sup>8</sup>	24-Hour Composite <sup>3</sup>

Footnotes:

1. Report annual average, monthly average and maximum daily flow for each month. The flow limit is an annual average that shall be calculated using the monthly average flow from the reporting month and the monthly average flows from the preceding 11 months.
2. Sampling required for influent and effluent.
3. A 24-hour composite sample will consist of at least twenty four (24) grab samples taken during one 24-hour consecutive period (e.g. 0700 Monday - 0700 Tuesday).
4.
  - a. Fecal coliform and Enterococci monitoring shall be conducted year round. The monthly average limits are expressed as geometric means. Enterococci samples shall be taken at the same time as a fecal coliform sample. **See Part I.G** for the compliance schedule for attaining the fecal coliform and enterococci limits.
  - b. No more than 10 percent of the fecal coliform samples in any calendar month shall exceed 28 organisms per 100 ml. The permittee shall report the percent of samples exceeding 28 organisms per 100 ml on its discharge monitoring report and submit the sample results with the discharge monitoring report.
5. The permittee shall use an analytical method found in 40 CFR Part 136 that achieves a minimum level (ML) of 20 ug/l or less. Results less than the ML shall be reported as zero on the discharge monitoring report.
6. For copper, the permittee shall use an analytical method found in 40 CFR Part 136 that achieves a minimum level (ML) of 3 ug/l or less.

PCB samples shall be analyzed using Modified Method 8082, using every effort to achieve a minimum level of 0.065 ug/l and a minimum detection level of 0.014 ug/l.

Results less than the ML shall be reported as zero on the discharge monitoring report. Actual sample results shall be submitted with the DMR.

7. The  $LC_{50}$  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.
8. Perform a 7-day chronic and modified acute toxicity test four times per year using the Inland Silverside, perform a 1-hour fertilization test four times per year using the Sea-Urchin and perform 48 hour acute four times per year test using Mysid Shrimp. Toxicity test samples shall be collected during the months of March, June, September, and December. Results are to be submitted by the end of second month after the sample i.e. May, August, November, and February. See **Attachments C and D** for Toxicity Test Procedure and Protocol.
9. The "12.5% or greater" limit is defined as a sample which is composed of 12.5% (or greater) effluent, the remainder being dilution water.

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 6.0 nor greater than 8.5 at any time.
  - 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 shall minimize the use of chlorine while maintaining adequate bacterial control.
  - f. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and carbonaceous biochemical oxygen demand during dry weather. Dry weather is defined as any calendar day on which there is less than 0.1 inch of rainfall and no snow melt. The percent removal shall be calculated as a monthly average using the influent and effluent CBOD and TSS samples collected during dry weather days
  - g. The permittee shall implement the requirements found in Part I.H to enhance nitrogen removal at the treatment plant. The goal is to optimize operation of the existing treatment facilities to minimize nitrogen in the effluent.
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. 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.

#### 4. 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. PRETREATMENT

1.
  - a. 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.
  - b. The permittee shall develop and enforce specific effluent limits (local limits) for Industrial Users(s) and all other users as necessary, which together with appropriate changes in the POTW facilities or operation, are essential to ensure continued compliance with the POTW's NPDES permit or sludge use or disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice and an opportunity to respond. Within 90 days of the effective date of this permit, the permittee shall prepare and submit a written technical evaluation to the EPA analyzing the need to revise local limits. As part of this evaluation, the permittee shall assess how the POTW performs with respect to influent and effluent pollutants, water quality concerns, sludge quality, sludge processing concerns/inhibition, biomonitoring results, activated sludge inhibition, worker health and safety, and collection system concerns. In preparing this evaluation, the permittee shall complete and submit the attached form (**Attachment F – Reassessment of Technically Based Industrial Discharge Limits**) 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. Should the evaluation reveal the need to revise local limits, 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 revisions in accordance with EPA's Local Limit Development Guidance (July 2004).

2. Industrial Pretreatment Program

- a. 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"):
  - (1) Carry out 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.
  - (2) Issue or renew all necessary industrial user control mechanisms within 120 days of their expiration date or within 180 days after the industry has been determined to be a significant industrial user.
  - (3) Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement; and
  - (4) Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.
- b. The permittee shall provide the EPA and the MassDEP with an annual report describing the permittee's pretreatment program activities over the twelve month period ending 60 days prior to the due date in accordance with 403.12(i). The annual report shall be consistent with the format described in **Attachment E** of this permit and shall be submitted no later than March 1<sup>st</sup> of each year.
- c. 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).
- d. 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.
- e. 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 60 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.

### C. UNAUTHORIZED DISCHARGES

The permittee and co-permittees are authorized to discharge only in accordance with the terms and conditions of this permit and only from the authorized outfalls listed in Attachments A and B. 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 Part II Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting). [Note: SSO Reporting Form (which includes MassDEP Regional Office telephone numbers) for submittal of written report to MassDEP is available on-line at:

<http://www.mass.gov/dep/water/approvals/surffms.htm#sso.>]

### D. 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 and co-permittees shall provide adequate staffs to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

#### 2. Infiltration/Inflow

The permittee and co-permittees shall develop and implement plans to control infiltration and inflow (I/I) to the separate sewer system. The plans shall be **submitted to EPA and Mass DEP 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 bypasses due to excessive infiltration/inflow.

The plans 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 the disconnection and redirection of illegal sump pumps and roof down spouts. 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.

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 annually, by March 31**. 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, 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.

3. Alternate Power Source

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

4. Chlorination System

The permittee shall implement the operational recommendations of the March 29, 2001 Chlorination System Report, including adjustment of hypochlorite and bi-sulfate pumping rates to enhance compliance with effluent limitations.

**E. 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 and are in compliance 40 CFR Part 258. 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 (e.g. lagoons- reed beds), or are otherwise excluded under 40 CFR 503.6.
5. The permittee shall use and comply with the attached compliance guidance document (see **Attachment G** ) 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. Reports are due annually 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.

**F. COMBINED SEWER OVERFLOWS ( CSOs )**

1. EFFLUENT LIMITATIONS

- a. During wet weather, the permittee is authorized to discharge storm water/wastewater from combined sewer outfalls listed in **Attachment B**, subject to the following effluent limitations.

(1) The discharges shall receive treatment at a level providing Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT) to control and abate conventional pollutants and Best Available Technology Economically Achievable (BAT) to control and abate non-conventional and toxic pollutants. The EPA has made a Best Professional Judgement (BPJ) determination that BPT, BCT, and BAT for combined sewer overflow (CSO) control include the implementation of Nine Minimum Controls (NMC) specified below and detailed further in Part I.F.2. "Nine Minimum Controls, Minimum Implementation Levels", of this permit:

- (a) Proper operation and regular maintenance programs for the sewer system and the combined sewer overflows.
- (b) Maximum use of the collection system for storage.
- (c) Review and modification of the pretreatment program to assure CSO impacts are minimized.
- (d) Maximization of flow to the POTW for treatment.
- (e) Prohibition of dry weather overflows from CSOs.
- (f) Control of solid and floatable materials in CSOs.
- (g) Pollution prevention programs that focus on contaminant reduction activities.
- (h) Public notification to ensure that the public receives adequate notification of CSO Occurrences and CSO impacts.
- (i) Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

Implementation of these controls is required by the effective date of the permit. Documentation of the implementation of these controls has been previously submitted and reviewed by EPA and the State. **Within 180 days of the effective date of the**

- permit**, the permittee shall review and update its NMC program and submit a report documenting the revised program. Subsequent modification of the program by the permittee to enhance its effectiveness is allowed, but the nine minimum controls program shall always include the minimum implementation levels set forth in Part I.F.2 of this permit.
- b. The discharges shall not cause violations of Federal or State Water Quality Standards.
2. NINE MINIMUM CONTROLS, MINIMUM IMPLEMENTATION LEVELS

- a. The permittee must implement the nine minimum controls in accordance with the documentation provided under Part I.F.1.a.i. of this permit. This implementation must include the following controls plus other controls the Permittee can reasonably implement as set forth in the documentation.
- b. Each CSO structure/regulator, pumping station and/or tidegate shall be routinely inspected, at a minimum of once per month, to insure that they are in good working condition and adjusted to minimize combined sewer discharges and tidal surcharging. (NMC # 1, 2 and 4).

The following inspection results shall be recorded: the date and time of the inspection, the general condition of the facility, and whether the facility is operating satisfactorily. If maintenance is necessary, the permittee shall record: the description of the necessary maintenance, the date the necessary maintenance was performed, and whether the observed problem was corrected. The permittee shall maintain all records of inspections for at least three years.

**Annually, no later than January 15th**, the permittee shall submit a certification to the State and EPA which states that the previous calendar year's monthly inspections were conducted, results recorded, and records maintained.

The State and EPA have the right to inspect any CSO related structure or outfall at any time without prior notification to the permittee.

- c. Discharges to the combined system of septage, holding tank wastes or other material which may cause a visible oil sheen or containing floatable material are prohibited during wet weather when CSO discharges may be active. (NMC# 3,6, and 7).
- d. Dry weather overflows (DWOs) are prohibited (NMC# 5). All dry weather sanitary and/or industrial discharges from CSOs must be reported to EPA and the State within 24 hours in accordance with the reporting requirements for plant bypass (Paragraph D.1.e of Part II of this permit).
- e. The permittee shall quantify and record all discharges from combined sewer outfalls (NMC# 9). Quantification may be through direct measurement or estimation. When estimating, the permittee shall make reasonable efforts, i.e. gaging, measurements, to

verify the validity of the estimation technique. The following information must be recorded for each combined sewer outfall for each discharge event:

- Estimated duration (hours) of discharge;
- Estimated volume (gallons) of discharge; and
- National Weather Service precipitation data from the nearest gage where precipitation is available at daily (24-hour) intervals and the nearest gage where precipitation is available at one-hour intervals. Cumulative precipitation per discharge event shall be calculated.

The permittee shall maintain all records of discharges for at least six years after the effective date of this permit.

Annually, no later than January 15th, the permittee shall submit a certification to the State and EPA which states that the all discharges from combined sewer outfalls were recorded, and records maintained for the previous calendar year.

- f. The permittee shall install and maintain identification signs for all combined sewer outfall structures (NMC# 8). The signs must be located at or near the combined sewer outfall structures and easily readable by the public. These signs shall be a minimum of 12 x 18 inches in size, with white lettering against a green background, and shall contain the following information:

CITY OF NEW BEDFORD  
WET WEATHER  
SEWAGE DISCHARGE  
OUTFALL (discharge serial number)

## G. COMPLIANCE SCHEDULE

The permittee shall achieve compliance with the effluent limits for fecal coliform and enterococci **within one year** of the effective date of the permit. During the interim period, the limits of fecal coliform in Part I.A.1 will continue as in the existing permit and sampling and reporting requirements of enterococci in Part I.A.1 are in effect.

## H. NITROGEN OPTIMIZATION PROGRAM

1. Assess and Reduce Nitrogen Loads to the WWTP.

Within 180 days of the effective date of this permit, the City of New Bedford shall:

- a. Identify major nitrogen sources in the influent. At a minimum, the City shall:
  - Develop and implement a sampling program for non-domestic sources of nitrogen. Samples will be analyzed for BOD, TSS, TKN, NO-3, NO-2 and NH3-N to assess the contribution from the fish houses and other sources for these parameters. The

sampling program shall be sufficient to determine average daily loads as well as peak loads during a typical day.

Prepared and submit a report summarizing the findings of the sampling program.

- b. Develop a continuing education program for the fish industry. The program will be developed in conjunction with the Massachusetts Office of Technology Assistance (OTA) and shall be targeted at those processors that discharge the larger loads of carbon and nitrogen to the treatment plant and will aim to partner with the owners to assess measures that could cost effectively reduce loads and surcharge payments. Implement the education program within 90 days of receiving comments from EPA and MassDEP.

## 2. Optimize Existing Treatment Facilities

Within 180 days of the effective date of the permit, the City shall submit to EPA and MassDEP a detailed scope of work for optimizing the existing treatment facilities. The scope of work will include the five items listed below and shall include a schedule for completing all items within 3 years of approval of the scope of work by EPA and MA DEP.

- a. Step 1 - Perform a detailed treatment plant nitrogen mass balance to identify and quantify the mechanisms and locations of nitrogen removal. Sampling data shall include primary effluent (composite sampling-TKN, ammonia, NO<sub>x</sub>) and the RAS/WAS (TKN-periodic grabs). Sidestream sampling for the same components plus BOD and TSS may be required.
- b. Step 2 - With results from Step 1, assess the capabilities and limitations of the existing facilities for nitrogen removal (nitrification and denitrification). Consider warm weather months (June through October) and colder months (November through April with May as a transition month) separately. The assessment will include an evaluation of the feasibility of operating with more facilities and equipment on line (e.g. existing aeration basins and/or existing blowers, increased rate of RAS pumping).
- c. Step 3 - Evaluate non-capital intensive plant modifications, such as the addition of internal recycle within the aeration tanks during the warm weather months and the potential use of swing zones (anoxic/aerobic). External carbon addition to the anoxic zones should also be evaluated.
- d. Steps 2 and 3 will be conducted using a plant-specific (calibrated) BioWin model. Calibration will require 2-4 weeks of COD fractionation on the primary effluent (composite sampling). A large amount of sampling will be required because the plant was designed for carbonaceous BOD removal.

- e. Based on the results of the required studies, prepare a draft report summarizing findings and plant operation changes, including minor piping and other capital improvements. As appropriate, the report will also include a scope of work and schedule for pilot testing of recommended changes on one aeration tank/secondary clarifier, and a preliminary schedule for subsequent plant-wide implementation (design, bid and construct) of the recommended changes.

## **I. MONITORING AND REPORTING**

### **1. Reporting**

Monitoring results obtained during the previous month shall be summarized for each month and reported on separate Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the 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 Director and the State at the following addresses:

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

#### **The State Agency is:**

Massachusetts Department of Environmental Protection  
Bureau of Resource Protection  
Southeast Regional Office  
20 Riverside Drive  
Lakeville, MA 02347

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

All Industrial Pretreatment Program Reports required by Section B must be sent to:

EPA New England  
Attn: Justin Pimpare  
One Congress Street  
Suite 1100 - CMU  
Boston, MA 02114

**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.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
NEW ENGLAND OFFICE  
1 CONGRESS STREET, SUITE 1100 (CMP)  
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.: MA0100781

NAME AND ADDRESS OF APPLICANT:

City of New Bedford  
1105 Shawmut Avenue  
New Bedford, MA 02740

NAME AND ADDRESS OF CO-PERMITTEES

Town of Acushnet 122 Main Street Acushnet, MA 02743	Town of Dartmouth 400 Slocum Road N. Dartmouth, MA 02747
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NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

New Bedford Wastewater Treatment Facility (outfalls 001 and 002)  
1000 South Rodney French Blvd.  
New Bedford, MA 02744

and 27 Combined Sewer Overflows (see Attachment B of the draft permit for outfall numbers and locations)

RECEIVING WATERS: Treatment Plant Outfalls- Outer New Bedford Harbor  
CSOs - Clark's Cove, Acushnet River and Outer New Bedford  
Harbor. (Buzzards Bay Watershed, MA Basin No. 95)

CLASSIFICATION: Outer New Bedford Harbor SA (O)  
Acushnet River - SB (R)  
Clark's Cove - SA (O)

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

### Proposed Action/Type of Facility

The above named applicant has requested that the US Environmental Protection Agency reissue its NPDES permit to discharge into the designated receiving waters. The facility is a publicly owned treatment works (POTW) engaged in collection and treatment of municipal wastewater. The discharges are from outfalls of the New Bedford Wastewater Treatment Plant and 27 Combined Sewer Overflows (CSOs). The locations of the CSO discharges are described in Attachment B of the draft permit. The location of wastewater treatment facility is shown in the **Attachment A** of the fact sheet.

The co-permittees own and operate separate sanitary sewer collection systems which convey wastewater to the New Bedford POTW for treatment. The draft permit requires the co-permittees to properly operate and maintain their collection systems (see Section D of the fact sheet and Part I.C and Parts I.D1-3 of the draft permit for specific requirements).

### Discharge Locations

The treatment facility has two outfalls to Outer New Bedford Harbor. The main outfall, 001, discharges 3000 feet southeast of Clark Point. Outfall 002 has been kept as an auxiliary outfall since the construction of outfall 001 approximately sixteen years ago. This outfall extends 1000 feet southeast of Clark Point and has not discharged since outfall 001 was put into operation.

Table 2-1 of the City's recent CSO Baseline Condition Report shows that the City owns and operates 27 CSOs, which receive flow from 70 regulators. Table 2-1 has been reproduced as **Attachment C**.

### Receiving Waters

Outer New Bedford Harbor and Clarks Cove are classified as a Class SA(O) waters by the state. The designated uses for a Class SA(O) water include: excellent habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. They shall be suitable for shellfish harvesting without depuration (Open Shellfish Areas). These waters shall have excellent aesthetic value.

Outer New Bedford Harbor is listed on the Massachusetts Year 2002 Integrated List of Waters as a water requiring a total maximum daily load (TMDL). The water is listed as not attaining water quality standards due to priority organics, nonpriority organics, metals, nutrients, organic enrichment/low dissolved oxygen, and pathogens. A TMDL is not currently scheduled.

Clarks Cove is listed on the Massachusetts Year 2002 Integrated List of Waters as a water requiring a total maximum daily load (TMDL). The water is listed as not attaining water quality standards due to priority organics and pathogens. A TMDL is not currently scheduled.

The Acushnet River, from its source at the outlet of the New Bedford Reservoir to Main Street, Acushnet, is classified by the state as a B water. From Main Street, Acushnet to the Hurricane Barrier, the Acushnet River is classified as SB(R) by the state. The designated uses for Class B and SB waters include: habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation, and shall have consistently good aesthetic value. SB(R) waters shall be suitable for shellfish harvesting with depuration (Restricted Shellfish Areas).

The Acushnet River is listed on the Massachusetts Year 2002 Integrated List of Waters as a water requiring a total maximum daily load (TMDL). From its source to the Hamlin Street Culvert, the river is listed for nutrients, siltation, organic enrichment/low D.O. and pathogens; from Hamlin Street to the culvert at Main Street Acushnet, the river is listed for nutrients and organic enrichment/low D.O.; from the outlet of the Main Street Culvert to the Coggeshall Street Bridge the river is listed for priority organics, metals, nutrients, organic enrichment/low D.O and pathogens; and from the Coggeshall Street Bridge to the Hurricane Barrier (identified as New Bedford Harbor in the report), the river is listed for priority organics, metals, nutrients, organic enrichment, low D.O., and pathogens.

Mass DEP is currently preparing a nutrient TMDL for the Acushnet River. The TMDL will include waste load allocations (WLAs) for the New Bedford CSOs as well as wasteload allocations for other point sources such as the Fairhaven POTW (which discharges to the Inner Harbor). The TMDL must also include Load Allocations (LAs) for non point sources such as storm drains and failed septic systems. A draft technical report for the Acushnet River is expected to be completed in the near future. TMDLs for the other water quality problems described above are not currently scheduled.

## II. Description of Discharge

According to the permit application, the sewerage system is 65 percent combined sewers and 35 percent separate sewers. The collection system serves about 99,500 people in New Bedford, 2300 in Dartmouth, and 2700 in Acushnet. There are 27 combined sewer overflows (CSOs) from the New Bedford collection system; a list of these overflow is shown on **Attachment C**.

The secondary wastewater treatment facility was completed in August, 1996 and provides preliminary, primary and secondary treatment followed by disinfection. The facility is designed to treat an annual average daily flow of 30 million gallons per day (MGD) and a maximum daily flow of 75 MGD. Approximately 10 percent of the total flow is industrial wastewater, with 32 major industries discharging to the collection system. Sludge generated by the treatment process is disposed off-site by a contractor.

A quantitative description of the discharge in terms of significant effluent parameters based on discharge monitoring data from January 2005 to December 2006 is shown in **Attachment B** of the fact sheet.

The permittee completed a CSO long term control plan (LTCP) in 1990. The 1990 long term control plan called for the grouping of work into six CSO Projects. These projects included

sewer separation for four groups, storage and pump- back of the 3 month storm for one group and the 6 month storm for the final group. The City was not placed on an enforceable schedule for implementing the plan because of the high user fees at the time, incurred by the construction of the secondary treatment facility.

After the 1990 plan was written, New Bedford built the new secondary treatment facility, which began operation in 1996, separated 90 acres of combined sewer area, constructed over 16 miles of new pipe, constructed 17 new or upgraded pumping stations projects, implemented a tide gate inspection and maintenance program, and implemented Best Management Practices. The current permit authorized 37 CSO outfalls, and the draft permit authorizes 27, consistent with the Baseline Report, indicating that 10 CSOs have been eliminated since the current permit was issued.

By 2011 the City plans to complete an additional 790 acres of sewer separation, construct an additional 12 miles of sewer pipe, and clean about 3 miles of PCB-laden sediment from the main interceptor.

In 2006, the city prepared the CSO Baseline Conditions Report which update and calibrated the 1990 sewer system model and provided estimates of CSO frequency and volume under various conditions, including the year 2005 and for the year 2011, when all currently planned sewer separation, new sewer construction, and sewer cleaning is completed. The estimate of total CSO volume in 2005 was 465 million gallons with frequencies ranging from zero to over 50 events per year. Table 5-5 from the CSO Baseline Conditions Report, which shows these estimates, is included as **Attachment D**.

### III. Limitations and Conditions

The effluent limitations of the draft permit, the monitoring requirements, and implementation schedules may be found in the draft permit.

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

Section 301 (b)(1)(B) of the Clean Act requires that publicly owned treatment works (POTWs) achieve limits based on secondary treatment. Secondary treatment is defined in 40 CFR Part 133. Regulations at 40 CFR Parts 122.44 , 122.45, and 125 Subpart A also include requirements regarding the establishment of technology based limitations in NPDES permits.

Section 301 (b)(1)(C) requires that dischargers also achieve any more stringent effluent limitations necessary to meet water quality standards. Federal regulations found at 40 CFR Par 122.44 includes requirements regarding the establishment of water quality based effluent limits.

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.

NPDES permit regulations found at 40 CFR Part 122.44(d) requires that NPDES permits include effluent limits for any pollutant or pollutant parameters (conventional, non-conventional, toxic and whole effluent toxicity) that are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality criterion. 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.

A permit may not be renewed, reissued, or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the anti-backsliding requirement of the CWA.

EPA's anti-backsliding provisions are found in Section 402(o) and 303(d)(4) of the CWA, and in 40 CFR 122.44(l) restrict the relaxation of permit limits, standards, and conditions. Anti-backsliding provisions require that limits in the reissued permit must be at least as stringent as those of the previous permit, unless specific conditions are met.

#### A. Effluent Limit Derivation

##### Conventional Pollutants:

Under section 301(b)(1)(B) of the CWA, POTWs must achieve effluent limitations based upon secondary treatment by July 1, 1977. The secondary treatment requirements are set forth at 40 CFR Part 133. The regulations define secondary treatment as achieving monthly average and weekly average biochemical oxygen demand (BOD) and total suspended solids (TSS) limits of 30 mg/l and 45 mg/l respectively, as well as monthly percent removal of 85 percent for both pollutants. Limits for carbonaceous biochemical oxygen demand (CBOD) may be substituted for BOD limits pursuant to 40 CFR 133.102(a)(4). Monthly average and weekly average limits for CBOD are 25 mg/l and 40 mg/l respectively. The secondary treatment definition also includes pH range of 6 to 9 s.u.

The current permit has monthly average and weekly average CBOD limits of 25 mg/l and 40 mg/l and monthly average and weekly average TSS limits of 30 mg/l and 45 mg/l. These limits will continue in the draft permit. In accordance with 40 CFR 122.45(f) the draft permit also includes CBOD and TSS monthly average and weekly average mass limitations. These limitations were calculated using the POTW design flow of 30 MGD and the monthly average and weekly average concentration limits of 25 mg/l and 40 mg/l for CBOD and 30 mg/l and 45 mg/l for TSS. Reporting requirements for maximum daily discharges have been continued in the draft permit.

The 85 percent removal CBOD and TSS secondary treatment limitation is also included in the

draft permit. The limit has been established pursuant to 40 CFR 133.103(a) which allows modification of the 85 percent removal requirement during wet weather for POTWs receiving flows from combined sewers. Accordingly, the limit applies only during dry weather and the average percent removal will be calculated each month, using only those samples collected on days with less than 0.1 inches of precipitation and no snow melt.

Numerical limitations for pH in the current permit are based on the Commonwealth's certification requirements under Section 401(a)(1) of the CWA, as described in 40 CFR 124.53.

Massachusetts Surface Water Quality Standards have numerical pH criteria of 6.5 - 8.5 s.u. for Class SA waters, which the state typically requires be included as effluent limits as a condition of receiving state certification. In its current permit application, the permittee has requested that the lower pH limit be relaxed to 6.0 s.u. The permittee reports that because of its enclosed aeration system, the effluent contains elevated concentrations of carbon dioxide, which results in pH less than 6.5. EPA has reviewed the pH data submitted on the discharge monitoring reports for June 30, 2002 to June 30, 2004, which shows pH values as low as 6.1 s.u. EPA believes that with the dilution available at the point of discharge, the lower pH limit can be reduced to 6.0 s.u. without a measurable impact on receiving water quality. No further reduction of the lower limit can be made because EPA's secondary treatment regulations found at 40 CFR 133.102 requires a that a pH range of 6.0- 9.0 be attained. MassDEP has agreed to reduce the lower pH limit from 6.5 s.u. to 6.0 s.u. because of the conditions described above.

The current permit includes a monthly average (geometric mean) fecal coliform limit of 200 organisms per 100 ml and a maximum daily limit of 400 organisms per 100 ml, which are based on the Commonwealth's certification requirements under Section 401(a)(1) of the CWA, as described in 40 CFR 124.53. The fecal coliform criteria in the Massachusetts Surface Water Quality Standards for class SA waters not designated for open shellfishing are a geometric mean of 200 organisms per 100 ml and a requirement that not more than 10 percent of samples exceed 400 organisms per 100 ml. In its review of the receiving water designation, EPA noted that the receiving water is in fact classified SA (O), so is in fact a water designated for shellfishing. Therefore, the draft permit contains monthly average limits of 14 organisms per 100 ml and a maximum daily limit of 43 organisms per 100 ml, consistent with the SA(O) criteria.

In addition, EPA has established monthly average (geometric mean) and daily maximum effluent limits for Enterococci in order to ensure that the discharge does not cause or contribute to exceedances federal water quality criteria established to protect primary contact recreational uses (see 40 CFR Part 131 dated November 16, 2004) and water quality standards adopted by MassDEP on December 29, 2006. The monthly average limit is 35 organisms per 100 ml and the daily maximum limit is 276 organisms per 100 ml. The permit includes a one year compliance schedule for attaining these limits.

#### Toxics Pollutants:

#### Chlorine:

Chlorine and chlorine compounds produced by the chlorination of wastewater can be extremely

toxic to aquatic life. Where effluent data show a reasonable potential for a pollutant to violate water quality standards, the NPDES permit must contain effluent limitations for that pollutant. (40 CFR Section 122.44 (d) (1)).

National Recommended Water Quality Criteria: 2002 recommends that the four-day average concentration of total residual chlorine (TRC) in the receiving water should not exceed 7.5 ug/l more than once every three years on the average and that the one-hour average concentration should not exceed 13 ug/l more than once every three years on the average. Based on these criteria, the current permit contains a TRC monthly average effluent limit of 67.5 ug/l and a maximum daily limit of 117 ug/l. These limits are calculated using the water quality criteria and a dilution factor of 9 (8:1 dilution ratio; refer to EPA letter dated November 12, 1992 to MADEP.

$$\text{Monthly Average Limit} = 7.5 \text{ ug/l} * 9 = 67.5 \text{ ug/l}$$

$$\text{Maximum Daily Limit} = 13 \text{ ug/l} * 9 = 117 \text{ ug/l}$$

The same limits have been included in the draft permit.

### Metals

Certain metals can be toxic to aquatic life. The current permit includes limitations on copper and nickel.

#### Copper:

The current permit includes monthly average and maximum daily copper limits of 33.6 ug/l and 52.0 ug/l respectively. These limits were checked to ensure consistency with National Recommended Water Quality Criteria: 2002. The limits are calculated using the dilution factor of 9, and the applicable acute and chronic water quality criteria.

$$\text{Allowable Discharge (total recoverable metal, ug/l)} = \frac{\text{Criteria (ug/l)}}{\text{CF}} * \text{Dilution Factor}$$

Criteria = Salt water criteria from National Recommended Water Quality Criteria: 2002 in dissolved metal

CF = conversion factor for converting from dissolved to total recoverable metal

$$\text{Monthly Average Limit} = \frac{3.1 \text{ ug/l}}{0.83} * 9 = 33.6 \text{ ug/l}$$

$$\text{Daily Maximum Limit} = \frac{4.8 \text{ ug/l}}{0.83} * 9 = 52 \text{ ug/l}$$

Effluent data submitted by the permittee shows monthly average concentrations ranging from 2.8 to 12.2 ug/l and daily maximum concentrations ranging from 3.2 to 15 ug/l. The reported data shows consistent compliance with the effluent limitations. The limitations have been retained in the draft permit, and the frequency of monitoring has been reduced from twice per month to once per month.

Nickel:

The current permit includes a monthly average limit of 74.5 ug/l. This limit was checked to ensure consistency with National Recommended Water Quality Criteria: 2002. The limit was calculated using the dilution factor of 9, and the applicable chronic water quality criteria.

$$\text{Monthly Average Limit} = \frac{8.2 \text{ ug/l}}{0.99} * 9 = 74.5 \text{ ug/l}$$

Effluent data submitted by the permittee shows monthly average concentrations ranging from 2.3 to 20 ug/l. The reported data shows consistent compliance with the effluent limitation. The limitation has been retained in the draft permit, and the frequency of monitoring has been reduced from twice per month to once per month.

Other Metals:

Using metals data reported in conjunction with whole effluent toxicity testing, EPA has evaluated the reasonable potential for the discharge of certain other metals to cause or contribute to exceedances of water quality standards.

All effluent metals data are taken from the toxicity test reports from the period of September 2004 to August 2006.

Lead :	Chronic	$C = 8.1 \times 9/.951 = 76.6 \text{ ug/l}$ , which is greater than the monthly average effluent concentration range of 5 - 29 ug/l. So, reasonable potential does not exist.
	Acute	$C = 210 \times 9/.951 = 1987 \text{ ug/l}$ which is greater than the maximum effluent concentration of 29 ug/l. So, reasonable potential does not exist.
Zinc :	Chronic	$C = 81 \times 9/.946 = 770 \text{ ug/l}$ which is far greater than the monthly average effluent concentration range of 23- 160 ug/l. So, reasonable potential does not exist.
	Acute	$C = 90 \times 9/.946 = 856 \text{ ug/l}$ which is far greater than the maximum effluent concentration of 160 ug/l. So reasonable potential does not exist.
Cadmium :	Chronic	$C = 9.3 \times 9/.994 = 84.2 \text{ ug/l}$ which is greater than the monthly average effluent concentration range of 1-3 ug/l. So, reasonable potential does not exist.

Acute  $C = 42 \times 9/994 = 380 \text{ ug/l}$  which is far greater than the maximum effluent concentration of 3 ug/l. So, reasonable potential does not exist.

Based on this evaluation, EPA has determined that there is no reasonable potential for the discharge of these metals to cause or contribute to exceedances of water quality criteria, therefore we have not included effluent limitations in the permit. These metals will continue to be monitored quarterly in conjunction with the WET tests.

### Other Toxics

A maximum daily limit of 9 ug/l for cyanide, and monitoring requirements for PCBs, and DDT (DDE and DDD) were established in the current permit. The permittee has indicated that these parameters have yielded minimum concentrations in the effluent and has requested that the monitoring requirements be eliminated or reduced. EPA has reviewed the discharge monitoring reports from January 2005 to December 2006 for these parameters, which showed that:

Cyanide concentrations were less than the ML for all 24 samples. PCB concentrations were less than the ML for all 9 samples, and DDT/DDD/DDE (total) concentrations ranged from 0.01 ug/l to 0.1 ug/l for 9 samples.

Based on these results, EPA has determined that the maximum daily limit and monitoring requirement for cyanide will be eliminated in the draft permit. Monitoring requirements for PCBs will continue, with a reduced frequency of two per year instead of one per quarter, and with a different method to obtain a lower ML. Sampling for DDT/DDD/DDE (total) has been removed from the draft permit.

### Nitrogen:

According to the Comprehensive Conservation and Management Plan (CCMP), Buzzards Bay Project, US EPA, MA. EOEPA Public Draft 5/90, nitrogen loading is one of the most serious problems threatening many embayments around Buzzards Bay. The CCMP concludes that 62% of the nitrogen entering Buzzards Bay comes from sewage treatment facilities. Nitrogen is an essential nutrient for the growth of marine plants, however excessive nitrogen loading can result in depressed dissolved oxygen concentrations in the lower part of the water column. The excess nitrogen can stimulate rapid phytoplankton growth, and the organic material in the phytoplankton is eventually respired, utilizing oxygen in the process.

During the Environmental Impact Report process, continuous dissolved oxygen meters were deployed in the vicinity of the New Bedford sewage outfall. Dissolved oxygen was routinely measured below the water quality criteria of 6 mg/l and often below 4 mg/l (CDM, Vol. IV Effluent Outfall, City of New Bedford Secondary Treatment Plant, 1989). These measurements were taken at a time when the effluent from New Bedford was not consistently achieving primary standards. Modeling of the impact of an effluent achieving secondary standards predicted a

slight improvement in dissolved oxygen concentrations (CDM, 1989).

During March 2004, Camp Dresser & McKee, Inc., on behalf of City of New Bedford, completed a report titled "2001 New Bedford Harbor Dissolved Oxygen and Benthic Habitat Study." From July 20, 2001 to September 28, 2001 Dissolved Oxygen (DO) and Chlorophyll data were collected from three mooring locations (M1, M2 and M3) at the surface and bottom of the water-body. M1 was located offshore about 0.5 miles south-southwest of the 301(h) site. M2 was located inshore about 1800 feet to the northeast of the outfall and M3 was located inshore about a mile to the south-southwest, flanking the current outfall site. Refer to Fig. 3-4 on page 3-13. The following DO data are summarized from this figure.

	Range of DO (mg/l)		Minimum DO (mg/l)	
	Surface	Bottom	Surface	Bottom
M1	6 - 8	5 - 7	6	5
M2	5 - 9	3 - 8	5	3
M3 *	6 - 9	4 - 8	6	4

A review of the data indicates that while dissolved oxygen (DO) appears to be slightly improved over historic levels, there are periods of time ( for stations M2 and M3) when the 6.0 mg/l minimum criteria is not met. At station M3 there are still long periods where 5.0 mg/l is not met. The lowest value measured near the outfall was 3.0 mg/l. High sediment oxygen demand (SOD) is likely to be causing these low dissolved oxygen events. As discussed during the EIR/EIS process, the SOD is likely being driven by the abundance of plankton in the vicinity of the discharge.

Refer to Fig. 3-9 on page 3-22. The following Chlorophyll data are summarized from this figure.

	Range of Chl. (ug/l)		Maximum Chl. (ug/l)	
	Surface	Bottom	Surface	Bottom
M1	1.7 - 8.6	0 - 6.5	8.6	6.5
M2	1.0 - 18.5	2.0 - 14.0	18.5	14.0
M3 *	3.0 - 17.6	1.0 - 11.2	17.6	11.2

\* 2 - week data gap from August 6 - 22 due to equipment failure.

The benthic habitat data shows a general decline in number of organisms and number of species at all stations sampled. At stations nearest the outfall, it also shows a reduction in opportunistic species, representing an improvement. It does appear that since secondary treatment has been implemented there is some overall improvement in benthic habitat near the discharge. At several of the more distant stations, including their reference station, the number of opportunistic species increased, representing a degradation in condition. The cause of that decline is unclear.

The current permit established requirements for the permittee to monitor the discharge for total nitrogen (total kjeldahl nitrogen, total nitrate and total nitrite) and to begin efforts to control nitrogen discharges from the wastewater treatment plant, including a requirement that the City complete a report evaluating options for optimizing the removal of nitrogen from the wastewater treatment plant. On January 2, 2002, Camp Dresser & McKee, Inc., on behalf of the City, completed a "Report on the Feasibility for Nitrogen Removal from Water Pollution Facility at Fort Rodman" (Nitrogen Feasibility Report). This report shows that total nitrogen concentrations in the effluent ranges from 5 mg/l to 25 mg/l and recommends a plan of action for reducing nitrogen discharges from the treatment facility. The plan of action includes: (1) implementation of a more extensive nitrogen sampling at the treatment facility; (2) promulgation of a surcharge program for BOD and TSS; (3) continued collaboration with local fish houses, OTA and EOE to study alternative pretreatment technologies for reduction of BOD and nitrogen loads. However, little progress has been made in implementing the recommendations, and nitrogen loadings from the treatment facility have not been reduced.

The draft permit requires the permittee to implement specific requirements in order to achieve a significant reduction in total nitrogen loadings and to submit annual reports on progress towards achieving nitrification/denitrification at the treatment facility. While a limit is not established at this time, the permit could be modified in the future if a limit is necessary. The specific requirements include the following:

- \* Fully implement a BOD/TSS surcharge program consistent with the recommendations of the Nitrogen Feasibility Report within 6 months of the effective date of the permit.
- \* Implement equalization and screening at all fish processing facilities that contribute flow to the New Bedford treatment facility. Equalization and screening facilities shall be implemented at a minimum of 25 percent of the fish processing facilities each year during the first four years of the permit term.
- \* Within two years of the effective date of the permit, submit an evaluation of whether the surcharge program and the equalization/screening requirements will be able to achieve sufficient influent loading reductions by the end of the fourth year of the permit to allow for nitrification/denitrification through enhanced primary treatment and maximized secondary process operations.
- \* If sufficient influent loading reductions will not be achieved with the surcharge and

equalization/screening programs, within four years of the effective date of the permit, develop and fully implement BOD/TSS pre-treatment requirements, including equalization where appropriate, sufficient to allow for nitrification/denitrification at the treatment facility. During year five of the permit, and for as long as the permit remains in effect, operate the treatment facility in nitrification/denitrification mode with a goal of minimizing the average total nitrogen discharge.

As described earlier, MassDEP is preparing a nitrogen TMDL for the Acushnet River/New Bedford Inner Harbor. The draft technical report will be available in the near future. It is not believed that nitrogen discharges from the New Bedford treatment plant are contributing to eutrophication in this system, so a wasteload allocation for the New Bedford treatment plant is not expected to be included. However, nitrogen loadings from combined sewer overflows may be contributing to eutrophication in this system. If an allocation is made, the permit may be reopened and modified to include the appropriate limitations and/or requirements.

### Whole Effluent Toxicity

National studies conducted by the Environmental Protection Agency have demonstrated that domestic sources contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents and aromatic hydrocarbons among others. 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 regulation and 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 Toxicities Control and MassDEP’s Implementation Policy for the Control of Toxic Pollutants in Surface Waters.)

The dilution ratio of the receiving water is estimated at 8:1 (see EPA letter dated 11/12/92 to Mass DEP). Pursuant to EPA and MassDEP policy, discharges having a dilution ratio of less than 10:1 require chronic and acute toxicity testing four 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 current permit requires that the permittee conduct chronic and modified acute WET testing of the effluent four times per year and that the tests include the use of Sea Urchin, Mysid Shrimp and Inland Silverside. The effluent limitations include an LC-50 limit of 100% and a C-NOEC limit of 12.5%. A review of the toxicity tests submitted from September 2004 to September 2006 shows that the permittee is complying with the effluent limitations. The same testing

requirements and limitations will continue in the draft permit. Toxicity tests shall be performed in accordance with EPA Region I protocols to be found in permit attachments C and D.

As a condition of this permit, the testing requirements may be reduced by a certified letter from the EPA. This permit provision anticipates that the permittee may wish to request a reduction in WET testing. After four 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 the 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.

EPA also will evaluate and may use the results of the aquatic toxicity tests and bioaccumulation assessment (which addresses potential human health hazards) in conjunction with the chemical analyses required by the permit and any other relevant information or data to develop site-specific numerical effluent limitations for specific pollutants. The permit may then be modified to incorporate such limitation, particularly if specific chemicals in the POTW discharge are identified as bioaccumulative or the cause of effluent toxicity.

#### B. Combined Sewer Overflow: Conditions for discharge

1. General: combined Sewer Overflows (CSOs) are overflows from a combined sewer system that are discharged into a receiving water without going to the headworks of a publicly owned treatment works (POTWs). CSOs occur when the flow in the combined sewer system exceeds interceptor or regulator capacity. CSOs are distinguished from bypasses which are “intentional diversions of waste streams from any portion of a treatment facility” (40 CFR 122.41(m)).

Flows in combined sewers can be classified into two categories: wet weather flow and dry weather flow. Wet weather flow is a combination of domestic and industrial sewage, infiltration from groundwater, and storm water flow including snow melt. Dry weather flow is the flow in a combined sewer that results from domestic sewage, groundwater infiltration and industrial wastes with no contribution from storm water runoff or storm water induced infiltration.

Dry weather overflows from CSOs are illegal. They must be reported immediately to EPA and eliminated as expeditiously as possible.

The objectives of the National CSO Control Policy are:

- 1) To ensure that if the CSO discharges occur, they are only as a result of wet weather,
- 2) To bring all wet weather CSO discharge points into compliance with the technology based requirements of the CWA and applicable Federal and State water quality standards, and
- 3) To minimize water quality, aquatic biota, and human health impacts from wet weather

flows.

2. Effluent Standards: CSOs are point sources subject to NPDES permit requirements for both water quality-based and technology-based requirements but are not subject to secondary treatment regulations applicable to publicly owned treatment works.

Section 301(b)(1)(C) of the Clean Water Act (CWA) of 1977 mandates compliance with Federal and State Water Quality Standards by July 1, 1977. Technology based permit limits must be established for best conventional pollutant control technology (BCT) and best available technology economically achievable (BAT) based on best professional judgement (BPJ) in accordance with Section 301(b) and Section 402(a) of the Water Quality Act Amendments of 1987 (WQA).

3. Conditions for Discharge: The draft permit prohibits dry weather discharges from CSO outfalls. During wet weather, the discharges must not cause violation of Federal and State Water Quality Standards. Dry weather discharges must be reported immediately to EPA and the State. Wet weather discharges must be monitored and reported as specified in the permit.

4. Nine Minimum Controls (NMC): The permittee must comply with BPJ derived BCT/BAT controls, which at a minimum include the following: (1) proper operation and maintenance of the sewer system and outfalls; (2) maximum use of the collection systems for storage; (3) review pretreatment programs to assure CSO impacts are minimized; (4) maximization of flow to the POTW for treatment; (5) prohibition of dry weather overflows; (6) control of solid and floatable materials in the discharge; (7) pollution prevention programs which focus on contaminant reduction activities; (8) public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts; and (9) monitoring into effectively characterize CSO impacts and the efficacy of CSO controls.

5. Documentation: The permittee has submitted documentation of its NMC program which was reviewed by EPA and the State. The draft permit requires the permittee to implement its NMC program as described in the documentation or subsequently modified by the permittee. The permit also establishes minimum implementation levels for the NMC program and requires that the NMC program be evaluated and updated within 180 days of the effective date of the permit..

6. Reopener/Additional CSO Control Measures: The draft permit requires an annual certification, no later than January 15<sup>th</sup> of each year, that states that all discharges from combined sewer outfalls were recorded, and other appropriate records and reports maintained for the previous calendar year.

This permit may be modified or reissued upon the completion of a long-term CSO control plan. Such modification may include performance standards for the selected controls, a post construction water quality assessment program, monitoring for compliance with water quality standards, and a reopener clause to be used in the event that the selected CSO controls fail to meet

water quality standards. Section 301(b)(1)(C) requires that a permit include limits that may be necessary to protect Federal and State water quality standards.

### C. Other Monitoring Requirements

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

### D. Infiltration/Inflow

Infiltration is groundwater that enters the collection system through physical defects such as cracked pipes, or deteriorated joints. Inflow is extraneous flow entering the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems. Significant I/I in a collection system may displace sanitary flow reducing the capacity and the efficiency of the treatment works and may cause bypasses of secondary treatment. It greatly increases the potential for sanitary sewer overflows (SSO) in separate systems, and combined sewer overflows in combined systems.

The draft permit includes requirements for the permittee and the co-permittees to control infiltration and inflow (I/I) into the separate sewer collections systems it owns and operates. The permittee and co-permittees shall develop I/I removal programs commensurate with the severity of the I/I in the collection system. In sections of the collection system that have minimal I/I, the control program will logically be scaled down.

The permit standard conditions for 'Proper Operation and Maintenance' are found at 40 CFR §122.41(e). These require proper operation and maintenance of permitted wastewater systems and related facilities to achieve permit conditions. EPA and Mass DEP maintain that an I/I removal program is an integral component to insuring permit compliance under both of these provisions.

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

### E. Sludge

In February 1993, the Environmental Protection Agency (EPA) promulgated standards for the use and disposal of sewage sludge. The regulations were promulgated under the authority of section 405(d) of the Clean Water Act (CWA). Section 405(d) of the CWA requires that sludge conditions be included in all municipal permits. The sludge conditions in the draft permit satisfy this requirement.

## F. Pretreatment Program

The permittee is required to administer a pretreatment program based on the authority granted under 40 CFR 122.44(j), 40 CFR 403 and section 307 of the CWA. The New Bedford pretreatment program received EPA approval on November 26, 1985, and as a result, appropriate pretreatment program requirements were incorporated into the previous permit commensurate with that approval and Federal Pretreatment Regulations in effect when the permit was issued.

In October 1988 and July 1990, the Federal Pretreatment Regulations at 40 CFR 403 were amended. Those amendments established new requirements for implementation of pretreatment programs. By reissuing this NPDES permit, the permittee is obligated to modify, if necessary, and implement its pretreatment program to be consistent with current Federal Regulations. Those activities that the permittee must address, if applicable, include, but are not limited to the following: (1) Develop and enforce specific effluent limits (technically-based local limits); (2) revise its local sewer-use ordinance, as appropriate, to be consistent with Federal Regulations; (3) revise an enforcement response plan; (4) implement a slug control evaluation program; (5) track significant noncompliance for industrial users; and (6) establish a definition of significant industrial user. These requirements are necessary to ensure continued compliance with the POTW's NPDES permit and its sludge use or disposal practices.

The permittee submitted a local limits report to EPA in December 2003.

Lastly, the permittee must continue to submit, annually on February 1, a pretreatment report detailing the activities of the program for the twelve month period ending 60 days prior to the due date.

## V. Essential Fish Habitat Determination (EFH)

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. ' 1801 *et seq.* (1998)), EPA is required to consult with National Marine Fisheries Service (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, may adversely impact any essential fish habitat. 16 U.S.C. ' 1855(b). The Amendments broadly define essential fish habitat as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. 16 U.S.C. ' 1802(10). Adversely impact means any impact which reduces the quality and/or quantity of EFH. 50 C.F.R. 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

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

Enclosed (see **Attachment E**) is the list of 16 managed species that are believed to be present

during one or more lifestage within EFH Area, which encompasses the existing discharge site. No “habitat areas of particular concern”, as defined under 600.815(a)(9) of the Magnuson-Stevens Act, have been designated for this site. Although EFH has been designated for this general location, EPA has concluded that this activity is not likely to adversely affect EFH or its associated species for the following reasons:

- This is a re-issuance of an existing permit.
- The monthly average discharge from the WWTF varies between 19 mgd to 25 mgd. The design capacity of the facility. is 30.0 mgd monthly average. Effluent receives a minimum secondary treatment using activated sludge processes;
- Effluent is discharged in the Outer New Bedford Harbor with an estimated dilution ratio of 8:1
- Limits specifically protective of aquatic organisms are established for chlorine, based on EPA water quality criteria;
- Acute and chronic toxicity tests will be conducted on Inland Silverside, Sea-Urchin and Mysid Shrimp four times per year;
- The permit will prohibit any violation of state water quality standards.

Accordingly, EPA has determined that a formal EFH consultation with NMFS is not required. If adverse impacts to EFH are detected as a result of this permit action, NMFS will be notified and an EFH consultation will be promptly initiated.

#### VI. Antidegradation

This draft permit is being reissued with an allowable wasteload identical to the current permit with the same parameter coverage and no change in outfall location. The State of Massachusetts has indicated that there will be no lowering of water quality and no loss of existing water uses and that no additional antidegradation review is warranted.

#### VII. State Certification Requirements

The staff of the Massachusetts Department of Environmental Protection has reviewed the draft permit. EPA has requested permit certification by the State pursuant to 40 CFR 124.53 and expects that the draft permit will be certified.

#### VIII. 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, MA Office of Ecosystem Protection, 1 Congress Street, Suite 1100 (CMP), Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit the Regional Administrator 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 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.

IX 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:

Suproakash Sarker  
MA NPDES Program Unit  
Environmental Protection Agency  
1 Congress Street, Suite 1100 (CMP)  
Boston, MA 02114-2023  
Telephone: (617) 918-1693  
E-mail : sarker.soupy@epa.gov

\_\_\_\_\_  
Date

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

**Note :**

**Attachments A and E are not electronically available.**

Attachment B

New Bedford WWTP- NPDES No. MA0100781  
Monitoring Data

Month	Flow MGD		CBOD - Influent mg/l		CBOD - Effluent			TSS - Influent mg/l		TSS - Effluent mg/l		
	12 mo avg	daily max	mo ave	daily max	mo ave	daily max	% removal	mo ave	daily max	mo ave	daily max	% removal
1/31/2005	22.4	45.5	172	351	5	14	97	175	304	12	20	93
2/28/2005	23.2	50.1	194	345	7	15	96	193	402	14	31	93
3/31/2005	24.3	53.5	169	286	9	24	95	193	364	19	50	90
4/30/2005	24.4	50.7	224	420	6	15	97	240	422	17	118	93
5/31/2005	25.1	44.2	289	493	6	14	98	325	556	11	21	97
6/30/2005	25.4	31.5	415	618	7	13	98	441	695	12	22	97
7/31/2005	25.5	28.2	603	1302	7	16	99	527	1065	10	22	98
8/31/2005	25.3	51.3	533	1100	5	17	99	381	705	9	18	98
9/30/2005	25.4	37.7	292	507	6	27	98	186	522	9	30	95
10/31/2005	26.4	68	146	355	4	8	97	79	170	5	12	93
11/30/2005	27	65.3	151	264	5	18	97	105	187	8	23	92
12/31/2005	27.1	49.1	154	284	6	13	96	97	158	14	26	86
1/31/2006	27.2	50.6	128	213	6	17	95	94	163	15	32	84
2/28/2006	26.9	48.7	149	274	6	9	96	114	278	16	23	86
3/31/2006	25.8	37.3	239	405	7	11	97	160	308	16	24	90
4/30/2006	24.8	32.7	8	20	8	20	97	172	330	18	90	90
5/31/2006	24.9	54.3	198	316	11	77	94	146	246	24	218	84
6/30/2006	26	72.1	152	258	8	29	95	126	208	23	87	82
7/31/2006	26.4	35.3	216	455	3	6	99	181	322	6	10	96
8/31/2006	26.5	34.4	255	381	3	9	99	201	315	9	15	96
9/30/2006	26.3	30.9	253	435	4	9	98	156	228	11	19	93
10/31/2006	25	42.3	217	336	3	8	98	135	218	8	15	94
11/30/2006	24.6	42.3	164	331	3	6	98	121	193	10	20	92
12/31/2006	24.1	40.2	188	306	5	11	97	137	292	13	26	91
Limits	30	-----	-----	-----	25	-----	≥85	-----	-----	25	-----	≥85

Attachment B (Continued)

New Bedford WWTP- NPDES No. MA0100781  
Monitoring Data

Month	pH SU		Fecal Coliform #/100 ml		Chlorine Residual ug/l		LC 50	LC 50	NOEC	NOEC
	min	max	mo ave	daily max	mo ave	daily max	menidia % effluent min	mysisd % effluent min	arbacia % effluent min	menidia % effluent min
1/31/2005	6.3	6.6	2	10	5.7	30				
2/28/2005	6.4	6.9	2	9	8.9	40	100	100	100	100
3/31/2005	6.4	6.9	2	20	11.9	40				
4/30/2005	6.4	6.9	1	6	12.3	40				
5/31/2005	6.2	6.9	2	18	8.7	30	100	100	100	100
6/30/2005	6.6	7	4	33	17	40				
7/31/2005	6.3	7.2	5	22	17.7	40				
8/31/2005	6.7	7.2	5	68	12.6	30	100	100	100	100
9/30/2005	6.6	7	4	36	15.7	40				
10/31/2005	6.4	7	3	28	12.3	30				
11/30/2005	6.4	6.9	2	21	15.7	40	100	100	50	50
12/31/2005	6.5	6.8	2	11	13.2	40				
1/31/2006	6.5	6.8	2	26	13.2	50				
2/28/2006	6.5	6.8	2	6	12.5	40	100	100		100
3/31/2006	6.5	6.9	2	12	13.9	40				
4/30/2006	6.5	7.1	2	31	11.3	60				
5/31/2006	6.4	6.8	3	24	10	40	100	100	50	50
6/30/2006	6.1	6.8	3	27	16.3	40				
7/31/2006	6.5	7	6	46	16.1	40				
8/31/2006	6.6	7.1	5	240	19.7	40	100	100	100	100
9/30/2006	6.5	7.1	5	53	17.3	40				
10/31/2006	6.3	7.1	5	87	9.4	30				
11/30/2006	6.1	6.9	13	160	16.3	40	100	100	100	100
12/31/2006	6.5	6.8	3	23	13.2	40				
Limits	6.5	8.5	200	400	67.5	117	≥100	≥100	≥12.5	≥12.5

Attachment B (Continued)

New Bedford WWTP- NPDES No. MA0100781  
Monitoring Data

Month	Total N lbs/day		DDT/DDE/DDD ug/l daily max	Total Copper ug/l		Total Cyanide ug/l daily max	Total Nickel ug/l		PCBs ug/l daily max
	mo avg	daily max		mo ave	daily max		mo ave	daily max	
1/31/2005	2356	2356	0.012	3	3.3	0	7	0	
2/28/2005	3366	3366		4.4	5.4	0	9.9		
3/31/2005	2391	2391		4.2	4.3	0	17		
4/30/2005	2029	2059	0.1	3.4	4.1	0	7	0	
5/31/2005	2561	3489		5	6.8	0	6.4		
6/30/2005	2247	2463		7.9	8.6	0	4.4		
7/31/2005	1896	2211	0.01	3	4.6	0	2.7	0	
8/31/2005	2338	2692		2.7	3.8	0	6.3		
9/30/2005	1886	2225		3.1	3.2	0	4.6		
10/31/2005	2386	3186	0.01	5	5.1	0	8.7	0	
11/30/2005	1653	1653		2.1	2.7	0	15		
12/31/2005	2570	2570		4.4	5.1	0	19.5		
1/31/2006	1901	1901	0.01	5.6	6.1	0	7.7	0	
2/28/2006	2211	2211		6.4	7.4	0	6		
3/31/2006	1693	1693		8	11	0	2.3		
4/30/2006	1869	2002	0.01	6.8	8.6	0	4.8	0	
5/31/2006	2098	2432		3.6	3.6	0	12		
6/30/2006	2006	2006		4	4	0	20		
7/31/2006	2042	2931	0.01	4.2	5.4	0	15	0	
8/31/2006	1850	2208	0.01	2.3	2.6	0	20	0	
9/30/2006	1631	1666		2.4	4.7	0	10		
10/31/2006	1765	2295	0.01	3.1	5	0	6.7	0	
11/30/2006	1791	1791		3.8	4.1	0	4		
12/31/2006	2776	2776		4.2	5	0	7.7		
Limits	-----	-----	-----	33.6	52	9	74.5	-----	

Table 5-5  
Annual Overflow by Receiving Water and Outfall

Attachment D

<i>Receiving Water</i>	<i>Outfall</i>	<i>1990 Conditions</i>		<i>With New WWTP (1996)</i>		<i>Existing (2005)</i>		<i>With Planned Improvements (2011)</i>		<i>Baseline Planning Year (2030)</i>		
		<i>Overflow Volume (MG/yr)</i>	<i>Overflow Frequency (#/yr)</i>	<i>Overflow Volume (MG/yr)</i>	<i>Overflow Frequency (#/yr)</i>	<i>Overflow Volume (MG/yr)</i>	<i>Overflow Frequency (#/yr)</i>	<i>Overflow Volume (MG/yr)</i>	<i>Overflow Frequency (#/yr)</i>	<i>Overflow Volume (MG/yr)</i>	<i>Overflow Frequency (#/yr)</i>	
Clarks Cove	003	17.0	23	14.9	23	15.5	23	15.1	23	14.9	23	
	004	191.3	31	114.6	29	89.5	23	83.0	20	79.4	21	
	005	47.5	40	0.8	6	1.0	8	5.4	16	5.2	16	
	006	67.6	39	2.1	27	2.4	27	6.4	27	5.8	27	
	007	0.9	10	0.4	5	0.3	5	0.4	6	0.4	6	
	008	25.9	41	0.1	3	0.1	3	1.4	16	1.4	15	
	009	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
	010	46.6	41	0.1	2	0.2	3	2.1	15	2.0	16	
		<b>Total</b>	<b>397</b>	<b>41</b>	<b>133</b>	<b>29</b>	<b>109</b>	<b>27</b>	<b>114</b>	<b>27</b>	<b>109</b>	<b>27</b>
	Outer Harbor	012	1.3	11	1.2	11	1.2	8	1.2	9	1.4	9
013		0.0	1	0.0	1	0.0	1	0.0	1	0.0	1	
015		0.8	7	0.7	7	1.0	9	1.1	9	1.0	9	
016		0.1	6	0.1	6	0.1	7	0.1	8	0.1	7	
017		221.0	continuous	217.1	continuous	11.6	37	11.2	37	11.3	37	
018		191.9	continuous	189.9	continuous	9.7	29	9.0	29	9.3	29	
	<b>Total</b>	<b>415</b>	<b>continuous</b>	<b>409</b>	<b>continuous</b>	<b>24</b>	<b>37</b>	<b>23</b>	<b>37</b>	<b>23</b>	<b>37</b>	
Inner Harbor	022	1699.4	continuous	1699.1	continuous	117.5	50	4.3	44	4.2	44	
	023	107.4	continuous	105.8	continuous	64.7	50T	54.4	48	51.9	48	
	024	NA	NA	NA	NA	NA	NA	4.6	32	4.3	30	
	026	26.0	48	26.0	48	26.1	48	26.1	48	26.1	48	
	027	35.2	38	34.3	38	31.1	38	30.3	38	28.5	38	
	030	99.0	43	4.9	42	9.2	50+	17.9	40	17.5	38	
	031	130.3	43	23.6	42	27.9	50+	31.9	42	31.3	41	

	032	2.6	29	0.6	24	0.8	24	1.9	23	1.9	23
	034	0.4	5	0.4	5	0.4	5	0.4	5	0.4	5
	035	0.5	25	0.5	25	0.5	25	0.5	25	0.5	25
	036	203.7	continuous	203.7	continuous	48.3	50	40.7	48	40.5	47
	040	0.0	1	0.0	1	2.4	18	0.0	0	0.0	0
	041	9.0	50	8.8	50	5.1	35	17.1	38	16.1	36
	<b>Total</b>	<b>2,314</b>	<b>continuous</b>	<b>2,108</b>	<b>continuous</b>	<b>334</b>	<b>50+</b>	<b>230</b>	<b>48</b>	<b>223</b>	<b>48</b>
	System Wide Total	3,125	continuous	2,650	continuous	467	50+	366	48	355	48

Notes:

1. 50+ denotes outfalls with 50 predicted CSO events plus some dry weather overflow predicted to occur during periods of high groundwater (spring).
2. 50T denotes an outfall that had a broken tide gate during metering contributing to overflows. This tide gate was repaired and tide no longer enters the system