

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),

Town of Fairhaven

is authorized to discharge from the facility located at

**Fairhaven Wastewater Pollution Control Facility
Arsene Street
Fairhaven, MA 02719**

to receiving water named

Acushnet River (New Bedford Inner Harbor; Buzzards Bay Watershed; State Code 95-42)

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

This permit shall become effective on the first day of the calendar month immediately following sixty 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 March 4, 2003.

This permit consists of 13 pages in **Part I** including effluent limitations and monitoring requirements, **Part II** including Standard Conditions and Definitions, and **Attachment A** (Toxicity Protocol) and **Attachment B** (Summary of Report Submittals).

Signed this 27th day of September, 2017

/S/SIGNATURE ON FILE

Ken Moraff, Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

/S/SIGNATURE ON FILE

Douglas E. Fine, Assistant Commissioner
Bureau of Water Resources
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

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

EFFLUENT CHARACTERISTIC	EFFLUENT LIMIT					MONITORING FREQUENCY ³	
PARAMETER	AVERAGE MONTHLY	AVERAGE WEEKLY	AVERAGE MONTHLY	AVERAGE WEEKLY	MAXIMUM DAILY	MEASUREMENT FREQUENCY	SAMPLE TYPE ³
FLOW ²	*****	*****	5.0 MGD	*****	Report MGD	CONTINUOUS	RECORDER
FLOW ²	*****	*****	Report MGD	*****	*****'	CONTINUOUS	RECORDER
BOD ₅ ⁴	1,252 lb/day	1,878 lb/day	30 mg/1	45 mg/1	Report mg/1	3/WEEK	24-HOUR COMPOSITE ⁵
TSS ⁴	1,252 lb/day	1,878 lb/day	30 mg/1	45 mg/1	Report mg/1	3/WEEK	24-HOUR COMPOSITE ⁵
pHRANGE ¹	6.5 - 8.5 SU (SEE PERMIT PAGE 6 OF 17, PARAGRAPH I.A.1.b.)					1/DAY	GRAB
FECAL COLIFORM ^{1,6}	*****	*****	88 cfu/100 ml	*****	260 cfu/100 ml	2/WEEK	GRAB
ENTEROCOCCI ⁶	*****	*****	35 cfu/100 ml	*****	276 cfu/100 ml	2/WEEK	GRAB
TOTAL NITROGEN (TKN +NITRATE + NITRITE) ^{4,11} (May 1 – October 31)	125 lb/day	*****	Report mg/1	*****	Report mg/1	3/WEEK	24-HOUR COMPOSITE ⁵
TOTAL NITROGEN (TKN+NITRATE + NITRITE) ^{4,12} (November 1 – April 30)	Report lb/day	*****	Report mg/1	*****	Report mg/1	3/WEEK	24-HOUR COMPOSITE ⁵
WHOLE EFFLUENT TOXICITY ^{7,8,9,10}	Acute LC ₅₀ 100% Chronic C-NOEC 12.2%					2/YEAR	24-HOUR COMPOSITE ⁵

Sampling Location: All effluent sampling shall be conducted at the outlet of the ultraviolet disinfection system.

Footnotes:

1. Required for State Certification.
2. Report annual average, monthly average, and the maximum daily flow. The limit is an annual average, which shall be reported as a rolling average. The value will be calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flows of the previous eleven months.
3. All required effluent samples shall be collected at the point specified on page 2. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP.

A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the week each month. Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented in correspondence appended to the applicable discharge monitoring report.

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.

4. Sampling required for influent and effluent.
5. 24-hour composite samples will consist of at least twenty-four (24) grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportionally to flow.
6. The monthly average limits for fecal coliform and enterococci are expressed as a geometric mean.
7. The permittee shall conduct chronic (and modified acute) toxicity tests two 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 Inland silverside and Sea urchin. Toxicity test samples shall be collected during months of March and September. The test results shall be submitted by the last day of the month following the completion of the test. The results are due April 30 and October 31 respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.

Test Dates	Submit Results By:	Test Species	Acute Limit LC ₅₀	Chronic Limit C-NOEC
March and September	April 30 and October 31	Inland silverside and Sea urchin	100%	12.2%

After submitting **two years** and a **minimum** of **four** consecutive sets of WET test results, all of which demonstrate compliance with the WET permit limits, the permittee may request a reduction in the WET testing requirements. The permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from the EPA that the WET testing requirement has been changed.

8. 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.
9. 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 "12.2% or greater" limit is defined as a sample which is composed of 12.2% (or greater) effluent, the remainder being dilution water.
10. The permittee will submit a map or GIS coordinates of the receiving water sampling point with the first toxicity test under this permit. 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., DILLUTION 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 may be 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 Program Instructions for the Discharge Monitoring Report Forms (DMRs) which is sent to all permittees with their annual set of DMRs and may also be found on the EPA, Region I web site at <https://www3.epa.gov/region1/npdes/permits/generic/Alternatedilutionwaterguidance.pdf>. If this guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in **Attachment A**. 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**.

11. The nitrogen limit is a rolling seasonal average limit, which is effective from May 1 – October 31 of each year. The first value for the seasonal average will be reported after an entire May – October period has elapsed following the effective date of the permit (results do not have to be from the same year). For example, if the permit becomes effective on December 1, 2017, the permittee will calculate the first seasonal average from samples collected during the months of May through October 2018, and report this average on the October 2018 DMR. For each subsequent month that the seasonal limit is in effect, the seasonal average shall be calculated using samples from that month and the previous five months that the limit was in effect.
12. The permittee shall operate the treatment facility to reduce the discharge of total nitrogen during the months of November through April to the maximum extent possible. All available treatment equipment in place at the facility shall be operated unless equal or better performance can be achieved in a reduced operational mode. The addition of a carbon source that may be necessary in order to meet the total nitrogen limit during the months of May through October is not required during the months of November through April. The permittee shall submit an annual report to EPA and the MassDEP by June 15 each year that summarizes activities related to optimizing nitrogen removal efficiencies during the preceding November through April period.

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 or greater than 8.5 at any time.
 - c. The discharge shall not cause objectionable discoloration of the receiving waters.
 - d. The effluent shall not contain a visible oil sheen, foam, or 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 results of sampling for any parameter done in accordance with EPA approved methods above its required frequency must also be reported.
 - g. If a future TMDL for the Acushnet River is completed and approved during the term of the permit, EPA may either modify or reissue the permit as necessary to incorporate any nitrogen limits mandated by the TMDL.
2. All POTWs must provide adequate notice to the Director of the following:

- a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; 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.

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. PRETREATMENT

Within 120 days of the effective date of the permit, the permittee shall submit the results of an industrial user survey including identification of industrial users and the character and volume of pollutants contributed to the Publicly Owned Treatment Works (POTW) by the industrial users. The industrial user survey shall as a minimum include the following:

1. Industries discharging wastes which are or may be in the future subject to local

limitations or the national prohibited discharge standards found in 40 CFR Part 403.5.

2. Industries discharging wastewater from processes in one or more primary industry categories (See Appendix A to 40 CFR Part 122 or Appendix C of 40 CFR Part 403).

C. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge 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 (Twenty-four hour reporting).

Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes DEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at:

<http://www.mass.gov/eea/agencies/massdep/service/approvals/sanitary-sewer-overflow-bypass-backup-notification.html>.

Bypasses of treatment units are not authorized. If during peak flow there are emergency bypasses of any treatment unit, the permittee shall take hourly grab samples of the final effluent and test for fecal coliform and enterococci. Each incident shall be documented in a report that includes the monitoring results, and the date, time, duration of bypass and volume bypassed. This report shall be attached to the monthly DMR.

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 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 Plan

The permittee shall update its 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 program 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 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.

4. Reporting Requirements:

A summary report of all actions taken to minimize I/I during the previous calendar year shall be submitted to EPA and 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 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.

5. Alternate 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).

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, including EPA regulations promulgated at 40 CFR Part 503, which prescribe "Standards for the Use or Disposal of Sewage Sludge" pursuant to Section 405(d) of the CWA, 33 U.S.C. § 1345(d).
2. If both state and federal requirements apply to the permittee's sludge use and/or disposal practices, the permittee shall comply with the more stringent of the applicable requirements.
3. The requirements and technical standards of 40 CFR Part 503 apply to the following sludge 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 requirements of 40 CFR Part 503 do not apply to facilities which dispose of sludge in a municipal solid waste landfill. 40 CFR § 503.4. These requirements also do not apply to facilities which do not use or 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 40 CFR. Part 503 requirements including the following elements:
 - General requirements
 - Pollutant limitations
 - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
 - Management practices
 - Record keeping
 - Monitoring
 - Reporting

Which of the 40 C.F.R. Part 503 requirements apply to the permittee will depend upon the use or disposal practice followed and upon the quality of material produced by a facility. The EPA Region 1 Guidance document, "EPA Region 1 - NPDES Permit Sludge Compliance Guidance" (November 4, 1999), may be used by the permittee to assist it in determining the applicable requirements. This guidance document is available upon request from EPA Region 1 and may also be found at: <http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf>

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods) and pathogen vector attraction reduction (land application and surface disposal) 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 1,500	1/quarter
1,500 to less than 15,000	6/year
15,000 +	1/month

Sampling of the sewage sludge shall use the procedures detailed in 40 CFR 503.8.

7. Under 40 CFR § 503.9(r), the permittee is a "person who prepares sewage sludge" because it "is ... the person who generates sewage sludge during the treatment of domestic sewage in a treatment works" If the permittee contracts with *another* "person who prepares sewage sludge" under 40 CFR § 503.9(r)-i.e., with "a person who derives a material from sewage sludge"-for use or disposal of the sludge, then compliance with Part 503 requirements is the responsibility of the contractor engaged for that purpose. If the permittee does not engage a "person who prepares sewage sludge," as defined in 40 CFR § 503.9(r), for use or disposal, then the permittee remains responsible to ensure that the applicable requirements in Part 503 are met. 40 CFR §503.7. If the ultimate use or disposal method is land application, the permittee is responsible for providing the person receiving the sludge with notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.
8. The permittee shall submit an annual report containing the information specified in the 40 CFR Part 503 requirements (§ 503.18 (land application), § 503.28 (surface disposal), or § 503.48 (incineration)) by **February 19** (*see also* "EPA Region 1 - NPDES Permit Sludge Compliance Guidance"). Reports shall be submitted electronically using EPA's NPDES Electronic Reporting Tool ("NeT") (see "Monitoring and Reporting" section below).

F. MONITORING AND REPORTING

Unless otherwise specified in this permit, the permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

The permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and MassDEP no later than the 15th day of the month electronically using NetDMR. When the permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or MassDEP. NetDMR is accessed from the internet at <http://www.epa.gov/netdmr>.

2. Submittal of Reports as NetDMR Attachments

Unless otherwise specified in this permit, the permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. Permittees shall continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP. (See Part I.F.7. for more information on State reporting.) Because the due

dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the particular report due date specified in this permit.

3. Submittal of Pretreatment Related Reports

Prior to 21 December 2020, all reports and information required of the permittee in the Industrial Users and Pretreatment Program section of this permit shall be submitted to the Office of Ecosystem Protection's Pretreatment Coordinator in Region 1 EPA's Office of Ecosystem Protection (OEP). Starting on 21 December 2020, these submittals must be done electronically. Instruction for electronic reporting can be found on the internet at <https://www.epa.gov/compliance/npdes-ereporting>. These requests, reports and notices include:

A. Industrial User Survey Report

This information shall be submitted to EPA/OEP as a hard copy at the following address:

**U.S. Environmental Protection Agency
Office of Ecosystem Protection
Regional Pretreatment Coordinator
5 Post Office Square - Suite 100 (OEP06-03)
Boston, MA 02109-3912**

4. Submittal of Biosolids/Sewage Sludge Reports

By February 19 of each year, the permittee must electronically report their annual Biosolids/Sewage Sludge Report for the previous calendar year using EPA's NPDES Electronic Reporting Tool ("NeT") found on the internet at <https://www.epa.gov/compliance/npdes-ereporting>.

5. Submittal of Requests and Reports to EPA/OEP

The following requests, reports, and information described in this permit shall be submitted to the EPA/OEP NPDES Applications Coordinator in the EPA Office Ecosystem Protection (OEP).

- A. Transfer of Permit notice
- B. Request for changes in sampling location
- C. Request for reduction in WET testing requirement
- D. Report on unacceptable dilution water / request for alternative dilution water for WET testing
- E. Notification of proposal to add or replace chemicals and bio-remedial agents including microbes

These reports, information, and requests shall be submitted to EPA/OEP electronically at

R1NPDES.Notices.OEP@epa.gov or by hard copy mail to the following address:

**U.S. Environmental Protection Agency
Office of Ecosystem Protection
EPA/OEP NPDES Applications Coordinator
5 Post Office Square - Suite 100 (OEP06-03)
Boston, MA 02109-3912**

6. Submittal of Reports in Hard Copy Form

The following notifications and reports shall be submitted as hard copy with a cover letter describing the submission. These reports shall be signed and dated originals submitted to EPA.

- A. Written notifications required under Part II
- B. Notice of unauthorized discharges, including Sanitary Sewer Overflow (SSO) reporting
- C. Report on annual activities related to I/I.

This information shall be submitted to EPA/OES at the following address:

**U.S. Environmental Protection Agency
Office of Environmental Stewardship (OES)
Water Technical Unit
5 Post Office Square, Suite 100 (OES04-SMR)
Boston, MA 02109-3912**

7. State Reporting

Unless otherwise specified in this permit or by the State, duplicate signed copies of all reports, information, requests or notifications described in this permit, including the reports, information, requests or notifications described in Parts I.F.3 through I.F.6 also shall be submitted to the State at the following addresses:

**MassDEP – Southeast Region
Bureau of Water Resources
20 Riverside Drive
Lakeville, MA 02347**

Copies of toxicity tests and nitrogen optimization reports only shall be submitted to:

**Massachusetts Department of Environmental Protection
Watershed Planning Program
8 New Bond Street
Worcester, Massachusetts 01606**

8. Verbal Reports and Verbal Notifications

Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit,

shall be made to both EPA and to MassDEP. This includes verbal reports and notifications which require reporting within 24 hours. (As examples, see Part II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.) Verbal reports and verbal notifications shall be made to:

EPA's Office of Environmental Stewardship at: **617-918-1510**

and to

MassDEP's Emergency Response Program at: **888-304-1133**

G. 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.

**MARINE CHRONIC
TOXICITY TEST PROCEDURE AND PROTOCOL**

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable silverside chronic (and modified acute) and sea urchin chronic toxicity tests in accordance with the appropriate test protocols described below:

- **Inland Silverside (Menidia beryllina) Larval Growth and Survival Test.**
- **Sea Urchin (Arbacia punctulata) 1 Hour Fertilization Test.**

Chronic and acute toxicity data shall be reported as outlined in Section VIII. The chronic Menidia test can be used to calculate an LC50 at the end of 48 hours of exposure when both an acute (LC50) and a chronic (C-NOEC) test is specified in the permit.

II. METHODS

Methods to follow are those recommended by EPA in:

Klemm, D.J. et al. Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters To Marine and Estuarine Organisms, Second Edition. Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, July 1994, EPA/600/4-91/003. <https://www.epa.gov/cwa-methods/whole-effluent-toxicity-methods>

Any exceptions are stated herein.

III. SAMPLE COLLECTION

For each sampling event involving the Menidia beryllina, three discharge samples shall be collected. Fresh samples are necessary for Days 1, 3, and 5 (see Section V. for holding times). A single sample is necessary for the Arbacia punctulata test. The sample shall be analyzed chemically (see Section VI). The initial sample (Day 1) is used to start the tests, and for test solution renewal on Day 2. The second sample is collected for use at the start of Day 3, and for renewal on Day 4. The third sample is used on Days 5, 6, and 7. The initial (Day 1) sample will be analyzed chemically (see Section VI). Day 3 and 5

renewal samples will be held until test completion. If either the Day 3 or 5 renewal sample is of sufficient potency to cause lethality to 50 percent or more test organisms in any of the dilutions for either species, then a chemical analysis shall be performed on the appropriate sample(s) as well.

Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for the chemical and physical analyses. The remaining sample shall be dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual oxidants (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1 mg/L chlorine. A thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) should also be run.

All samples held overnight shall be refrigerated at 4°C.

IV. DILUTION WATER

Grab samples of receiving water used for chronic toxicity testing shall be collected from one or several distances away from the discharge. It may be necessary to test receiving water at several distances in a separate chronic test to determine the extent of the zone of toxicity. Avoid collecting near areas of obvious road or agricultural runoff, storm sewers or other point source discharges. An additional control (0% effluent) of a standard laboratory water of known quality shall also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a conductivity, salinity, total suspended solids, organic carbon, and pH similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternative dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection
U. S. Environmental Protection Agency-New England
JFK Federal Building (CAA)
Boston, MA 02203

It may prove beneficial to the permittee to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

EPA New England requires that tests be performed using four replicates of each control and effluent concentration because the on-parametric statistical tests cannot be used with data from fewer replicates. Also, if a reference toxicant test was being performed concurrently with an effluent or receiving water test and fails, both tests must be repeated.

The following tables summarize the accepted Menidia and Arbacia toxicity test conditions and test acceptability criteria:

**EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE SEA URCHIN,
ARBACIA PUNCTULATA, FERTILIZATION TEST¹**

1. Test type	Static, non-renewal
2. Salinity	30 o/oo \pm 2 o/oo by adding dry ocean salts
3. Temperature	20 \pm 1°C
4. Light quality	Ambient laboratory light during test preparation
5. Light intensity	10-20 uE/m ² /s, or 50-100 ft-c (Ambient Laboratory Levels)
6. Test vessel size	Disposal (glass) liquid scintillation vials (20 ml capacity), presoaked in control water
7. Test solution volume	5 ml
8. Number of sea urchins	Pooled sperm from four males and pooled eggs from four females are used per test
9. Number of egg and sperm cells per chamber	About 2000 eggs and 5,000,000 sperm cells per vial
10. Number of replicate chambers per treatment	4
11. Dilution water	Uncontaminated source of natural seawater or deionized water mixed with artificial sea salts
12. Dilution factor	Approximately 0.5
13. Test duration	1 hour and 20 minutes
14. Effects measured	Fertilization of sea urchin

eggs

15. Number of treatments per test² 5 and a control. An additional dilution at the permitted effluent concentration (% effluent) is required.
16. Acceptability of test Minimum of 70% fertilization in controls. Effluent concentrations exhibiting greater than 70% fertilization, flagged as statistically significantly different from the controls, will not be considered statistically different from the controls for NOEC reporting.
17. Sampling requirements For on-site tests, samples are to be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection.
18. Sample volume required Minimum 1 liter
-

Footnotes:

1. Adapted from EPA/600/4-91/003, July 1994.
2. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE INLAND SILVERSIDE, MENIDIA BERYLLINA, GROWTH AND SURVIVAL TEST¹

1.	Test type	Static, renewal
2.	Salinity	5 o/oo to 32 o/oo \pm 2 o/oo by adding artificial sea salts
3.	Temperature	25 \pm 1°C
4.	Light quality	Ambient laboratory light
5.	Light intensity	10-20 uE/m ² /s, or 50-100 ft-C (Ambient Laboratory Levels)
6.	Photoperiod	16 hr light, 8 hr darkness
7.	Test vessel size	600 - 1000 mL beakers or equivalent (glass test chambers should be used)
8.	Test solution volume	500-750 mL/replicate loading and DO restrictions must be met)
9.	Renewal of test solutions	Daily using most recently collected sample.
10.	Age of test organisms	Seven to eleven days post hatch; 24 hr range in age.
11.	Larvae/test chamber	15 (minimum of 10)
12.	Number of replicate chambers	4 per treatment
13.	Source of food	Newly hatched and rinsed <u>Artemia</u> nauplii less than 24 hr old
14.	Feeding regime	Feed once a day 0.10 g wet wt <u>Artemia</u> nauplii per replicate on days 0-2; feed 0.15 g wet wt <u>Artemia</u> nauplii per replicate on days 3-6
15.	Cleaning	Siphon daily, immediately before test solution renewal and feeding

16. Aeration²

None

17. Dilution water	Uncontaminated source of natural seawater; or deionized water mixed with artificial sea salts.
18. Effluent concentrations ³	5 and a control. An additional dilution at the permitted effluent concentration (% effluent) is required.
19. Dilution factor	≥ 0.5
20. Test duration	7 days
21. Effects measured	Survival and growth (weight)
22. Acceptability of test	The average survival of control larvae is a minimum of 80%, and the average dry wt of unpreserved control larvae is a minimum of 0.5 mg, or the average dry wt of preserved control larvae is a minimum of 0.43 mg if preserved not more than 7 days in 4% formalin or 70% ethanol.
23. Sampling requirements	For on-site tests, samples are collected daily and used within 24 hours of the time they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection.
24. Sample Volume Required	Minimum of 6 liters/day.

Footnotes:

¹ Adapted from EPA/600/4-91/003, July 1994.

² If dissolved oxygen (D.O.) falls below 4.0 mg/L, aerate all chambers at a rate of less than 100 bubbles/min. Routine D.O. checks are recommended.

³ When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

VI. CHEMICAL ANALYSIS

As part of each daily renewal of the Menidia test, pH, dissolved oxygen, salinity, and temperature must be measured at the beginning and end of each 24 hour period in each dilution and in the controls. It must also be done at the start of the Arbacia test. The following chemical analyses shall be performed for each sampling event.

<u>Parameter</u>	<u>Effluent</u>	<u>Diluent</u>	Minimum Quanti- fication Level(mg/L)
pH	x	x	---
Salinity	x	x	PPT(o/oo)
Total Residual Oxidants* ¹	x	x	0.05
Total Solids and Suspended Solids	x	x	

Ammonia	x	x	
	0.1		
Total Organic Carbon	x	x	
	0.5		
<u>Total Metals</u>			
Cd	x		0.001
Cr	x		0.005
Pb	x		0.005
Cu	x		0.0025
Zn	x		0.0025
Ni	x		0.004
Al	x		0.02

Superscripts:

*¹ Total Residual Oxidants
 Either of the following methods from the 18th Edition of the APHA (1992) Standard Methods for the Examination of Water and Wastewater must be used for these analyses:

- Method 4500-CL E the Amperometric Titration Method (the preferred method);
- Method 4500-CL G the DPD Photometric Method.

or use USEPA Manual of Methods Analysis of Water or Wastes, Method 330.5.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See flow chart on page 56 of EPA/600/4-91/003 for appropriate point estimation method to use on a given data set.

Chronic No Observed Effect Concentration (C-NOEC)

Methods of Estimation:

- Dunnett's Procedure
- Bonferroni's T-Test
- Steel's Many-One Rank Test
- Wilcoxin Rank Sum Test

Reference flow charts on pages 191, 192, and 321 of EPA/600/4-91/003 for the appropriate method to use on a given data set.

In the case of two tested concentrations causing adverse effects but an intermediate concentration not causing a statistically significant effect, report the C-NOEC as the lowest concentration where there is no observable effect. The definition of NOEC in the EPA Technical Support Document only applies to linear dose-response data.

VIII. TOXICITY TEST REPORTING

A report of results will include the following:

- Description of sample collection procedures, site description;
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody; and
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)

- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.

Attachment B

Summary of Required Report Submittals*

Required Report	Date Due	Submitted By:	Submitted To: ^{**} (see bottom of page for key)
Discharge Monitoring Report (DMR) (Part I.F.1)	Monthly, submitted electronically using NetDMR by the 15 th of the month following the monitoring month (e.g. the March DMR is due	Town of Fairhaven	Net DMR, 1, 2
Whole Effluent Toxicity (WET)Test Report (Part I.A.1)	April 30 and October 31 of each year	Town of Fairhaven	NetDMR attachment 1, 2
Pretreatment: Industrial User Survey (Part I.B..)	Within 120 days of permit effective date	Town of Fairhaven	1, 3
I/I Control Plan (Part I.D.3)	Within 6 months of permit effective date	Town of Fairhaven	NetDMR attachment 1,
I/I Annual Report (Part I.D.4)	March 31 each year	Town of Fairhaven	NetDMR attachment 1,
Annual Sludge Report (Part I.E.8.)	February 19 each year electronically using NeT	Town of Fairhaven	NeT, 1

*This Table is a summary of reports required to be submitted under this NPDES permit as an aid to the permittee. If there are any discrepancies between the permit and this summary, the permittee shall follow the permit requirements.

**The addresses are for the submittal of hard copies. When the permittee begins reporting using NetDMR, submittal of hard copies of many of the required reports will not be necessary. See permit conditions for details.

1. Massachusetts DEP – Southeast Region
Bureau of Resource Protection
20 Riverside Drive
Lakeville, MA 02347

2. Massachusetts Department of Environmental Protection
Watershed Planning Program
8 New Bond Street
Worcester, Massachusetts 01606

3. U.S. Environmental Protection Agency
Office of Ecosystem Protection
Regional Pretreatment Coordinator
5 Post Office Square - Suite 100 (OEP06-03)
Boston, MA 02109-3912

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PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

- a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.
- b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed \$25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both.
- c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.

Note: See 40 CFR §122.41(a)(2) for complete “Duty to Comply” regulations.

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or notifications of planned changes or anticipated noncompliance does not stay any permit condition.

3. Duty to Provide Information

The permittee shall furnish to the Regional Administrator, within a reasonable time, any information which the Regional Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Regional Administrator, upon request, copies of records required to be kept by this permit.

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4. Reopener Clause

The Regional Administrator reserves the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA in order to bring all discharges into compliance with the CWA.

For any permit issued to a treatment works treating domestic sewage (including “sludge-only facilities”), the Regional Administrator or Director shall include a reopener clause to incorporate any applicable standard for sewage sludge use or disposal promulgated under Section 405 (d) of the CWA. The Regional Administrator or Director may promptly modify or revoke and reissue any permit containing the reopener clause required by this paragraph if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or contains a pollutant or practice not limited in the permit.

Federal regulations pertaining to permit modification, revocation and reissuance, and termination are found at 40 CFR §122.62, 122.63, 122.64, and 124.5.

5. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

6. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges.

7. Confidentiality of Information

- a. In accordance with 40 CFR Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words “confidential business information” on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information).
- b. Claims of confidentiality for the following information will be denied:
 - (1) The name and address of any permit applicant or permittee;
 - (2) Permit applications, permits, and effluent data as defined in 40 CFR §2.302(a)(2).
- c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

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8. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee must apply for and obtain a new permit. The permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Regional Administrator. (The Regional Administrator shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

9. State Authorities

Nothing in Part 122, 123, or 124 precludes more stringent State regulation of any activity covered by these regulations, whether or not under an approved State program.

10. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, or local laws and regulations.

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

- (1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

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- (2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can be reasonably expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of Paragraphs B.4.c. and 4.d. of this section.

c. Notice

- (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.
- (2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (Twenty-four hour reporting).

d. Prohibition of bypass

Bypass is prohibited, and the Regional Administrator may take enforcement action against a permittee for bypass, unless:

- (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
- (3) i) The permittee submitted notices as required under Paragraph 4.c. of this section.
ii) The Regional Administrator may approve an anticipated bypass, after considering its adverse effects, if the Regional Administrator determines that it will meet the three conditions listed above in paragraph 4.d. of this section.

5. Upset

- a. Definition. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph B.5.c. of this section are met. No determination made during

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administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

- c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
 - (2) The permitted facility was at the time being properly operated;
 - (3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
 - (4) The permittee complied with any remedial measures required under B.3. above.
- d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

PART II. C. MONITORING REQUIREMENTS

1. Monitoring and Records

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. Except for records for monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator at any time.
- c. Records of monitoring information shall include:
 - (1) The date, exact place, and time of sampling or measurements;
 - (2) The individual(s) who performed the sampling or measurements;
 - (3) The date(s) analyses were performed;
 - (4) The individual(s) who performed the analyses;
 - (5) The analytical techniques or methods used; and
 - (6) The results of such analyses.
- d. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.
- e. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by

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imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The permittee shall allow the Regional Administrator or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

- a. **Planned Changes.** The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:
 - (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR§122.29(b); or
 - (2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§122.42(a)(1).
 - (3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition or change may justify the application of permit conditions different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
- b. **Anticipated noncompliance.** The permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- c. **Transfers.** This permit is not transferable to any person except after notice to the Regional Administrator. The Regional Administrator may require modification or revocation and reissuance of the permit to change the name of the permittee and

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incorporate such other requirements as may be necessary under the CWA. (See 40 CFR Part 122.61; in some cases, modification or revocation and reissuance is mandatory.)

- d. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
- (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.
 - (2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.
 - (3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.
- e. Twenty-four hour reporting.
- (1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances.

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
 - (2) The following shall be included as information which must be reported within 24 hours under this paragraph.
 - (a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR §122.41(g).)
 - (b) Any upset which exceeds any effluent limitation in the permit.
 - (c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)
 - (3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

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- f. Compliance Schedules. Reports of compliance or noncompliance with, any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
 - g. Other noncompliance. The permittee shall report all instances of noncompliance not reported under Paragraphs D.1.d., D.1.e., and D.1.f. of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D.1.e. of this section.
 - h. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, it shall promptly submit such facts or information.
2. Signatory Requirement
- a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §122.22)
 - b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.
3. Availability of Reports.

Except for data determined to be confidential under Paragraph A.8. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and Federal standards and limitations to which a “discharge”, a “sewage sludge use or disposal practice”, or a related activity is subject to, including “effluent limitations”, water quality standards, standards of performance, toxic effluent standards or prohibitions, “best management practices”, pretreatment standards, and “standards for sewage sludge use and disposal” under Sections 301, 302, 303, 304, 306, 307, 308, 403, and 405 of the CWA.

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Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in “approved States”, including any approved modifications or revisions.

Average means the arithmetic mean of values taken at the frequency required for each parameter over the specified period. For total and/or fecal coliforms and Escherichia coli, the average shall be the geometric mean.

Average monthly discharge limitation means the highest allowable average of “daily discharges” over a calendar month calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month.

Average weekly discharge limitation means the highest allowable average of “daily discharges” measured during the calendar week divided by the number of “daily discharges” measured during the week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of “waters of the United States.” BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Best Professional Judgment (BPJ) means a case-by-case determination of Best Practicable Treatment (BPT), Best Available Treatment (BAT), or other appropriate technology-based standard based on an evaluation of the available technology to achieve a particular pollutant reduction and other factors set forth in 40 CFR §125.3 (d).

Coal Pile Runoff means the rainfall runoff from or through any coal storage pile.

Composite Sample means a sample consisting of a minimum of eight grab samples of equal volume collected at equal intervals during a 24-hour period (or lesser period as specified in the section on Monitoring and Reporting) and combined proportional to flow, or a sample consisting of the same number of grab samples, or greater, collected proportionally to flow over that same time period.

Construction Activities - The following definitions apply to construction activities:

- (a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.
- (b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.
- (c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

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- (d) Final Stabilization means that all soil disturbing activities at the site have been complete, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.
- (e) Runoff coefficient means the fraction of total rainfall that will appear at the conveyance as runoff.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a “discharge” which occurs without interruption throughout the operating hours of the facility except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, and Pub. L. 97-117; 33 USC §§1251 et seq.

Daily Discharge means the discharge of a pollutant measured during the calendar day or any other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the “daily discharge” is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the “daily discharge” is calculated as the average measurement of the pollutant over the day.

Director normally means the person authorized to sign NPDES permits by EPA or the State or an authorized representative. Conversely, it also could mean the Regional Administrator or the State Director as the context requires.

Discharge Monitoring Report Form (DMR) means the EPA standard national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by permittees. DMRs must be used by “approved States” as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA’s.

Discharge of a pollutant means:

- (a) Any addition of any “pollutant” or combination of pollutants to “waters of the United States” from any “point source”, or
- (b) Any addition of any pollutant or combination of pollutants to the waters of the “contiguous zone” or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation (See “Point Source” definition).

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead

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to a treatment works; and discharges through pipes, sewers, or other conveyances leading into privately owned treatment works.

This term does not include an addition of pollutants by any “indirect discharger.”

Effluent limitation means any restriction imposed by the Regional Administrator on quantities, discharge rates, and concentrations of “pollutants” which are “discharged” from “point sources” into “waters of the United States”, the waters of the “contiguous zone”, or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under Section 304(b) of CWA to adopt or revise “effluent limitations”.

EPA means the United States “Environmental Protection Agency”.

Flow-weighted composite sample means a composite sample consisting of a mixture of aliquots where the volume of each aliquot is proportional to the flow rate of the discharge.

Grab Sample – An individual sample collected in a period of less than 15 minutes.

Hazardous Substance means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

Indirect Discharger means a non-domestic discharger introducing pollutants to a publicly owned treatment works.

Interference means a discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- (a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- (b) Therefore is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act (CWA), the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

Large and Medium municipal separate storm sewer system means all municipal separate storm sewers that are either: (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and 40 CFR Part 122); or (ii) located in the counties with unincorporated urbanized

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populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships, or towns within such counties (these counties are listed in Appendices H and I of 40 CFR 122); or (iii) owned or operated by a municipality other than those described in Paragraph (i) or (ii) and that are designated by the Regional Administrator as part of the large or medium municipal separate storm sewer system.

Maximum daily discharge limitation means the highest allowable “daily discharge” concentration that occurs only during a normal day (24-hour duration).

Maximum daily discharge limitation (as defined for the Steam Electric Power Plants only) when applied to Total Residual Chlorine (TRC) or Total Residual Oxidant (TRO) is defined as “maximum concentration” or “Instantaneous Maximum Concentration” during the two hours of a chlorination cycle (or fraction thereof) prescribed in the Steam Electric Guidelines, 40 CFR Part 423. These three synonymous terms all mean “a value that shall not be exceeded” during the two-hour chlorination cycle. This interpretation differs from the specified NPDES Permit requirement, 40 CFR § 122.2, where the two terms of “Maximum Daily Discharge” and “Average Daily Discharge” concentrations are specifically limited to the daily (24-hour duration) values.

Municipality means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribe organization, or a designated and approved management agency under Section 208 of the CWA.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an “approved program”.

New Discharger means any building, structure, facility, or installation:

- (a) From which there is or may be a “discharge of pollutants”;
- (b) That did not commence the “discharge of pollutants” at a particular “site” prior to August 13, 1979;
- (c) Which is not a “new source”; and
- (d) Which has never received a finally effective NPDES permit for discharges at that “site”.

This definition includes an “indirect discharger” which commences discharging into “waters of the United States” after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a “site” for which it does not have a permit; and any offshore rig or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a “site” under EPA’s permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Regional Administrator in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Regional Administrator shall consider the factors specified in 40 CFR §§125.122 (a) (1) through (10).

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An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a “new discharger” only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a “discharge of pollutants”, the construction of which commenced:

- (a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or
- (b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means “National Pollutant Discharge Elimination System”.

Owner or operator means the owner or operator of any “facility or activity” subject to regulation under the NPDES programs.

Pass through means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation).

Permit means an authorization, license, or equivalent control document issued by EPA or an “approved” State.

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to any pipe ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 CFR §122.2).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. §§2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

- (a) Sewage from vessels; or
- (b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

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Primary industry category means any industry category listed in the NRDC settlement agreement (Natural Resources Defense Council et al. v. Train, 8 E.R.C. 2120 (D.D.C. 1976), modified 12 E.R.C. 1833 (D. D.C. 1979)); also listed in Appendix A of 40 CFR Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operation is not the operator of the treatment works or (b) not a “POTW”.

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly Owned Treatment Works (POTW) means any facility or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a “State” or “municipality”.

This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary Industry Category means any industry which is not a “primary industry category”.

Section 313 water priority chemical means a chemical or chemical category which:

- (1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);
- (2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and
- (3) satisfies at least one of the following criteria:
 - (i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
 - (ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
 - (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semisolid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced wastewater treatment, scum, septage, portable toilet pumpings, Type III Marine Sanitation Device pumpings (33 CFR Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

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Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials, fuels, materials such as solvents, detergents, and plastic pellets, raw materials used in food processing or production, hazardous substance designated under section 101(14) of CERCLA, any chemical the facility is required to report pursuant to EPCRA Section 313, fertilizers, pesticides, and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 CFR §110.10 and §117.21) or Section 102 of CERCLA (see 40 CFR § 302.4).

Sludge-only facility means any “treatment works treating domestic sewage” whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to Section 405(d) of the CWA, and is required to obtain a permit under 40 CFR §122.1(b)(3).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands.

Storm Water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. (See 40 CFR §122.26 (b)(14) for specifics of this definition.

Time-weighted composite means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

Toxic pollutants means any pollutant listed as toxic under Section 307 (a)(1) or, in the case of “sludge use or disposal practices” any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or wastewater treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, “domestic sewage” includes waste and wastewater from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Regional Administrator may designate any person subject to the standards for sewage sludge use and disposal in 40 CFR Part 503 as a “treatment works treating domestic sewage”, where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 CFR Part 503.

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Waste Pile means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States means:

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide;
- (b) All interstate waters, including interstate “wetlands”;
- (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands”, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;
 - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of the United States under this definition;
- (e) Tributaries of waters identified in Paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in Paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 CFR §423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test. (See Abbreviations Section, following, for additional information.)

2. Definitions for NPDES Permit Sludge Use and Disposal Requirements.

Active sewage sludge unit is a sewage sludge unit that has not closed.

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Aerobic Digestion is the biochemical decomposition of organic matter in sewage sludge into carbon dioxide and water by microorganisms in the presence of air.

Agricultural Land is land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture.

Agronomic rate is the whole sludge application rate (dry weight basis) designed:

- (1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and
- (2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

Air pollution control device is one or more processes used to treat the exit gas from a sewage sludge incinerator stack.

Anaerobic digestion is the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of air.

Annual pollutant loading rate is the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period.

Annual whole sludge application rate is the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period.

Apply sewage sludge or sewage sludge applied to the land means land application of sewage sludge.

Aquifer is a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs.

Auxiliary fuel is fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of the sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel.

Base flood is a flood that has a one percent chance of occurring in any given year (i.e. a flood with a magnitude equaled once in 100 years).

Bulk sewage sludge is sewage sludge that is not sold or given away in a bag or other container for application to the land.

Contaminate an aquifer means to introduce a substance that causes the maximum contaminant level for nitrate in 40 CFR §141.11 to be exceeded in ground water or that causes the existing concentration of nitrate in the ground water to increase when the existing concentration of nitrate in the ground water exceeds the maximum contaminant level for nitrate in 40 CFR §141.11.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 CFR §501.2, required to have an approved pretreatment program under 40 CFR §403.8 (a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR §403.10 (e) and any treatment works treating domestic sewage, as defined in 40 CFR § 122.2,

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classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved state programs, the Regional Administrator in conjunction with the State Director, because of the potential for sewage sludge use or disposal practice to affect public health and the environment adversely.

Control efficiency is the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator.

Cover is soil or other material used to cover sewage sludge placed on an active sewage sludge unit.

Cover crop is a small grain crop, such as oats, wheat, or barley, not grown for harvest.

Cumulative pollutant loading rate is the maximum amount of inorganic pollutant that can be applied to an area of land.

Density of microorganisms is the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge.

Dispersion factor is the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack.

Displacement is the relative movement of any two sides of a fault measured in any direction.

Domestic septage is either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

Domestic sewage is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

Dry weight basis means calculated on the basis of having been dried at 105 degrees Celsius (°C) until reaching a constant mass (i.e. essentially 100 percent solids content).

Fault is a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to the strata on the other side.

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

Final cover is the last layer of soil or other material placed on a sewage sludge unit at closure.

Fluidized bed incinerator is an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas.

Food crops are crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco.

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Forest is a tract of land thick with trees and underbrush.

Ground water is water below the land surface in the saturated zone.

Holocene time is the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present.

Hourly average is the arithmetic mean of all the measurements taken during an hour. At least two measurements must be taken during the hour.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Industrial wastewater is wastewater generated in a commercial or industrial process.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land with a high potential for public exposure is land that the public uses frequently. This includes, but is not limited to, a public contact site and reclamation site located in a populated area (e.g., a construction site located in a city).

Land with low potential for public exposure is land that the public uses infrequently. This includes, but is not limited to, agricultural land, forest and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area).

Leachate collection system is a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit.

Liner is soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} centimeters per second or less.

Lower explosive limit for methane gas is the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 degrees Celsius and atmospheric pressure.

Monthly average (Incineration) is the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month.

Monthly average (Land Application) is the arithmetic mean of all measurements taken during the month.

Municipality means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management agency under section 208 of the CWA, as amended. The definition includes a special district created under state law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

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Other container is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

Pasture is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permitting authority is either EPA or a State with an EPA-approved sludge management program.

Person is an individual, association, partnership, corporation, municipality, State or Federal Agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration; a measure of the acidity or alkalinity of a liquid or solid material.

Place sewage sludge or sewage sludge placed means disposal of sewage sludge on a surface disposal site.

Pollutant (as defined in sludge disposal requirements) is an organic substance, an inorganic substance, a combination of organic and inorganic substances, or pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could on the basis of information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction) or physical deformations in either organisms or offspring of the organisms.

Pollutant limit (for sludge disposal requirements) is a numerical value that describes the amount of a pollutant allowed per unit amount of sewage sludge (e.g., milligrams per kilogram of total solids); the amount of pollutant that can be applied to a unit of land (e.g., kilograms per hectare); or the volume of the material that can be applied to the land (e.g., gallons per acre).

Public contact site is a land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

Qualified ground water scientist is an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground water hydrology and related fields, as may be demonstrated by State registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding ground water monitoring, pollutant fate and transport, and corrective action.

Range land is open land with indigenous vegetation.

Reclamation site is drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites.

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Risk specific concentration is the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of a site where the sewage sludge incinerator is located.

Runoff is rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off the land surface.

Seismic impact zone is an area that has 10 percent or greater probability that the horizontal ground level acceleration to the rock in the area exceeds 0.10 gravity once in 250 years.

Sewage sludge is a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to: domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in treatment works.

Sewage sludge feed rate is either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR §122.2.

Sewage sludge unit boundary is the outermost perimeter of an active sewage sludge unit.

Specific oxygen uptake rate (SOUR) is the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in sewage sludge.

Stack height is the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 meters. When the difference is greater than 65 meters, stack height is the creditable stack height determined in accordance with 40 CFR §51.100 (ii).

State is one of the United States of America, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, and an Indian tribe eligible for treatment as a State pursuant to regulations promulgated under the authority of section 518(e) of the CWA.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

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Total hydrocarbons means the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane.

Total solids are the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 degrees Celsius.

Treat or treatment of sewage sludge is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

Treatment works is either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature.

Unstable area is land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement.

Unstabilized solids are organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Volatile solids is the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 degrees Celsius in the presence of excess air.

Wet electrostatic precipitator is an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

Wet scrubber is an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

3. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl ₂	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)

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TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont. (Continuous)	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M ³ /day	Cubic meters per day
DO	Dissolved oxygen
kg/day	Kilograms per day
lbs/day	Pounds per day
mg/l	Milligram(s) per liter
ml/l	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH ₃ -N	Ammonia nitrogen as nitrogen
NO ₃ -N	Nitrate as nitrogen
NO ₂ -N	Nitrite as nitrogen
NO ₃ -NO ₂	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
pH	A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material
Surfactant	Surface-active agent

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Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
ug/l	Microgram(s) per liter
WET	“Whole effluent toxicity” is the total effect of an effluent measured directly with a toxicity test.
C-NOEC	“Chronic (Long-term Exposure Test) – No Observed Effect Concentration”. The highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.
A-NOEC	“Acute (Short-term Exposure Test) – No Observed Effect Concentration” (see C-NOEC definition).
LC ₅₀	LC ₅₀ is the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC ₅₀ = 100% is defined as a sample of undiluted effluent.
ZID	Zone of Initial Dilution means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports.

RESPONSE TO PUBLIC COMMENTS

In accordance with the provisions of 40 C.F.R. §124.17, this document presents EPA’s responses to comments received on the draft National Pollutant Discharge Elimination System (“NPDES”) Permit MA0100765. The response to comments explains and supports EPA’s determinations that form the basis of the final permit. On July 8, 2010, the U.S. Environmental Protection Agency (“EPA”) and the Massachusetts Department of Environmental Protection (“MassDEP”) released a draft National Pollutant Discharge Elimination System (“NPDES”) permit for public notice and comment for the Fairhaven Wastewater Treatment Facility. On August 6, 2010 the public comment period for this draft permit was extended for 60 days. The public comment period for this draft permit ended on October 4, 2010.

EPA and MassDEP received comments from Pierce Atwood LLP on behalf of the Town of Fairhaven, MA (the “permittee” or the “Town”) dated October 4, 2010 and the Coalition for Buzzards Bay (currently known as the “Buzzards Bay Coalition” or “BBC”) dated October 4, 2010. Following a review of the comments received, EPA has made a final decision to issue the permit authorizing this discharge. EPA’s knowledge of the facility has benefited from the various comments and additional information submitted. While the information and arguments presented did not raise any substantial new questions concerning the permit, EPA did, however, make certain clarifications in response to comments. These improvements and changes are detailed in this document and reflected in the final permit. In accordance with the provisions of 40 C.F.R. § 124.17, the comments received and EPA’s responses to those comments, including a description of any changes made to the permit as a result of those comments, as well as any clarifications EPA considers necessary, are described below.

A copy of the Final Permit may be obtained by calling or writing Ellen Weitzler, United States Environmental Protection Agency, 5 Post Office Square – Suite 100, Mail Code OEP06-3, Boston, Massachusetts 02109-3912, Telephone (617) 918-1501. Copies of the Final Permit and the Response to Comments may also be obtained from the EPA Region I website at https://www3.epa.gov/region1/npdes/permits_listing_ma.html

A. Summary of Changes to the Final Permit:

1. The effluent limit for Total Nitrogen in Part I.A.1 has been revised into two seasonal components. The first applies from May 1 through October 31 and specifies a seasonal rolling average rather than a monthly average limit. Footnote 11 has been added to specify that the limit is a rolling seasonal average limit and provides detail on how the seasonal average will be calculated. The second component applies from November 1 through April 30. It is a report only limit, and Footnote 12 has been added to signify that the permittee shall operate the treatment facility to reduce the total nitrogen discharge to the maximum extent possible from November 1 through April 30 and that the addition of a carbon source is not required during these months. [See Response to Comment No. A.15 at page 32 below.]

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2. The web addresses of documents referenced on page 5 (Footnote 10) and on page 8 (Part I.C) have been updated.
3. Electronic reporting requirements have been modified to add NetDMR requirements (Part I.F and Attachment B) and for annual biosolids reports (Part I.E, Part I.F, and Attachment B) as required by EPA's 2015 Electronic Reporting Rule (80 FR 64063).

B. Response to Public Comments

Comments are reproduced below as received; they have not been edited.

The following comments were received from **the Town of Fairhaven**:

Comment No. A.1

These comments are provided on behalf of the Town of Fairhaven regarding the draft NPDES permit issued by EPA and MassDEP (collectively referred to as "the Agencies") on June 8, 2010 for the Fairhaven Wastewater Pollution Control Facility ("WPCF"). The draft permit imposes a new average monthly limit of 125 lbs/day for total nitrogen ("TN"). As will be explained below, the Town does not believe that this limit has been adequately explained by the Agencies in the Fact Sheet accompanying the draft permit, and, upon close review, cannot be justified scientifically. Moreover, it is not practicable (and may not even be possible) for the Town to meet this limit.

Accordingly, the Town of Fairhaven requests that the Agencies stop the permit process until additional information is developed and provided. If the permit process is not delayed than the Agencies should not impose a numeric criterion for TN in this NPDES permit, and instead provide a monitor-only requirement, while conducting a total maximum daily load ("TMDL") analysis that can instead be the basis for an equitable and defensible permit limit. At the same time, the Town would continue to take concrete steps to assure reasonable progress on improving water quality, including implementing a nitrogen optimization plan and an inflow and infiltration ("I/I") plan.

These comments begin by explaining why the technology-based TN limit is invalid and, in any event, cannot practicably be met. The Town then highlights the significant flaws in the water quality modeling that form the basis of the Agencies' apparent rush to over-regulate the WPCF. Finally, the Town provides several important reasons why a numeric TN limit is premature and why the Agencies should instead conduct a comprehensive TMDL for the New Bedford Inner Harbor that will result in fair load allocations.

Response to Comment No. A.1

As described in detail below in responses to more detailed versions of the points included in these introductory comments, EPA believes it has sufficient information to issue the final permit.

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Comment No. A.2

I. The Technology-Based Limit for Total Nitrogen is Unexplained and Unsupported, and Cannot Practicably be Met.

As noted above, the draft permit imposes on the WPCF a new technology-based average monthly limit of 125 lbs/day for TN. The sole justification for this limit is the Agencies' statement in the Fact Sheet that this is the "limit of technology." Fact Sheet at 10. As will be discussed below, this failure to provide even a summary of the basis for the TN limitation precludes the Town's ability to fully comment on the draft permit and violates the Agencies's [sic] own rules. In any event, no matter what the actual basis, the Town cannot practicably meet such a permit limit.

A. The Failure to Explain the Basis for the TN Limitation Precludes the Town' Ability to Comment Effectively on the Draft Permit.

As an initial matter, EPA has failed completely to explain the basis of the new TN limit, thus precluding our ability to comment effectively on the draft permit and Fact Sheet. EPA's rules state that the Fact Sheet must provide at least a "summary of the basis for the draft permit conditions, including...appropriate supporting references to the administrative record." 40 C.F.R. § 124.8(b)(4). Moreover, in a permit involving case-by-case technology-based limits, such as for TN here, the Fact Sheet must explain "the reasons that such conditions are applicable." 40 C.F.R. § 124.56(b)(1)(iv). The purpose of these provisions is to ensure that the public, including the applicant, understands the basis for a proposed permit limit, and can thus effectively exercise the right to comment. Absent a reasonable explanation, the opportunity to comment is effectively rendered meaningless.

Despite providing four pages of discussion about TN, most of which relates to in-stream water quality conditions, there is almost no explanation of the rationale for the technology-based average monthly TN limit. For example, page 9 of the Fact Sheet notes that EPA's regulations require that effluent limits be included for discharges that have the potential to cause or contribute to a water quality violation, but then abandons this discussion to conclude that a technology-based limit of 125 lbs/day is appropriate: "EPA and MassDEP have included a monthly average limitation of 57 kg/day (125 lbs/day), which corresponds to a treatment plant flow of 5.0 MGD and an effluent concentration of 3 mg/L TN." In the paragraph immediately above this provision, EPA simply asserts that the 3.0 mg/L TN proposed effluent concentration is "the limit of technology." The phrase "limit of technology" appears to be the entire basis for the effluent concentration upon which a new and very costly TN limitation is to be imposed on the Town of Fairhaven.¹

The Fact Sheet, however, leaves unexplained exactly what the phrase "limit of technology" means in the context of this permit. As a legal matter, what is the regulatory standard that was applied in establishing this limit of technology- best available technology, best professional judgment, best practicable

¹ In the event that the Agencies somehow consider the TN limit to be a water quality-based limit, in part or in whole, the Town reserves its right to challenge the basis of any such water quality-based TN limit. This reservation of rights includes, but is not limited to, the appropriate dilution factor for the Town, which may be different for TN than for other license parameters, the 0.5 mg/L TN target concentration, and the assertion that the Town is causing or contributing to actual impairment in the harbor or even whether there is actual water quality impairment related to nitrogen in the areas of the harbor affected by the Town's discharge.

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treatment, or some other determination? As a factual matter, what specific treatment technologies and facilities were considered to derive this limit of technology? Where are these reference facilities located, and how do they compare to the WPCF? What are the costs of the technologies that can achieve the effluent concentration of 3.0 mg/L TN?

Without further information relating to all of the questions posed above, we cannot adequately respond to the proposed TN limit. There is not enough information in the Fact Sheet to provide the permittee a reasonable opportunity to comment, and thus, as the remainder of these comments demonstrates, we are left to guess at the basis for the TN limit. *In re Dominion Energy Brayton Point LLC*, 12 E.A.D. 490, 2006 WL 3361084 at 54 (E.A.B. 2006) (remanding permit where EPA provided only a conclusory basis for a limitation, stating that "[w]ithout an articulation by the permit writer of his analysis, we cannot properly perform any review whatsoever of that analysis and, therefore, cannot conclude that it meets the requirement of rationality"). Accordingly, we request that EPA provide additional information that will help the Town of Fairhaven understand the derivation of the proposed TN effluent limitation upon which significant legal, technical, and financial consequences may rest. Once the additional information is provided, an opportunity for comment on the new information must be provided.

Response to Comment No. A.2

EPA disagrees with the assertion that it has “failed completely” to explain the basis of the new TN limit. Section IV.B.2.a of the Fact Sheet provides the basis for, and explanation of the derivation of, the effluent limit for TN. The section begins by describing and referencing numerous studies that confirm the listing of the receiving water as impaired for nutrients, organic enrichment/low DO and other criteria.

The discussion of the derivation of the effluent limit clearly states that:

Regulations at 40 CFR Part 122.44(d)(1) require that effluent limits must be included for any pollutant discharge at a level that has reasonable potential to cause, or contribute to an excursion above any State water quality standard.

This explicit reference provided a clear indication that EPA was establishing a *water quality-based* limit, not establishing a technology-based effluent limit. Contrary to the comment, in the Fact Sheet EPA never “abandons the discussion to conclude that a technology-based limit of 125 lb/day is appropriate”; the entire section focuses on the question of whether the facility causes, has the reasonable potential to cause, or contributes to a violation of water quality standards, and, if so, what TN limit is necessary to attain water quality standards. The penultimate paragraph in this section of the Fact Sheet makes clear that the proposed TN limit, which is equivalent to 3 mg/L at design flow, “is necessary to attain water quality standards.” FS at 10. While the Fact Sheet notes that the proposed TN limit at design flow corresponds to what is generally considered the current limit of technology for nitrogen treatment, FS at 10, this does not make it a *technology-based* effluent limitation.² The reference to the limit of technology was meant to provide factual information indicating that “state of the art” technology currently in use in many POTWs in Massachusetts and elsewhere could achieve the proposed limit.

²The commenter’s reliance on 40 CFR § 124.56(b)(1)(iv) is misplaced, because this is not “a permit involving case-by-case technology-based limits” for TN.

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The proposed effluent limit was water quality-based and the basis for finding that the water quality-based limit was sufficient to attain water quality standards was included in the Fact Sheet, in accordance with 40 CFR Sections 124.8 and 124.56(a). Thus, EPA does not agree with the Town's assertion that there is not enough information in the Fact Sheet to provide the permittee a reasonable opportunity to comment.

Regarding the commenter's request to reserve its right to comment later (see Footnote 1 above), EPA considers the public comment period that has ended as an adequate opportunity to comment on this matter. That being said, despite the request to reserve rights, the commenter does challenge the water quality-based total nitrogen limit in Comment A.8, and EPA has addressed this comment in responses to comments A.8, A.9, and A.10.

Comment No. A.3

B. The Agencies' Technology Determination is Unsupported and Inadequate.

Because there is no applicable effluent limitation guideline and TN is not a conventional pollutant, we assume, for purposes of these comments, that EPA's TN limit is based on the best available technology economically achievable ("BAT") requirements, 40 C.F.R. § 125.3(a)(2)(v), and that MassDEP's limit is based upon the highest and best practical treatment ("HBPT") standard, 314 C.M.R. 4.05(5)(c).

1. The Agencies Failed to Consider the Required Factors.

Both of these determinations, however, require extensive case-by-case consideration of whether a given limitation is practicable. Thus, for example, any BAT determination must include consideration of the following factors:

1. The age of equipment and facilities involved;
2. The process employed;
3. The engineering aspects of the application of various types of control techniques;
4. Process changes;
5. The cost of achieving such effluent reduction; and
6. Non-water quality environmental impact (including energy requirements).

40 C.F.R. § 125.3(d)(3). Likewise, HBPT is "the most appropriate means available on a regional basis" and must reflect the best performance technologies . . . that are economically achievable." 314 C.M.R. 4.02.

In this case, as demonstrated above, there is no evidence in the record that the Agencies have considered *any* of these factors. EPA and MassDEP must complete these evaluations before developing and imposing the technology-based permit limit.

Fairhaven has, however, on its own initiative, spent significant funds reviewing existing conditions, assessing potential methods to optimize nitrogen removal, and developing a number of preliminary scenarios to upgrade treatment processes. Because of the premature permit issuance, Fairhaven was

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not given the opportunity to review and discuss its findings with Agencies for use in the permitting process.

Response to Comment No. A.3

This comment is not relevant to the proposed TN limit because the assumption that the effluent limit was based on the best available technology economically achievable ("BAT") requirements, 40 C.F.R. § 125.3(a)(2)(v), is incorrect, as it is based on a misconception that the TN limit is technology-based. As discussed above in Response to Comment No. A.2, EPA established a water quality-based limit, not a technology-based limit.

Comment No. A.4

2. The WPCF Cannot Practicably Meet a TN Concentration Limit of 3 mg/L.

Regardless of how the "limit of technology" was derived here, a TN limitation based on 3 mg/L is not currently practicable or economically achievable by the WPCF. Years of monitoring data for TN indicate that the WPCF achieves on average TN effluent concentration of approximately 10. See Influent and Effluent Total Nitrogen Concentrations, attached as Exhibit 1. Further, as discussed below in detail, it would cost the Town over \$50 million to reduce its effluent concentrations of TN to 3 mg/L.

3. The Agencies Have Failed to Consider Affordability and the Potential for Substantial and Widespread Economic and Social Impact in Establishing the Proposed TN Permit Limits.

A preliminary estimate of the cost to upgrade the Fairhaven WPCF to meet an average monthly limit of 3 mg/L TN at design flow (the basis for the mass limit in the draft permit) is in excess of \$50 million. Additional wastewater system improvements required to maintain permit compliance are expected to add several million dollars to this estimated cost of required capital improvements.

This estimate is based on a number of sources of cost information, including a recent Brown and Caldwell study of possible upgrades to the Town's secondary treatment process to meet a total nitrogen limit of 3 mg/L Attached as Exhibit 2; a 2008 WEFTEC publication titled, "Analysis of Nutrient Removal Costs in the Chesapeake Bay Program and Implications for the Mississippi-Atchafalaya River Basin;" and a study of "Engineering Feasibility & Cost Analyses of Nitrogen Reduction from Selected POTWs in Massachusetts," ("MassDEP Study") completed by a team of CDM/Stearns & Wheeler for MassDEP in 2008. A graph of the cost information derived from the Mass DEP study Attached as Exhibit 3.

The "best fit" unit costs developed from the CDM/Stearns & Wheeler study were adjusted upward to account for the significantly higher costs required to construct nitrogen removal facilities to meet an effluent limit of 3 mg/L versus a limit of 5 mg/L, which was the target of the MassDEP study, as well as to account for the considerable site limitations of the Fairhaven facility. At the higher end of the range of unit costs developed using the MassDEP study, upgrade costs could be even higher than \$50 million. Due to site limitations, full reconstruction of the facility or construction of a new facility at an alternative site may be necessary to meet the proposed limit. Note a prior Fact Sheet developed by EPA in 2007, Biological Nutrient Removal Processes and Costs, EPA-823-R-07-002,

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cites lowest unit costs for some facilities; however, this Fact Sheet does not identify costs for facilities designed to achieve compliance with a TN limit of 3 mg/L with wastewater temperatures as cold as those regularly observed at the Fairhaven WPCF.

Using EPA's February 1997 financial capability guidance document (EPA 832-B-97-004), (verified as applicable by EPA staff, 7/26/10 meeting at MassDEP, Lakeville) a preliminary evaluation indicates that the cost of the required WPCF upgrade would *readily exceed 2.5%* of the adjusted median household income in Fairhaven and place a very high burden on the users of the Town's wastewater facilities. Other required upgrades to the Town's wastewater system would further burden users of the Town's wastewater facilities. The impact would be even greater to some users of the Town's facilities, a significant percentage whom are economically disadvantaged. The current unemployment rate in Fairhaven is at 11.3%, much higher than the national unemployment rate. Pursuant to a complete BAT or HBPT analysis, this high financial burden must be considered by EPA and MassDEP in developing the technology-based permit limitations.

4. The Agencies Have Failed to Consider the Effect Cold Temperatures Have on Total Nitrogen Removal.

To remove nitrogen from the wastewater, a two-step biological treatment process is employed: nitrification followed by denitrification. The nitrification reaction is highly dependent on temperature because the organisms have slow growth rates. The rate of nitrification at 20° C is approximately twice the rate at 10° C³, requiring over two times the mass of microorganisms to maintain the same level of nitrification at the colder temperature. To keep the mass nitrifiers in the system, high solids and hydraulic detention times are required at cold temperatures.

If nitrification is lost during the cold temperatures, it cannot be re-established until the temperatures increase and the growth rate increases, allowing the population of nitrifiers to re-establish in the treatment system. With a very stringent monthly permit limit equivalent to 3 mg/L, the loss of nitrification could easily result in permit violations for many months. Therefore, basin sizes need to be large enough to ensure consistent nitrification even in cold weather and high flows.

At the Fairhaven WPCF, temperatures in the winter and spring, during snowmelt and runoff, often fall below 10° C. See Wastewater Temperature Graph, Exhibit 4. Therefore, the basin sizes needed for nitrification at Fairhaven to provide consistent year- round nitrification would have to be significantly larger than those needed at facilities with warmer temperatures (such as in the Chesapeake Bay area and Florida) with similar permit limits.

5. The Agencies Failed to Consider Other Important Treatment Plant Factors.

In addition to low temperatures, the important factors that negatively affect a wastewater treatment plant's ability to meet low total nitrogen limits are: peak influent nitrogen loads, high wet weather

³Water Environment Federation and the American Society of Civil Engineers/Environmental and Water Resources Institute. (2008) Biological Nutrient Removal Operation in Wastewater Treatment Plants, Manual of Practice No. 30. McGraw Hill, New York.

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flows, low alkalinity, and return streams.⁴ These factors are present at the Fairhaven WPCF and will further complicate TN removal and greatly increase the cost of treatment. The Fairhaven WPCF has recorded significant I/I rates in its system during the late winter and early springtime, which results in sustained periods of high flow rates and very cold wastewater temperatures. Providing adequate volume to equalize and treat nitrogen during periods of high I/I will also significantly increase the cost of nitrogen removal at Fairhaven.⁵ Additionally, Fairhaven is completing an \$8 million upgrade to provide combined heat and power ("CHP") from captured digester gas. The return stream from this process will be high in ammonia, which will also require additional treatment.

The Fairhaven WPCF has significant space constraints that limit future expansion of treatment processes to accommodate nitrogen removal. As noted above, in 2009 the Town undertook a study of conceptual upgrades needed to the secondary treatment process to meet various total nitrogen restrictions, included at Exhibit 2. The study included process modeling of three upgrade alternatives, including a conventional 4- Stage Bardenpho activated process with filters; a Modified Ludzack-Ettinger ("MLE") process with denitrification filters; and an integrated fixed film activated sludge ("IFAS") process in an MLE configuration with a denitrification filter.

In all of these scenarios, significant additional tanks and equipment are required to meet the proposed monthly limit including additional primary and secondary clarifier capacity, filters, and modifications and/or additions to the aeration tanks. Based on these results, a conceptual opinion of cost for the upgrade is \$50 million, and could easily be more due to I/I work, future sidestreams of concentrated ammonia from the anaerobic digester, modifications to the solids handling systems, land constraints, and limited yard piping space, and other factors.

Other technologies that minimize footprint and have other benefits have been discussed and would be evaluated and considered. However, most if not all these are in their infancy and/or would be even more costly. The Town believes it would not be a prudent course of action and use of ratepayer funds to select one of these newer technologies unless there has been full scale implementation for a number of years under similar conditions as the Fairhaven WPCF. These technologies would also need significant evaluation, including pilot testing, to evaluate their performance, reliability and costs.

Significantly, EPA and MassDEP have chosen to impose in a number of other NPDES permits a limit higher than the "limit of technology" assigned to the WPCF, where there has been far less uncertainty in the data used to support these permit limits than the data used to support the proposed Fairhaven limit. A notable, recent example of this is the permit issued to the Upper Blackstone Water Pollution Abatement District, which contains a TN limit of 5 mg/l, a limit that is almost twice that proposed for the Town of Fairhaven. This permit was appealed by a number of parties, some of whom sought a lower limit and others who sought a higher limit.

In a ruling dated May 28, 2010, the Environmental Appeals Board upheld the proposed limit citing uncertainties in supporting data as being a reasonable basis for EPA imposing a limit greater than what was cited as the limit of technology. As documented below, the supporting data for the proposed Fairhaven TN limit has numerous flaws, omissions and errors and is therefore fraught with

⁴ See generally, Nutrient Control Design Manual, EPA/600/R-10/100, August 2010.

⁵ The Town has and continues to undertake significant I/I work well beyond any current permit requirements.

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uncertainty. Another example of EPA's imposition of TN limits less restrictive than the cited limit of technology is the permit recently issued to the Town of Wareham. In a nearly identical situation; where a study of the receiving water body had been drafted but not yet accepted by the MassDEP as the basis for establishment of a TMDL, EPA specifically chose to retain the existing permit limit instead of imposing a more restrictive limit, citing the lack of MassDEP approval of the study and adoption of a TMDL as the basis for not changing the permit limit.

Response to Comment No. A.4

The Clean Water Act requires that water quality-based limits be established at levels necessary to attain water quality criteria and that cost and feasibility are not to be factored into that analysis. *See Upper Blackstone Water Pollution Abatement Dist. v. EPA*, 690 F.3d 9, 33 (1st Cir. 2012); *In re City of Taunton*, NPDES Appeal No. 15-08, slip op. at 88 (EAB May 3, 2016); *In re City of Moscow*, 10 E.A.D. 135, 168 (EAB 2001); *In re City of Fayetteville, Ark.*, 2 E.A.D. 594, 600-601 (CJO 1988) (Section 301(b)(1)(C) “requires unequivocal compliance with applicable water quality standards, and does not make any exceptions for cost or technological feasibility.”).⁶ Cost is a consideration relative to implementation of the permit limits and can be a factor in development of compliance schedules where a determination is made, as is the case here, that immediate attainment of water quality-based limits is not possible. In other words, while cost is not taken into account as a consideration when *establishing* water quality-based effluent limitations, it can be a factor when *implementing* limits (i.e., through reasonable schedules of compliance in administrative enforcement orders).

Even so, EPA disagrees that a TN limitation equivalent to 3 mg/L at design flow is not practicable or economically achievable. In the time since the permit was proposed, the Town has commissioned studies and pilot projects that demonstrate that a TN limitation of 3 mg/L could be achieved through an upgrade to the WPCF.

A “Phase 2 Wastewater Management Plan” prepared for the Town by Fay, Spofford and Thorndike, evaluated options to optimize the existing facility to achieve additional nitrogen reduction, including the following:

- Pre-anoxic Zone (Modified Ludzack-Ettinger aka MLE);
- Secondary Anoxic Zone (Bardenpho);
- Carbon Addition; and
- Mechanical Mixing.

This analysis concluded that conversion of the facility to a 4-stage Bardenpho process with the addition of methanol as a carbon source could achieve TN levels between 4 and 5 mg/l in warm months (May – December) and below 6 mg/l in cold months (January – April).

The report then considered the application of the following add-on treatment systems to the 4-stage Bardenpho process:

⁶ The claim in the comment that “financial burden must be considered by EPA and MassDEP in developing the technology-based permit limitations” for TN is irrelevant, because the TN limit is not a technology-based limit. *See Responses to Comments A.2 and A.3*

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- Membrane Bio-Reactor (MBR);
- Denitrification Filter; and
- BioMag™.

This analysis concluded that any of these three treatment approaches in addition to the 4-stage Bardenpho process, with differing amounts of methanol addition, could achieve the 3 mg/l TN limit under warm and cold conditions.

The Phase 2 report estimated costs for four different options as presented in Table 1 below. The report recommended that since the cost of the Bardenpho plus Denitrification Filters and Bardenpho plus BioMag™ were very similar, further study of these alternatives should be conducted prior to making a decision about a final design to achieve the 3 mg/l TN limit.

Table 1. Nitrogen Reduction Cost Summary

Option	Construction Cost (million \$)	Annual O&M Cost (m \$)	Total Present Worth Cost (m \$)
4 stage Bardenpho	2.828	0.697	12.298
Bardenpho + MBR	11.341	1.123	26.603
Bardenpho + Denite	10.570	0.829	21.833
Bardenpho + BioMag	9.786	0.826	21.005

In 2015, the Town applied for and received a grant from the Massachusetts Office of Coastal Zone Management, Buzzards Bay National Estuary Program to conduct a full-scale pilot study at the facility. The Town’s consultant, Stantec, led a full scale “modified” 4-stage Bardenpho process with BioMag™, with the entire flow for the plant handled in one aeration train. Budget and time constraints precluded modifying one of the smaller existing secondary clarifiers to mimic a true 4-stage Bardenpho process. The study goal was to demonstrate the ability to achieve 5 mg/l TN in the final effluent, understanding that full stage operation would have a second anoxic and reaeration process to polish from <5 mg/l to 3 mg/l.

In 2016, Stantec prepared the “Nitrogen Reduction Pilot Study” report for the Town. The report concludes:

The results of the pilot study demonstrated that operation of the modified 4-stage Bardenpho with BioMag™ system would result in significantly lower effluent TN concentrations than the WPCF was discharging prior to the study. However, the pilot study did not consistently produce the required effluent concentration of 5 mg/l; the average TN concentration in the final effluent after supplemental carbon addition at 100 gallons per day (gpd) (the desired supplemental carbon dosage), was 6.3 mg/l. The shortfall in meeting this limit could be due to several factors, including the internal recycle and RAS pumping rates being lower than desired for optimum TN removal, the need to consistently maintain a higher magnetite to biosolids ratio, and/or increasing the supplemental carbon addition. We believe adjusting one or more of these factors would have led to achieving 5 mg/l TN in the final effluent, and with modifications to the smaller existing clarifier to provide further polishing, a final effluent TN value of 3 mg/l would be

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attained, satisfying the draft NPDES permit requirement for this parameter. This treatment technology is thus an effective means for significantly reducing nitrogen discharged to the plant's receiving water, the Acushnet River, and could be applied to other area WPCFs, depending on existing tankage, process layout and operation, and effluent TN requirements.

EPA has no reason to question these conclusions. Thus, there is no longer any question of whether achieving the TN limit is practicable.

The Phase 2 and Pilot Study reports also help to mitigate the Town's concerns about affordability and the potential for "substantial and widespread economic and social impact" associated with the proposed TN limit. The Pilot study report indicates that the construction cost for the Bardenpho plus BioMag™ system would be about \$9.8 million, a far cry from the "over \$50 million" estimate in the Town's original comments. The Pilot Study report states that additional operational costs are expected to exceed \$200,000 per year. Using the same financial capability guidance document referenced in the Town's comment and the revised cost estimate, EPA estimates that the additional cost of the required upgrade would yield sewer rates that would be less than 1% of the median household income in Fairhaven. That is below the threshold EPA uses as a guideline in determining whether there is substantial and widespread economic and social impact.

EPA acknowledges that cold weather affects the ability of the Bardenpho process to reduce nitrogen. Yet, as the Phase 2 study demonstrates, depending on the dosage of methanol, it is/may be possible to meet 3 mg/l TN in the colder months. However, EPA concurs with the commenter that the available information on effluent variability indicates that 3.0 mg/l may not be consistently achievable on a monthly basis in colder months using currently available nitrogen removal technologies and may only be achievable over a longer seasonal period. As described in greater detail in Response to Comment No. A.15, however, EPA has revised the final permit such that TN limit is a seasonal (six month) rolling average (May 1 – Oct. 31) and that, in the colder months (Nov. 1 – Apr. 30), the TN limit is "report only," with the additional requirement that the facility operate the treatment facility to reduce the discharge of total nitrogen to the maximum extent possible.

The "other important treatment plant factors" cited by the Town have since been considered in the Phase 2 Wastewater Management Plan. The Pilot Study then put the modeled findings of the Phase 2 Plan to a real world test at the WPCF. As described above, the TN limit is practicable. As to concerns about the data used in establishing the TN limit, please see Response No. A.10 below.

Comment No. A.5

6. EPA's Proposed Permit Fails to Recognize Overall Environmental Impacts.

In response to stringent permit conditions, a number of recent NPDES permittees have appropriately questioned whether or not the net environmental benefit of stringent permit conditions outweigh the overall environmental impacts that result from these permit conditions. To date, most of these arguments have been discounted by EPA as not being relevant to the objectives of the Clean Water Act. However, as evidenced through its Notice of Data Availability issued in April 2009, EPA has

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begun to acknowledge that the release of carbon to the atmosphere increases CO₂ deposition and acidification of waterbodies, and a Clean Water Act mandate to restrict carbon dioxide emissions to protect the nation's waters from acidification is a likely future result. To reduce the likelihood that the Town would be required to make additional improvements to its treatment facility in the future to offset the increase in its carbon footprint, an evaluation of the net environmental benefit of the more stringent permit conditions should be completed before more stringent permit conditions are adopted.

Both higher electrical use and carbon addition add to carbon emissions and green- house gases. Sustainability and wastewater experts are now actually calculating the carbon that can be offset by reducing nitrogen reduction targets. See, for example:

http://www.epa.gov/owow/tmdl/oceanfrMarch_2010/pdf/qa_ocean_acid_frn.pdf

<http://www.theatlantic.com/technology/archive/2010/04/can-the-clean-water-act-cut-carbon-emissions/38502/>

<http://climateprogress.org/2009/04/17/clean-water-act-obama-epa-ocean-acidification-global-warming-geoengineering/>

Response to Comment No. A.5

While the overall environmental impacts of the WPCF are a concern, the Town correctly notes that these considerations are not part of the statutory and regulatory requirements for setting water quality-based effluent limitations. EPA's decision to require optimization for nitrogen control without the addition of carbon in the colder months (Nov – Apr) has the additional benefit of lowering the overall environmental impact of the facility. Fairhaven is also to be commended for its pursuit of state grant funding to assist in adding anaerobic digesters at the facility. Another opportunity for gains in energy efficiency at the WPCF is through continued efforts to reduce inflow and infiltration (I/I) into the facility. Nearly half of the influent flow of the annual average daily flow to the facility is attributable to I/I. Further investments to reduce I/I should help to reduce treatment costs and their associated environmental footprint. EPA does not foresee that the Town would be required to make additional improvements to its treatment facility in the future to offset the increase in its carbon footprint associated with the requirements of this permit.

Comment No. A.6

C. The Total Nitrogen Limit May Not Be Technically Achievable.

The nitrogen limit is based on a concentration of 3 mg/L, the so-called "limit of technology." Not all wastewater treatment facilities can meet this limit due to the presence of effluent dissolved organic nitrogen ("EDON") that is not removed by the nutrient removal treatment processes. According to the February 27, 2009 report titled "Establishing a Research Agenda for Assessing the Bioavailability of Wastewater Treatment Plant-Derived Effluent Organic Nitrogen in Treatment Systems and Receiving Water by the Scientific and Technical Advisory Committee ("STAC") and Water Environment Research Foundation ("WERF")" (attached as Exhibit 5). EDON concentrations from

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over 30 wastewater treatment facilities ranged from 0.10 mg/L to 2.80 mg/L, leading to the following conclusion:

There is a wide range of observed EDON concentrations observed from BNR processes, and it appears that in some cases the EDON can be at a high enough concentration to make it impossible to meet an effluent TN concentration goal of 3.0 mg/L.

The report cited several areas of needed and on-going research related to EDON treatment and bioavailability including:

1. The fraction of EDON that is recalcitrant ("rEDON") and not bioavailable in surface water receiving streams;
2. The fate of dissolved organic nitrogen ("DON") in biological wastewater treatment and the relative effectiveness of different biological treatment processes on degradation of DON; and
3. The impact of DON in recycle streams from aerobic and anaerobic digestion and dewatering.

The Town continually tests for nitrogen, but EDON concentrations at the Fairhaven WWTF have not been characterized.

Response to Comment No. A.6

As discussed above in Response to Comment No. A.4, feasibility is not a factor in determining a permit limit that must ensure water quality standards are met. *In re Taunton*, slip op. at 88. In addition, studies conducted for the Town since the time of writing of this comment have demonstrated that a TN limit of 3.0 mg/l is technologically achievable at Fairhaven WPCF. Moreover, the TN limit in the Final Permit is a mass-based limit that is equivalent to 3 mg/L at design flow of 5 MGD. The Fairhaven WPCF, however, typically operates well below 5 MGD, with recent 12-month rolling averages of 2.2 MGD to 2.6 MGD. Thus, the mass-based limit at current actual flows could be equivalent to a concentrations of 5 to 6 mg/L.

Comment No. A.7

D. The Agencies Should Allow A Variance To The Limit of Technology-Based TN Permit Limitation.

Finally, if EPA and MassDEP continue to insist on imposing a technology-based limit of 125 lbs/day, despite the issues raised above, the Town hereby requests a variance to allow for a more reasonable monthly average limitation in the range of 334-417 lbs/day. Pursuant to federal law, EPA may grant such a variance from BAT limits if the applicant can show that the proposed alternative limit will (1) represent the maximum use of technology within the economic capability of the owner or operator, and (2) result in reasonable further progress toward the elimination of the discharge of pollutants. 33 U.S.C. § 1311(c).

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Likewise, MassDEP has authority to grant a similar variance where dams, diversions, or other types of hydrologic modifications, such as, in this case, the hurricane barrier, preclude attainment of the use, human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; human caused conditions or sources of pollution (CSOs and PCBs) prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or where stringent controls will result in substantial and widespread economic and social impact as will be the case in Fairhaven. 314 C.M.R. 4.03(4)(c), (4)(d) & (4)(f). A variance is particularly appropriate in this case where boundary concentrations of TN approach 0.4 mg/L.

In sum, by failing to explain the derivation of the technology-based TN limit, or to consider adequately the technical and financial implications through a proper BAT or HBPT analysis, EPA and MassDEP have failed to justify the technology-based TN limit proposed in the draft permit. As a result, such a limit is legally and technically invalid. EPA and MassDEP are requested to defer any imposition of any TN limit at this time, or grant a variance to a level that can be more practicably achieved.

Response to Comment No. A.7

As noted in Response to Comment Nos. A.2 and A.3, EPA and MassDEP did not in the Draft Permit, and do not in the Final Permit, “insist on imposing a technology-based limit” for TN. As has already been explained, EPA established a water quality-based limit. Thus, the request for a “variance from BAT limits” is irrelevant to the TN limit. In any event, as discussed above, the Town has now demonstrated that the water quality-based limit is technically achievable. *See also* Response to Comment No. A.4 (discussing affordability).

Comment No. A.8

II. The Water Quality Model and the Draft MEP Report are Fatally Flawed.

Despite imposing a technology-based TN limitation, it is clear from the lengthy discussion on nutrients in the Fact Sheet that EPA and MassDEP place great weight on the draft water quality model prepared by the Massachusetts Estuaries Project (“MEP”). That draft model, entitled “Linked Watershed-Embayment Model to Determine Critical Nitrogen Loading Thresholds for the New Bedford Inner Harbor Embayment System, New Bedford, MA,” and referred to as the “MEP Report,” in the Fact Sheet, is deeply flawed, both procedurally and substantively. (For reasons outlined below, we will occasionally refer to the report referenced in the Fact Sheet as the “Draft July, 2009 MEP Report.”) As a result, EPA and MassDEP have also failed to provide an adequate basis to regulate the WPCF’s TN discharge as a water quality-based limit. In any event, a water- quality based limit cannot legally be based on a draft model.

A. The Agreed Upon MEP Report Process Was Not Followed and the Town's Involvement in Development of the Report was Limited.

Since at least 2003, the Town has been working collaboratively with the Massachusetts Estuaries Project, including UMass/SMASST, DEP and other involved agencies to develop a site-specific study for

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the Inner Harbor. The purpose of the study is to support development of a nutrient TMDL and ultimately a comprehensive, cost effective strategy for controlling nitrogen loads.

Seeking funding from the Town, Agency representatives explained several benefits of Town funding including deferral of regulatory action. Also noted was that limits, once developed, would traditionally be more stringent if no site-specific studies were available to reduce uncertainty. Other Towns in the MEP study area were provided similar descriptions of benefits, and this reasoning has been a basic underpinning of the MEP program itself. Based on these representations the Town appropriated \$114,000.

Even after the Town contributed this significant financial resource as well as other resources to the effort, the process for developing the Draft, July 2009 MEP Report was somewhat disturbing. The Town was supposed to have the opportunity to review, comment, and get its questions answered on the MEP Report prior to it being finalized and used as the basis for further regulation. In 2008, the BPW hired Applied Science Associates and Brown and Caldwell to review the 216-page report. Because so much was unexplained, the first letter to the MEP Report authors, in December 2008, was a simple request for information so substantive questions could be developed and submitted. Following up in the spring, the Town was surprised to learn that the authors of the MEP Report did not intend to answer the Town's questions, mainly due to lack of funding.

The authors then called back and said they were getting additional funding to run more scenarios, and that the Town would have input into the choice of scenarios. 'Imminent' funding was continually delayed. As of May 2008, even the Coalition for Buzzards Bay hadn't heard there had been movement on developing the next draft of the MEP Report. The Town finally received a draft of what's called the Final Report (but which is in fact a July draft report) and it is this draft report that serves as a basis for the proposed TN permit limit.

Good science must be subject to free and open peer review, especially when it may ultimately be the basis for permitting considerations. Governmental agencies cannot act in secret, and thus the entire model and the assumptions in the model should be made publicly available for review.⁷

Response to Comment No. A.8

EPA was not a direct party to the collaboration between the Town, the Massachusetts Estuaries Project, including UMass/SMASST and MassDEP and other involved agencies to develop the site-specific study for New Bedford Inner Harbor. While it appears that there were stops and starts in the study process, it is evident that the Town did have access to the December 2008 Final MEP Report on which to base its comments. For instance, according to the Massachusetts Estuaries Project, an MEP Technical Team conducted a Technical Workshop for the Town of Fairhaven and other municipalities (Acushnet and New Bedford) shortly after the release of the 2008 MEP Report and received comments from consultants to the Town of Fairhaven in February of 2009. MEP Response to Comments, at 2 (May 29, 2014). Moreover, Fairhaven submitted additional comments to MEP in February 2014 on a

⁷The failure to make the model available for review reinforces the point made above about the difficulty of commenting on permit conditions that are not explained. How can the Town of Fairhaven understand EPA and MassDEP's analysis if it cannot review the underlying assumptions behind it?

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later iteration of the MEP Report. *Id.* at 3. And, finally the 2015 MEP Report provides that it was revised based in part on technical comments received from Fairhaven. 2015 MEP Report at ES-1.

Comment No. A.9

B. The Agencies are Using the Draft MEP Report for the Wrong Purposes

EPA fails to acknowledge in the permit Fact Sheet that the draft MEP Report was not developed for the purpose of establishing a recommended nutrient limit for the Fairhaven WPCF, but rather as a planning tool “to test specific management scenarios and weigh the resulting water quality impact against the cost of that approach.” MEP Report at 5. The following is also stated in the Executive Summary:

It is important to note that load reductions can be produced by reduction of any or all sources or by increasing the natural attenuation of nitrogen within the freshwater systems to the embayment. The load reductions presented below represent only one of a suite of potential reduction approaches that need to be evaluated by the community.

MEP Report at 6.

The EPA cites the one and only scenario evaluated in the MEP Report relative to the WPCF, reduction of nitrogen discharges to a concentration of 3 mg/L, as if the MEP had concluded this reduction were the only scenario that could achieve the objectives of the study. However, as noted above, there are many other scenarios that could have been evaluated by the MEP, but were not. For example, the MEP did not include an evaluation of reduction of the WPCF's nitrogen concentrations to 8 mg/L or 10 mg/L instead or [sic] 3 mg/L. It is quite likely that the water quality goals of the MEP could be met more equitably with less reduction of nitrogen from the WPCF and greater reduction from other sources such as the New Bedford combined sewer overflows ("CSOs"), stormwater outfalls, or septic system discharges, particularly where water quality impacts in the lower basin are localized and related primarily to physical disturbance and flushing. MEP Report at pg. 7.

The arbitrary establishment of a mass limit based on 3 mg/L total nitrogen places an extremely high burden on Fairhaven to address the water quality goals of the MEP, without any consideration of other potential solutions.

Response to Comment No. A.9

EPA agrees that the 2008 MEP Report was not developed with the express purpose of establishing a recommended nutrient limit for the Fairhaven WPCF. As the permitting authority, however, it is EPA's responsibility to establish permit limits where it determines that a pollutant is, or may be discharged, at a level which will cause, have the reasonable potential to cause, or contribute to a violation of water quality standards. In so doing, EPA must evaluate all the relevant scientific and technical information available at the time of draft permit and final issuance in establishing effluent limitations. In this instance, the MEP Report is a key component of the available information. As noted in the Executive Summary of the report: “The present MEP effort is the necessary ‘next step’ in the restoration of the New Bedford Inner Harbor System by providing

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quantitative restoration targets for nitrogen for on-going efforts by the City of New Bedford, Town of Fairhaven and the Coalition for Buzzards Bay.” MEP Report at 3. Indeed, the “quantitative restoration target” developed in the report is the cornerstone for the derivation of the water quality-based limit established in the permit.

It is incorrect to imply that the MEP Report evaluated “one and only one” scenario. The 2008 MEP Report noted that,

Two model runs were made under the MEP to assess the impact of removing loads to the harbor system: (1) changes in water quality from continued Combined Sewer Outflows (CSOs) improvements and (2) from the modification of the Fairhaven wastewater treatment facility outfall. The focus of the model runs was whether either change to TN loads to the harbor system would achieve the requirements of the threshold. ...Based on the results from the Linked Watershed-Embayment Model, it is seen that neither of these scenarios alone will meet the threshold requirements.... Therefore, some additional load (e.g., septic load), would need to be removed to meet the threshold.

2008 MEP Report at 9-10.

The model runs referenced above assumed a “build out” scenario based on potential future development. The report also included consideration of a “no anthropogenic load” scenario. As described in Section IX.2 in the 2008 report, the MEP team developed four nitrogen source scenarios, one for existing conditions and three under “build-out conditions.” MEP Report at 173. The scenario presented in detail in the 2008 MEP Report includes the “build out”, with future CSO loads set to zero (i.e., no overflows), a 65.8% reduction of the WPCF load and a 77% reduction in septic load in order to achieve the threshold concentration. Moreover, as EPA stated in the Fact Sheet, high levels of removal from CSO and septic tank sources are also necessary, in addition to nitrogen reductions at Fairhaven WPCF. FS at 10. EPA also noted that the Fairhaven WPCF discharge accounts for “about 37 percent of the current [nitrogen] loading and 70 percent of the loading that will achieve the target concentration” of 3.0 mg/L. FS at 9. And, as discussed in more detail below, even with the revisions to the MEP reports from 2008 to 2015, the outcome remains the same – with the WPCF load reduced to the equivalent of 3 mg/L TN at design flow, and CSOs eliminated, there will still need to be reductions from other sources to achieve the target load to reach a target concentration of 0.5 mg/L. Response A.10. Considering the magnitude of the overall load reduction necessary, Fairhaven’s contribution to the current load, and the large reductions that will be required of other nitrogen sources in light of the limit in the Final Permit, it is not arbitrary, unreasonable, or inequitable to establish a limit that, even according to Fairhaven’s own studies, it could achieve through an upgrade to the WPCF at a significantly lower cost than the Town originally estimated. *See* Response A.4. The reality of the loads to the Inner Harbor system are such that there are a very limited number of possible scenarios.

Comment No. A.10

C. The Draft MEP Report is Based on Faulty Assumptions.

There are other significant substantive deficiencies in the MEP Report that render suspect its conclusions about water quality in the New Bedford Inner Harbor. For example, as indicated in

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correspondence included at Exhibit 6 from Dr. Joseph Costa, the Executive Director of the Buzzards Bay National Estuary Program, the loading analysis is flawed because, among other things, the report overestimates both the number of dwellings and the number of septic systems in Fairhaven and Acushnet. Dr. Costa states that this may have caused nitrogen loading to be inflated by 20% or more. The rest of his report is to similar effect, for example suggesting "profound issues" with whether a 0.5 ppm TN standard is appropriate, identifying "outright GIS analysis errors," and stating that the report should have addressed the potential impact of planned dredging projects and the seasonality of flows from wastewater and CSO sources.

Dr. Costa also identifies impervious surface, and thus non-point source nitrogen pollution, as being underestimated by a factor of 50% to 100%, and the Fairhaven portion of the watershed having only 33 septic systems versus 3,092 utilized in the Draft July, 2009 MEP Report.

In other correspondence, Dr. Costa finds that stormwater contributions of nitrogen from densely urbanized areas of New Bedford Harbor are underestimated by as much as 5%. As Dr. Costa stated "these errors and omissions are startling." These significant discrepancies must be corrected prior to finalizing the MEP Report and utilizing it for NPDES permit limit development.

To better understand the draft MEP Report, the Town has retained Thomas Gallagher of HydroQual, one of the leading water quality modeling experts in the nation. Mr. Gallagher offered the following comments on the draft MEP Report and models used:

1. The RMA hydrodynamic and total nitrogen models of Inner New Bedford Harbor were two-dimensional (vertically mixed). If there are vertical gradients in dissolved oxygen and salinity within the harbor (which is likely) a three-dimensional model is required.
2. The calibration of the total nitrogen model was achieved by empirically varying the exchange of total nitrogen between the sediment and water column. This weakens the reliability of the total nitrogen model especially when these water column sediment nitrogen exchange rates are estimated under future nitrogen reduction scenarios.
3. A target average total nitrogen concentration of 0.50 mg/L near Popes Island has been established to allow restoration of an impaired benthic habitat. It was assumed that elevated nitrogen levels stimulate algae which consume water column oxygen by respiration and degradation on the bottom sediments. No quantitative link was established between New Bedford Inner Harbor dissolved oxygen and nitrogen levels.
4. The target nitrogen concentration of 0.50 mg/L was based on reference to other nearby rivers, ponds, and bays that had healthy to moderately impaired benthic habitats. This extrapolation of the nitrogen-benthic habitat impairment from other waterbodies is inappropriate because the quantitative link between nitrogen and benthic habitat depends on many site specific factors including: flushing time, depth, water clarity, other sources of dissolved and particulate organic carbon, atmospheric reaeration and water column stratification. The only scientifically defensible approach to regulating nitrogen loads to Inner New Bedford harbor is

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to establish that low dissolved oxygen is the cause of benthic habitat impairment and then to apply a mechanistic model that specifically computes the bottom water dissolved oxygen as a function of BOD and ammonia oxidation, sediment oxygen demand (SOD), algal photosynthesis and respiration, and atmospheric reaeration.

5. The potential impact of a nitrogen load to Upper New Bedford Harbor nitrogen and dissolved oxygen levels depends on both location and nitrogen components of the load. For example, Fairhaven nitrogen load is close to the hurricane barrier and subject to significant tidal dilution and therefore may have less of an impact than a similar load from the Acushnet River or upper basin. In addition, as total nitrogen reduction occurs at the Fairhaven STP, the fraction of the less reactive and unavailable nitrogen for algal growth remaining increases. Therefore, the same mass of nitrogen from Fairhaven may have a lesser impact in stimulating algal growth than the same mass of nitrogen in a bioavailable form (nitrate) from the Acushnet River.

Letter from T. Gallagher/HydroQual, attached as Exhibit 7.

In addition to Mr. Gallagher's comments, it should also be noted that the model's allocation of nitrogen loads does not appear to accurately represent the relationship between where the load originates within the watershed, transport mechanisms, and the ultimate mixed water quality in the harbor. In addition, the estimates for tidal flushing and mixing and the resulting mixed water quality also do not appear to accurately represent the harbor's existing conditions.

Another issue discussed with Mr. Gallagher is the .39 mg/L boundary quantity measured as background, outside of the Harbor. This concentration, coming through the Hurricane Barrier, makes it almost impossible to reach a goal that is only .1 mg/l higher than background.

Unfortunately, Mr. Gallagher and other modeling experts are not yet able to fully peer review the calculation details, source code, algorithms and assumptions behind the model because the model has not been made available to outside parties. Therefore, the presented information cannot be verified. As noted above, the MEP Report process and specific agreements with the Town included the Town's ability to request several selected mitigation scenarios. The Town was never given that opportunity and no Town selected scenarios are included in any of the Draft MEP Report.⁸

The Woods Hole Group, Inc., attempted to perform an independent review of the SMAST MEP Report for Pleasant Bay in Orleans, "Peer Review (Independent Technical Review) of The Massachusetts Estuaries Project Report on the Pleasant Bay System, June 2009" "WHG Technical Review." Although severely hampered by limited access to data, and or no access to the models and analysis methods employed, they identify many problems with the report and its various components, and underlying science and assumptions. Virtually all comments are applicable to the Draft, July MEP Report for New Bedford Harbor, and the Town wishes to incorporate by

⁸ Nine Cape Cod communities are requesting that the MEP reports be validated by the National Academy of Science given the complexity of the process and the large economic impact of the findings and conclusions. Thus, Fairhaven is not alone in questioning the wisdom and need to move too quickly to solutions that may cost tens of millions of dollars, or more, per community before adequate validation of the science achieved. See attached article from Cape Cod Times, August 21, 2010, attached as Exhibit 8.

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reference the arguments in the WHG Technical Review in its entirety as supporting its argument that the Draft, July MEP Report cannot serve as the basis for the Fairhaven nitrogen permit limit.

In summary, the MEP Report was intended only as a means of developing a model and methodology for evaluating alternatives and resulting water quality enhancement. The MEP Report was not intended to present a recommended alternative for addressing water quality impacts. Of equal importance, the MEP Report was to form the basis for providing information necessary to complete TMDL and water quality standards, neither of which have been implemented. *See* MOU between MassDEP and the University of Massachusetts, Dartmouth, Attached as Exhibit 9. Thus, the model is fatally flawed.

Response to Comment No. A.10

EPA agrees with the Town and with Dr. Joseph Costa, the Executive Director of the Buzzards Bay National Estuary Program, that there were flaws in the loading analysis in the 2008 MEP Report, particularly with respect to overestimates of both the number of dwellings and the number of septic systems in Fairhaven and Acushnet, estimates of impervious surface, and thus non-point source nitrogen pollution, and estimates of stormwater contributions from densely urbanized areas of New Bedford Harbor. The MEP team acknowledged the input from Dr. Costa and conducted additional analyses to address Dr. Costa's concerns and incorporate more recent information in a draft Updated Final Report, dated June 2013 and the final Updated Final Report of June 2015. The Executive Summary addresses the revisions made to address concerns about the inputs to the analysis contained in the 2008 Report.

The present update incorporates information obtained subsequent to the completion of the original analysis (2008) and addresses clarifications requested by the Buzzards Bay Project. Minor editorial comments provided to the MEP Technical Team by the Coalition for Buzzards Bay were also integrated into this update report. The key underlying refinement in the present report involves an update to the land-use database used by the towns and provided to the MEP. The updating of the parcel database included reformatting GIS files and cross-checks as well as a re-evaluation of water use and sewershed linkages, updates related to developed versus undeveloped and developable parcels, in addition to new wetland survey information and the treatment of cranberry bogs, all of which has been conducted over the past several years by the Buzzards Bay Project, MassDEP and MEP/SMASST staff. The refinements to the land-use database have been used by the MEP to reconstruct the watershed nitrogen loading model, which then required a recalibration of the water quality model and associated assessments. In support of the revision of the loading models, additional data on nitrogen sources/strengths were integrated into the update of the MEP threshold analysis. As a result of the refinements to the land-use database, the MEP/SMASST Technical Team completed a new build-out nitrogen loading projection for the present report update which will greatly enhance on-going nutrient management planning associated with these estuaries. In addition to the updates made to the watershed nitrogen loading module, water quality was re-evaluated to include monitoring that has taken place throughout the harbor since completion of the original MEP threshold analysis. Benthic regeneration (nutrient recycling from sediments) was re-evaluated as well in the summer of 2012 in order to capture potential changes in sediment nutrient flux rates which may have resulted from nutrient load reductions to the harbor between 2002 and 2012. In the fall of 2012,

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additional sediment cores were collected for the purpose of reassessing the benthic infaunal populations and how they may have changed over the ten years since the original infaunal assessment was completed. 2015 MEP Report at 1-2.

EPA also notes that Dr. Costa provided a review of the 2013 MEP Report in a December 2013 letter to MassDEP. Dr. Costa stated, “In summary, this 2013 updated report corrects or addresses all the significant issues raised in our September 2009 comment letter on the December 2008 report.”

EPA is satisfied that the revisions included in the 2015 Updated MEP Report adequately address the concerns raised by Dr. Costa and others regarding the inputs to the models used in the analysis.

Like the 2008 MEP Report, the 2015 MEP Report identifies the restoration target as infaunal habitat in the middle of the three main basins of the Inner Harbor. The middle basin is impaired predominantly as a consequence of organic matter nitrogen enrichment. Nitrogen management focused on restoration of infaunal habitat quality within the middle basin will result in significant improvements in the upper and lower basins. The target TN concentration for restoration of infaunal habitat is ≤ 0.50 mg/L (tidally averaged) at the head of the middle basin, just below the entrance to the channel to the upper basin—the same target concentration identified in the 2008 MEP Report.

The data in the table below indicate that the Fairhaven WPCF constitutes nearly 88 percent of the TN load to the Inner Harbor (sub-watersheds 5 and 6; between Route 6 and the Hurricane Barrier) under the “existing” and “build-out” scenarios. Modeling indicates that the total TN load in the Inner Harbor will need to be reduced to just under 63 kg/day, a 64% reduction from the “build-out” scenario, to achieve the target TN concentration at the head of the middle basin. The “threshold” scenario in the table below represents a case where the CSO load has been removed, the other non-WPCF sources are unchanged and the WPCF load is reduced to achieve the TN threshold load. This would be equivalent to a TN concentration of 2.3 mg/L at the WPCF design flow of 5 MGD.

Inner Harbor Watersheds 5 + 6	Existing kg/day	Build-out kg/day	Threshold kg/day
Septic wastewater	5.97	6.00	6.00
Fairhaven WPCF	145.32	151.96	44.99
NB CSOs	3.05	4.07	0
Fertilizers	6.86	7.11	7.11
Impervious Surfaces	3.34	3.64	3.64
Freshwater wetlands	0.25	0.25	0.25
“Natural” Surfaces	0.71	0.68	0.68
TOTAL	165.51	173.70	62.67
Non-WPCF	20.19	21.75	17.68
Fairhaven WPCF	145.32	151.96	44.99

There clearly are other distributions of load that could achieve the TN threshold load. EPA assumes that the loads from freshwater wetlands and natural surfaces are unlikely to be reduced by regulatory intervention, whereas the septic, fertilizer and impervious surface loads can arguably be reduced, though not easily. If the septic, fertilizer and impervious surface ‘build-out’ loads were reduced by 64% (the same as the overall reduction required), then the WPCF load would be 55.71 kg/day. With the WPCF

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load set at 57 kg/day (the equivalent of 3 mg/L TN at design flow) as proposed in the draft permit, then there will need to be a 72% reduction in the combined septic, fertilizer and impervious surface loads. Even if the septic, fertilizer and impervious surface loads were reduced to zero, the maximum WPCF load would be 61.74 kg/day, the equivalent of 3.26 mg/L TN at design flow.

Thus, even with the revisions to the MEP reports from 2008 to 2015, the outcome remains the same – the target total nitrogen concentration for restoration of infaunal habitat is 0.5 mg/L and, with the WPCF load reduced to the equivalent of 3 mg/L TN at design flow and CSOs eliminated, there will still need to be reductions from other sources to achieve the target load. In short, the 2015 MEP Report, which was revised based, in part, on comments received from the Town’s technical consultants, confirms the bases for EPA’s decision to establish the TN limit proposed in the draft permit. EPA has retained the proposed WPCF TN load at 57 kg/day or 125 lb/day. The 2015 MEP Report is included in the administrative record for this permit proceeding.

As to the critique of the models offered by Thomas Gallagher on behalf of the Town, EPA views the analysis provided in the MEP report to be robust enough to provide a basis for permitting. While a three-dimension model would surely provide additional complexity to the hydrodynamic and total nitrogen models, there is nothing in EPA’s regulatory or technical guidance that say a three-dimensional model “is required.” There is almost no limit to how complex a model could be. The relevant question is whether the MEP model – a two dimensional model – provides an adequate understanding of the likely dynamics in the Inner Harbor. EPA has relied on many two-dimensional models to support derivation of water quality-based effluent limits. In essence, the Town’s criticisms seek to characterize any less complex analysis as insufficient, so that permit limits would be deferred until a more complex model can be developed. This is a recipe for inaction that is inconsistent with CWA requirements. *In re Upper Blackstone Water Pollution Abatement Dist.*, 14 E.A.D. 577, 606 (EAB 2010); *see also Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 525 (D.C. Cir. 1983); *Natural Resources Defense Council, Inc. v. Costle*, 568 F.2d 1369, 1380 (D.C. Cir. 1977). EPA’s permitting regulations authorize and require EPA to interpret narrative water quality standards in terms of calculated numeric criteria and to establish water-quality based limits, “even in the face of some scientific uncertainty.” *Upper Blackstone Water Pollution Abatement Dist. V. EPA*, 690 F.3d 9, 23 (1st Cir. 2012) *cert. denied*, 133 S. Ct. 2382 (2013). Moreover, the “reasonable potential” analysis “requires some degree of certainty greater than a mere possibility, but it leaves to the permit writer’s scientific and technical judgment how much certainty is necessary.” *In re Upper Blackstone*, 14 E.A.D. at 599 n.29; *accord In re City of Taunton*, NPDES Appeal No. 15-08, slip op. at 29 (EAB May 3, 2016). The commenter’s criticisms of the MEP report do not establish “uncertainty so profound that it precludes EPA from making a reasoned judgment,” *Massachusetts v. EPA*, 549 U.S. 497, 534 (2007), and the commenter overstates its case by asserting that the report is “fatally flawed.” The report, which is supported by numerous data sets and underwent multiple revisions, based in part on technical comments from the Town and others, provides ample evidence that excess nitrogen contributes to low dissolved oxygen that impairs the infaunal habitat in New Bedford Harbor and that the Fairhaven WPCF contributes to that impairment. In addition, and as discussed in more detail below, the MEP report follows a modeling approach that has been favorably peer-reviewed. In short, it represents the best available information and constitutes a more than sufficient foundation for the TN limit.

The Town has also requested to incorporate by reference the arguments in the Woods Hole Group’s Technical Review of the MEP report on the Pleasant Bay System. EPA does not find the arguments in

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the WHG Technical Review to be particularly applicable to New Bedford Inner Harbor. While the underlying MEP linked model is common to both, the two settings are significantly different. New Bedford Inner Harbor is surrounded by an urban setting featuring significant impervious area and the load is dominated by point source discharges. The nitrogen load to Pleasant Bay in Orleans (Cape Cod) is dominated by septic system loads to groundwater. Point source discharges and impervious surfaces make up only a very small part of the load. The Pleasant Bay system is also more complex – a combination of ponds, bay areas and very dynamic interchange with the Atlantic Ocean. A significant concern in the WHGG Technical Review regards the benthic flux of nitrogen, which is specific to Pleasant Bay, and less applicable to New Bedford Inner Harbor. Another concern raised in the WHG Technical Review is about uncertainty and potential bias in the nitrogen loading inputs to the model. In New Bedford Inner Harbor, the nitrogen inputs are more clearly identified and more readily quantified. In addition, a more comprehensive review of the MEP approach was conducted subsequent to the WHG Technical Review, as described below.

EPA disagrees with the Town and its consultants that the MEP approach is “fatally flawed.” The MEP was designed to provide water quality, nutrient loading and hydrodynamic information for 89 estuaries on Cape Cod, Buzzards Bay and the Islands in Southeastern Massachusetts. Concerns about the validity of the MEP approach have been raised in a number of different contexts, but perhaps most importantly in connection with the development of TMDLs on Cape Cod and the role of the models in developing a comprehensive wastewater strategy for the Cape. In 2011, the Cape Cod Water Protection Collaborative, an agency of Barnstable County, sponsored an independent scientific peer review of the MEP methodology for developing appropriate TMDLs for estuaries and embayments of Cape Cod, and the use of that methodology as a basis for wastewater and nutrient management planning and implementation on Cape Cod. (Massachusetts Estuary Project (MEP) Linked Watershed Embayment Model, Scientific Peer Review Panel Report, 2011, http://www.capecodcommission.org/resources/waterresources/MEP_Panel_Report_12302011.pdf)

The peer review process was conducted independently and operated externally from the Collaborative. The peer review panel (the “Panel”) consisted of six experts covering a range of specialties, including estuarine water quality, groundwater and estuarine hydrodynamic modeling, soil science and nitrogen transport and estuarine biology. Panel members reviewed MEP documents, reports from previous peer reviews, reviews and comments by the Town of Orleans Wastewater Management Validation and Design Committee, comments from other stakeholders, and numerous papers and reports from government agencies and the published scientific literature.

The panel was presented with two charge questions:

1. Is the MEP modeling approach scientifically defensible and functionally adequate to be relied upon in the development and implementation of appropriate nitrogen TMDLs for the estuaries and embayments of Cape Cod in support of the state’s Comprehensive Wastewater Management Planning and EPA Clean Water Act requirements and in developing overall wastewater and nutrient management plans for Cape Cod to meet the TMDLs?
2. To what level of accuracy will the MEP linked model predict the effect of alternative nitrogen load planning scenarios and/or the prospective water quality in the affected estuaries and

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embayments and what is the degree of uncertainty in those predictions relative to alternative planning methodologies available in the industry?

The summary of the Panel's findings is:

The Panel finds that the MEP modeling approach is scientifically credible. It is consistent with current understanding of existing conditions for Cape Cod estuaries, based on available data. The components in the approach are well-known and documented. Computation of watershed nitrogen loads is strongly data-driven and quantitatively linked to estuarine nitrogen concentrations. A fundamental principle in the development and application of environmental models to inform management decisions is that there should be compatibility among the study questions and objectives, available data and resources, and level of model complexity. The Panel finds that the level of complexity in the components and linkages of the MEP modeling approach is simple, parsimonious and well balanced within this context.

The Panel also finds that the MEP modeling approach is functionally adequate. This approach is specifically designed for groundwater dominated systems and explicitly considers nitrogen loads from septic systems, the dominant controllable watershed source of nitrogen for Cape Cod estuaries. The MEP modeling approach is appropriate and useful for evaluating alternative scenarios and informing nutrient management plans, and is consistent with existing nationwide TMDL practices.

The Panel recommends that the MEP modeling approach be considered within the larger context of the overall decision support system and not be limited to just the linked watershed-embayment model. The Panel further recommends that an adaptive management framework be used for this decision support system, which integrates the watershed-embayment model. This integration should include continued monitoring, data analysis and modeling to improve scientific understanding and reduce uncertainties in the physical, chemical and biological processes in the watersheds and estuaries.

The Panel recommends that the towns proceed within this adaptive management framework to develop and implement wastewater and nutrient management plans, and make improvements along the way to reduce management uncertainties. This will ensure that TMDL implementation is not compromised due to a lack of information, and that progress will be made in the most cost-effective manner while gathering new information to improve upon the scientific analysis, and the initial wastewater and nutrient management plans.

(Cape Cod Commission, at pp 4-5.)

While the geographic focus of the peer review was the estuaries on Cape Cod, the fundamental MEP approach was developed for application to estuaries across Southeastern Massachusetts, including Buzzards Bay and New Bedford Harbor. In EPA's view, the charge questions and the Panel's conclusions are applicable to the overall MEP approach regardless of the setting. EPA is thus satisfied that the MEP modeling approach as applied to New Bedford Inner Harbor is scientifically credible.

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Comment No. A.11

III. The Development of A Proposed TN Limit Is Premature For Legal and Technical Reasons.

Given the uncertainties discussed above and lack of adequate consideration of alternatives for achieving technology requirements and water quality goals cited in the MEP Report, the EPA and MassDEP should defer adoption of any numeric TN limit for the WPCF until additional alternatives and other factors are considered.

A. EPA and MassDEP Did Not Conduct the Permit Re-issuance Process With Input from the Town.

For a number of years, it has been the standard practice of EPA Region 1 to contact permit holders to discuss the permit reissuance process, review likely significant permit changes, and provide an opportunity for resolution or errors or inaccuracies in the Fact Sheet and draft permit. Permittees are typically provided with a copy of a “predraft” version of the Fact Sheet and permit for review. This process was not followed by EPA for the Town of Fairhaven. As outlined in these comments, the Town has spent significant resources working with water quality agencies to develop the basis for a new permit. The Town was not contacted by and received no information regarding the permit renewal from EPA until the draft permit was issued for public comment. As evident from internal correspondence between MassDEP and MEP staff, as late as June 2010, there were numerous errors and inaccuracies in data used as part of the MEP study of New Bedford Harbor, yet EPA and MassDEP went ahead and issued the draft permit for public comment anyway, citing the results of the MEP Report as a partial basis for the stringent nitrogen limit. Given the problems with the MEP study, the draft permit should be withdrawn and reissued once the MEP study is complete, accepted by MassDEP as the basis for a TMDL and a TMDL has been completed for New Bedford Harbor.

Response to Comment No. A.11

While EPA has in the past provided a permittee with a “predraft” version of a draft permit and fact sheet in advance of public notice, this is not required by relevant EPA regulations and is no longer a common practice. EPA issued the draft permit and Fact Sheet consistent with the public participation requirements at 40 CFR § 124.10, which provide for a comment period of at least 30 days. Upon a request from the Town, the comment period for the Draft Permit was extended 60 additional days, providing a total of 90 days to review the draft permit and provide comments.

As noted in the Town’s comments, it was working with MassDEP, the MEP and others to provide input to the MEP study, and in 2009, the Town was evaluating the potential for a TN limit that could vary from “a concentration of 8 mg/L [to] as low as 3 mg/L and could be issued in the near future...” Exhibit 2, Nitrogen Removal Evaluation – Preliminary Modeling, at 1. The Town’s comments also indicate that it was in possession of a draft MEP Report in July 2009, a year before the draft permit was issued. Thus, the Town was not operating in a vacuum and could have contacted EPA regarding the status of the permit reissuance. EPA is not aware of an inquiry from the Town during this period.

See Response to Comment A.12 regarding the suggestion that the permit be delayed until a TMDL has been completed to New Bedford Harbor. See Response to Comment A.10 regarding the claim of “numerous errors and inaccuracies in data used as part of the MEP study of New Bedford Harbor.”

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Comment No. A.12

B. The Draft Permit Unfairly Places Primary Responsibility on The Town of Fairhaven To Redress A Perceived Problem That Should Instead Be Addressed With a TMDL.

A significant problem with the draft permit is that EPA and MassDEP are attempting to permit the WPCF in a vacuum, rather than conducting a legally-mandated TMDL and then allocating an appropriate load to the WPCF. The Town strongly believes that the better course is for MassDEP to complete a TMDL, which can then be the basis for an equitable permitting scheme for the entire Inner Harbor. At the same time, and as will be discussed in more detail below, to prevent unfairly triggering antibacksliding considerations, we request that the WPCF be subject to a monitor-only requirement for TN, along with requirements to take specified steps, such as authorizing implementation of the nitrogen optimization plan, that will ensure reasonable progress on nutrient issues in the Inner Harbor.

The New Bedford Inner Harbor has been listed as impaired for nutrients on Massachusetts' 303(d) list since 1998. Despite this long-standing listing, no TMDL has been prepared by either MassDEP or EPA. This violates the clear requirement of the Clean Water Act. 33 U.S.C. § 1313(d)(1)(C) (obligating states to establish TMDLs for impaired waters); *Hayes v. Whitman*, 264 F.3d 1017, 1024 (10th Cir. 2001) (holding that failure of state to establish TMDL for water-quality limited segment triggers non-discretionary duty by EPA to do so).

In the Fact Sheet, EPA candidly acknowledges that "high levels of removal from CSO and septic tank sources are necessary" to bring the waterbody into compliance. Fact Sheet at 10. However, only Fairhaven's discharge is being cut to one-third of its current load, whereas non-point source contributions are not considered at all. If a thorough TMDL were conducted, there would be an opportunity to look at other point and non-point source allocations that may allow for a more equitable and effective distribution of the burdens in addressing water quality in the Inner Harbor. Based on the data presented in the MEP Report, the Fairhaven WPCF and the New Bedford CSOs are reported to be 32% and 8%, respectively, of the total controllable nitrogen load, leaving about 60% with no identified mitigation. Adequate study of how to manage all the controllable load and to best achieve the overall watershed goal should be completed before specific solutions are imposed in a NPDES permit. This would be consistent with the approach in the Town of Wareham's recent NPDES permit, in which EPA and MassDEP chose not to change nutrient criteria pending completion of a TMDL.

Additional study time would also allow for the consideration of creative, efficient alternative strategies to address nitrogen loading, such as storing treated effluent for release during the outgoing tide, similar to the practice permitted for brine discharges from the Swansea desalinization facility; relocation or extension of the Fairhaven outfall to allow for improved flushing and dilution; restoration of degraded wetland areas to enhance natural attenuation; retrofitting stormwater outfalls with LID strategies; and other techniques.

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Response to Comment No. A.12

While EPA has encouraged MassDEP to complete a TMDL for the New Bedford Inner Harbor, the absence of a TMDL does not bar EPA from proceeding to set a TN limit using the best available information available – namely the MEP Report. EPA regulations at 40 C.F.R. § 122.44(d)(1)(vii) specifically contemplate that permit issuers will establish numeric permit limits when there is no TMDL or wasteload allocation. *See Upper Blackstone Water Pollution Abatement Dist. v. United States EPA*, 690 F.3d 9, 14 (1st Cir. 2012); *In re Upper Blackstone Water Pollution Abatement Dist.*, 14 E.A.D. 577, 604-05 (EAB 2010).

Development of TMDLs can be time and resource intensive. There can be no telling when a TMDL will be completed if at all and, in EPA’s view, it makes little sense to forestall necessary nitrogen reductions on the mere possibility that a TMDL will someday soon be completed, especially where it is not obvious that such a TMDL would lead to any less stringent controls on the WPCF. Neither the CWA nor EPA regulations require that a TMDL, or its equivalent, be completed before a water quality-based limit may be included in an NPDES permit. Rather, water quality-based effluent limitations in NPDES permits must be “consistent with the assumptions and requirements of any *available* [emphasis added] wasteload allocation.”

40 C.F.R. § 122.44(d)(1)(vii)(B). *Id.* Thus, an approved TMDL is not a precondition to the issuance of an NPDES permit for discharges to an impaired waterway. *Id.* This interpretation is consistent with the preamble to 40 C.F.R. § 122.44(d)(1), which expressly outlines the relationship between subsections 122.44(d)(1)(vi) (*i.e.*, procedures for implementing narrative criteria), and (d)(1)(vii):

The final point about paragraph (vi) is that in the majority of cases where paragraph (vi) applies waste load allocations and total maximum daily loads will not be available for the pollutant of concern. Nonetheless, any effluent limit derived under paragraph (vi) must satisfy the requirements of paragraph (vii). Paragraph (vii) requires that all water quality-based effluent limitations comply with "appropriate water quality standards," and be consistent with "available" waste load allocations. Thus for the purposes of complying with paragraph (vii), where a wasteload allocation is unavailable, effluent limits derived under paragraph (vi) must comply with narrative water quality criteria and other applicable water quality standards.

See 54 Fed. Reg. 23,868, 23,876 (June 2, 1989). EPA is not treating the MEP Report for New Bedford Inner Harbor as a draft WLA or as a TMDL but as a source of relevant information under section 122.44(d)(1)(vi) to inform the establishment of a numeric effluent limitation and implement the State’s narrative nutrient criteria, consistent with applicable law and policy. *See In re City of Taunton*, NPDES Appeal No. 15-08, slip op. at 32 (EAB May 3, 2016).

If a TMDL is completed and approved by EPA, the effluent limitation in any subsequently issued NPDES permit must be consistent with the wasteload allocation assigned to the Fairhaven WPCF. In the meantime, relevant regulations *require* that EPA develop water quality-based effluent limitations based on the existing applicable water quality standard in order to ensure that the permit complies with the EPA regulations requiring permits to include requirements “necessary to achieve water quality standards,” 40 C.F.R. § 122.44(d)(1), and limits “derived from, and [that comply] with” water quality

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standards, *id.* § 122.44(d)(1)(vii). These requirements implement Clean Water Act section 301(b)(1)(C), which mandates inclusion of “any more stringent limitation, including those necessary to meet water quality standards” in NPDES permits. *See, e.g., In re Upper Blackstone*, 14 E.A.D. at 604-06.

The Town incorrectly implies that the WPCF was targeted for reductions while other sources were not. As evident in the Response to Comment No. A.10, the MEP Report’s threshold scenario reduced CSO discharges to zero and included significant reductions on septic, fertilizer and impervious surfaces. EPA’s discussion of alternative allocations that would meet the target TN concentration makes it clear that the dominant contribution of the WPCF to the total load to the Inner Harbor means that it must be significantly reduced, even if most other sources are given a zero allocation.

Comment No. A.13

C. The Nitrogen Optimization Study Should Be Updated, Approved and Implemented.

Pursuant to its existing NPDES permit, the Town of Fairhaven was required to complete a nitrogen optimization study and submit it to the EPA and MassDEP for review. NPDES Permit MA0100765 at 9. The permit clearly states that the recommendations were to be implemented "following EPA and DEP approval of the study," which never occurred. The Fact Sheet nonetheless incorrectly implies that the *Town* somehow neglected to act on implementation of the recommendations in the nitrogen optimization study, *see* Fact Sheet at 7 (stating that recent DMRs suggest "that the operational changes [in the study] were not implemented"), and fails to acknowledge that the EPA and MassDEP were the parties that failed to act.

The failure to act on the Town's final nitrogen optimization study, which cost the Town \$85,000, and was submitted on-time and in accordance with the requirements of the Town's existing NPDES permit, has significantly impacted and delayed the Town's ability to proceed with implementation of the recommendations of this study, planned follow-up monitoring to gauge its effectiveness, and incorporation of the results of this optimization study in long term facility upgrade planning.

Given the significant time lapse between now and the completion and submittal of the optimization study, and changes in the plant (including the digester, below), the optimization study should be updated.

Thus, we suggest as a condition of the permit that EPA give the Town six months to update the nitrogen optimization study, one year to implement its recommendations once they have been approved, and a two-year period to monitor effectiveness and achieve optimization.

Response to Comment No. A.13

While it is unfortunate that there was less than optimal communication regarding the nitrogen optimization report required by the 2004 permit, EPA agrees that changes at the plant, including the installation of digesters, might have necessitated further consideration of nitrogen optimization at the facility. The passage of time has effectively given the Town the additional time sought. There has now been more than adequate time to assess the impacts of the digesters on the TN effluent from the facility and to prepare the Phase 2 Wastewater Management Plan, taking the digesters into account. In any

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event, EPA agrees that a compliance schedule will be necessary since the WPCF will not be able to meet the TN limit at the time of permit issuance. EPA will work with Fairhaven to develop a reasonable compliance schedule once the permit is finalized.

Comment No. A.14

D. No TN Permit Limitation Should Be Imposed Until the WPCF's CHP Digester Project is Operational.

Deferring TN limitations will also allow the Town to analyze any changes in the effluent stream that may be caused by the anaerobic digester and combined heat and power system scheduled to go on-line in May or June of 2011. That project, as you know, was recently funded by an \$8M State Revolving Fund Green Reserve grant through the federal stimulus package, and is expected to have multiple environmental benefits, such as reducing the WPCF's sludge and generating renewal energy to offset the utilization of fossil fuel generated electricity at the WPCF. The Town expects that it will take at least a year after that project goes on-line to determine whether and how it affects the WPCF's effluent characteristics, and thus that information will be important in finally setting attainable numeric criteria for TN. As said above, it will also be important to update the optimization study at that time.

E. No TN Permit Limitation Should Be Imposed Until the Town's Northern Fairhaven/New Bedford Inner Harbor Watershed Stormwater Enhancement Program is Complete.

The Town has an aggressive stormwater management program. It is recognized for its highly accurate mapping, asset management, and maintenance program. Regulations for private development now require Low Impact Development Best Management Practices and groundwater recharge. With its belief that stormwater a major source of impairment to the Inner harbor, the Town began seeking various funding opportunities to implement Low Impact Development ("LID") stormwater treatment retrofits to enhance the water quality within the northern Fairhaven/New Bedford Inner Harbor Watershed. In June 2008, the Town was awarded \$278,100 in grant funds from the MassDEP 319 Nonpoint Source Competitive Grants Program to design and implement various LID stormwater treatment processes. Fairhaven also committed another \$185,400 in in-kind services match toward the project. The project is currently under construction and consists of 18 tree box filter retrofits, 4 leaching catch basins, a filtered catch basin unit, a rain garden, and a stormwater treatment unit to treat for nitrogen, total suspended solids and bacteria from stormwater runoff.

The Town applied for funding to construct Phase II of the LID stormwater improvements project for the northern Fairhaven/New Bedford Inner Harbor Watershed in May of 2009 and was awarded another \$258,400 in MassDEP 319 grant funds. The Town has committed an additional \$171,600 match to support the project. This project is currently in the design phase and is expected to consist of several tree box filter retrofits throughout northern Fairhaven and a rain garden at the Board of Public Works building, which will be used as a public education device to teach the local public about enhanced stormwater treatment techniques and their environmental benefits.

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It is important to consider that these projects are specifically designed to address nutrient pollution upstream, rather than the more traditional 'end-of-pipe' treatments for conventional pollutants. Fairhaven will continue to seek further funding to implement the goals of the LID stormwater treatment program throughout the Northern Fairhaven New Bedford Inner Harbor Watershed. A complete assessment of the Inner Harbor watershed shows approximately 75% of the approximately 1,100-acre watershed can be addressed, reducing current stormwater runoff pollutant loads to the New Bedford Harbor significantly.

F. No TN Permit Limitation Should Be Imposed Until the IIReduction Efforts are Complete.

Over the past two years, the Town of Fairhaven has aggressively quantified and targeted sources of infiltration and inflow (III) within the sewer collection system through continuous flow monitoring and sewer system hydraulic modeling studies (using the town's highly accurate sewer GIS asset management system). The information gathered through these studies has provided the Town with an organized, focused and cost effective approach to reduce the amount of extraneous flow entering the collection system, which in turn will decrease both the average and peak flows treated at the Fairhaven Water Pollution Control Facility. Based on the recommendations of these studies, the Town is currently in development of seven separate infiltration reduction contracts. The seven contracts in total are anticipated to include the lining of approximately 16,000 linear feet of collection system piping, the rehabilitation of over 100 manholes, and service line replacements throughout the locations to be lined. The anticipated amount of III flow reduction is estimated to be 850,000 gallons per day ("gpd"). Preliminary cost estimates are in the \$4M range. Private inflow sources were also addressed in the model, and the Town now has a data base of private sources which it can address.

With an appropriation of over \$200,000 the Town has recently lined numerous sewer lines, based on the results of its in-house CCTV work.

Response to Comment No. A.14

While the comments above may have been germane at the time they were submitted in 2010, the intervening time has rendered the concerns moot. The Town installed anaerobic digesters at the facility that came on line in 2012. There was a quite lengthy period needed to get the digesters and the rest of the WPCF to perform consistently, but the digesters were an operational part of the facility when the Phase 2 Wastewater Management Plan was developed and were in operation during the pilot of the Bardenpho plus BioMag™ process in 2015. Regarding stormwater, EPA commends Fairhaven for undertaking such projects. Nonetheless, and as discussed in the Response to Comment No. A.10, the Fairhaven WPCF contributes the lion's share of nitrogen to the Inner Harbor of all sources, by far; to achieve the target load will require *not only* a very challenging 72% reduction in stormwater (impervious surfaces) and other non-WCPF loads *but also* the TN limit at the WPCF. Finally, EPA understands that Fairhaven's efforts to reduce infiltration and inflow ("I/I") have progressed in the intervening years and that the projects described in the comment are likely long complete and were part of the considerations in the Phase 2 Plan. EPA understands, however, that the Town has other projects currently underway, which may be a factor to take into account when developing a reasonable compliance schedule for the total nitrogen limit once the permit is finalized. EPA does not agree, however, that a wait-and-see approach to establishing any TN limit at all is appropriate here, in part because there is no reasonable likelihood that such an approach will achieve compliance with water

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quality standards, not to mention that overall I/I reduction efforts are rarely, if ever, “complete.” Nor does the comment explain how I/I reduction efforts will decrease nitrogen loading to the Inner Harbor that could justify delaying the TN limit. Therefore, EPA finds that the concerns expressed in this comment about the impacts of the anaerobic digesters, additional stormwater work, and I/I efforts have, in some cases been addressed or accounted for in the intervening period and, in any event, do not provide reasons to delay including the TN limit at the WPCF.

Comment No. A.15

IV. Conclusion.

In sum, EPA and MassDEP have failed to demonstrate that there is a defensible limit – whether technology-based or water quality-based – for the Fairhaven WPCF. The “limit of technology” standard is left entirely unexplained, and fails to address the necessary and difficult issues of technical and financial limitations, particularly in light of the inadequate modeling effort that forms the basis for the assumption that such drastic measures are required. Moreover, it is apparent that the Draft July, 2009, MEP Report itself is severely flawed and cannot serve as the basis for an expenditure in the range of \$50 million to meet a standard that has yet to be scientifically justified, nor a solution that has not been proven to benefit receiving waters.

Accordingly, the Town of Fairhaven requests that EPA and MassDEP withdraw this draft permit, and instead discuss an interim a monitor-only requirement.⁹ This will allow adequate time for MassDEP to conduct a legally-mandated TMDL for the Inner Harbor that can then equitably allocate appropriate loads based on sound science to the WPCF, the New Bedford CSOs, and other sources. It will also avoid placing overly stringent requirements on the Town that may not later be revised upwards due to antibacksliding provisions.¹⁰

At the same time, to ensure that there is reasonable progress toward achieving attainment in the Inner Harbor, the Town is willing to negotiate and commit to a schedule, including interim milestones, including such tasks as:

⁹ If EPA and MassDEP decline to provide a monitor-only requirement, the Town requests that it at least be granted a more reasonable methods of calculating nitrogen compliance, such as seasonal limits, rolling averages, and multi-year calculations, as used in the amep [sic] model. This would reflect the seasonal fluctuations in nitrogen and the nature of nitrogen as a longer-term acting input to the system, as included in the Town of Wareham permit.

If EPA and MassDEP decline to provide a monitor-only requirement, the Town requests that it at least be granted a more reasonable seasonal average standard to reflect the seasonal fluctuations in nitrogen and the nature of nitrogen as a longer-term acting input to the system, as included in the Town of Wareham permit. Also, similar to the approach used in the development of Long Term Control Plans for CSO discharges, the Town should be allowed to propose a phasing plan (compliance schedule) with intermediate review milestones with a duration of up to 20 years, subject to demonstration of affordability concerns. The magnitude of the economic impact of the NPDES permit conditions is equal to or perhaps greater than that for CSO compliance in many communities. This approach would be consistent with the approach likely being taken for elimination of the New Bedford CSOs and the PCB remediation of the Inner Harbor. Alternatives to the existing treatment and discharge configuration must be studied to find technical and economically feasible solutions. If WPCF process changes are needed, then a timeline of years, five or more, is necessary to study, test, design, permit and construct the first phase of modifications.

¹⁰ If despite all the reasons to defer a TN limit the Agencies impose one, the Town requests specific permit language which allows the TN limit to be reopened and modified to be less stringent under both antibacksliding and antidegradation provisions.

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- Update and then implement Agency approved nitrogen optimization plan recommendations;
- Continue to implement its I/I plan, which includes the goal of reducing TN (and temperature impacts) in the WPCF's influent;
- Continue its work to require sewer tie ins in sensitive areas, including continuing its legal interventions to force compliance;
- Complete stormwater plans for the remainder of the Fairhaven portion of the watershed, and continue to implement on-going program of low-impact development requirements, including on municipally-owned properties, to reduce stormwater flow and address nutrient as well as conventional pollutants;
- Upon receipt of all necessary information, have its consultants prepare an independent review of the SMAST work in a timely manner, to assist in addressing the issues raised in this letter;
- Work aggressively with regulators to assist in developing a TMDL for the Inner Harbor; and;
- Other, to address other concerns or concepts raised by EPA and DEP during these negotiations prior to issuance of a permit.

If the Agencies proceed with this permit process, the Town respectfully requests a public hearing on those important issues of regional concern. We appreciate your attention to these comments and look forward to meeting with you to discuss a reasonable path forward.

Response to Comment No. A.15

For all the reasons set out in Responses to Comments No. A.1 – A.14, EPA finds that there is ample evidence that excess nitrogen contributes to low dissolved oxygen that impairs the infaunal habitat in New Bedford Harbor and that the Fairhaven WPCF contributes to that impairment. The 2008 MEP Report provides a reasonable scenario for allocating reduced TN loads such that the TN target for the harbor can be achieved, which was subsequently confirmed by the 2015 MEP Report. The Phase 2 Wastewater Management Plan and the subsequent Nitrogen Reduction Pilot Study provide evidence that the TN effluent limitation is technically achievable. EPA's own analysis indicates that the future sewer rates are within the affordability guidelines the agency has established. While EPA encourages MassDEP to complete a TMDL for the New Bedford Inner Harbor, the absence of a TMDL does not bar EPA from proceeding to set a TN limit, using the best available information available – namely the MEP Report.

EPA is in agreement with the Town's request that the TN limit incorporate a reasonable method of calculating nitrogen compliance, such as seasonal limits or using a rolling average, as included in the permit for the Town of Wareham. EPA considered this comment, and consistent with other permits such as permits for the cities of Brockton and Taunton and for the Town of Wareham, the Final Permit has been modified to indicate that the nitrogen limit is a rolling seasonal average limit during the months of May through October.

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The nitrogen effluent limit has been changed from year round monthly limit in the Draft Permit to a 6-month seasonal rolling average limit in the Final Permit. This change allows the permit's nitrogen limits to be better aligned with the seasonality of the effects of nitrogen in the New Bedford Inner Harbor and with the seasonality of treatment effectiveness. The warmer months of the year are the most critical period for phytoplankton growth and when there are the most significant eutrophication responses to nitrogen loading.

EPA concurs with the commenter that the available information on effluent variability indicates that an effluent concentration of 3 mg/L, (which was the basis for the 125 lb/day effluent limit) may not be consistently achievable at all facilities on a monthly basis in colder climates using currently available nitrogen removal technologies and may only be achievable over a longer seasonal period. Additionally, the critical seasonal responses observed in the Inner Harbor are more closely associated with the accumulated nitrogen loads over months rather than the nitrogen load of a single particular month. Therefore, a seasonal rolling average limit has been included in the Final Permit. The seasonal average effluent limitation of 125 lb/day shall be effective from May 1 – October 31.

While the warmer months of May – October are when most of the effects of eutrophication will be manifested, the permit also requires that the facility optimize its treatment process for nitrogen removal from November 1 – April 30 to minimize loadings of nitrogen to the system. The permit requires optimization for nitrogen removal during this timeframe using all available equipment. The combination of the summer effluent limitation of 125 lb/day and the winter optimization for TN removal will serve to keep the overall loading to the receiving water low. The numeric limitations and the optimization requirements are designed to ensure that the discharge does not cause or contribute to violations of applicable water quality standards, including narrative water quality criterion for nutrients, in accordance with Section 301(b)(1)(C) of the CWA.

The first value for the seasonal average will be reported after an entire May – October period has elapsed following the effective date of the permit (results do not have to be from the same year). For example, if the permit becomes effective on December 1, 2017, the permittee will calculate the first seasonal average from samples collected during the months of May through October 2018, and report this average on the October 2018 DMR. For each subsequent month that the seasonal limit is in effect, the seasonal average shall be calculated using samples from that month and the previous five months that the limit was in effect. Additionally, the permit requires that the treatment facility be operated to optimize the removal of total nitrogen during the months of November through March, using all available treatment equipment at the facility. The addition of a carbon source that may be necessary in order to meet the total nitrogen limit during the months of April through October is not required during the months of November through March. The permit has also been modified to include a “report only” requirement for the months of November through April.

EPA agrees that a compliance schedule will be necessary since the WPCF will not be able to meet the TN limit at the time of permit issuance. EPA will work with Fairhaven to develop a reasonable compliance schedule once the permit is finalized.

EPA does not agree to the Town's request for permit language allowing the TN limit to be reopened and modified to be less stringent. As described in Response to Comment No. A.10, EPA's analysis indicates

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that the WPCF dominates the load to the Inner Harbor and that the remaining sources will be very challenging to reduce.

While cost is not taken into account as a consideration when *establishing* water quality-based effluent limitations, it can be a factor when *implementing* limits (i.e., through reasonable schedules of compliance in administrative enforcement orders).

Apart from the Town, no other parties or individuals submitted requests for a public hearing on the draft permit. EPA did not consider the Town's single request for a public hearing, raised only at the end of its written comments and submitted to EPA on the final day of a 90-day comment period, to demonstrate a significant degree of public interest in the draft permit, so as to warrant scheduling a subsequent public hearing on the draft permit after the already extended public comment period would otherwise close.

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The following comments were received from **the Coalition for Buzzards Bay**.

Comment No. B.1

The Coalition for Buzzards Bay (“The Coalition”) has reviewed the draft permit for the Fairhaven Wastewater Pollution Control Facility (“WPCF”) to discharge under the National Pollutant Discharge Elimination System (“NPDES”) and offers the following comments.

New Bedford Harbor is severely degraded by nitrogen pollution and the largest source is the Fairhaven WPCF. We urge you, therefore, to establish a nitrogen limit for this facility today and applaud EPA for taking this much needed step toward the cleanup of New Bedford Harbor.

The Coalition is a nonprofit membership organization dedicated to the restoration, protection and sustainable use and enjoyment of Buzzards Bay and its watershed including the Acushnet River and Inner New Bedford Harbor. We represent more than 7,500 individuals, families, organizations, and businesses in Southeastern Massachusetts.

A. Nitrogen Pollution in the Acushnet River and Inner New Bedford Harbor: Failure to Meet State Water Quality Standards.

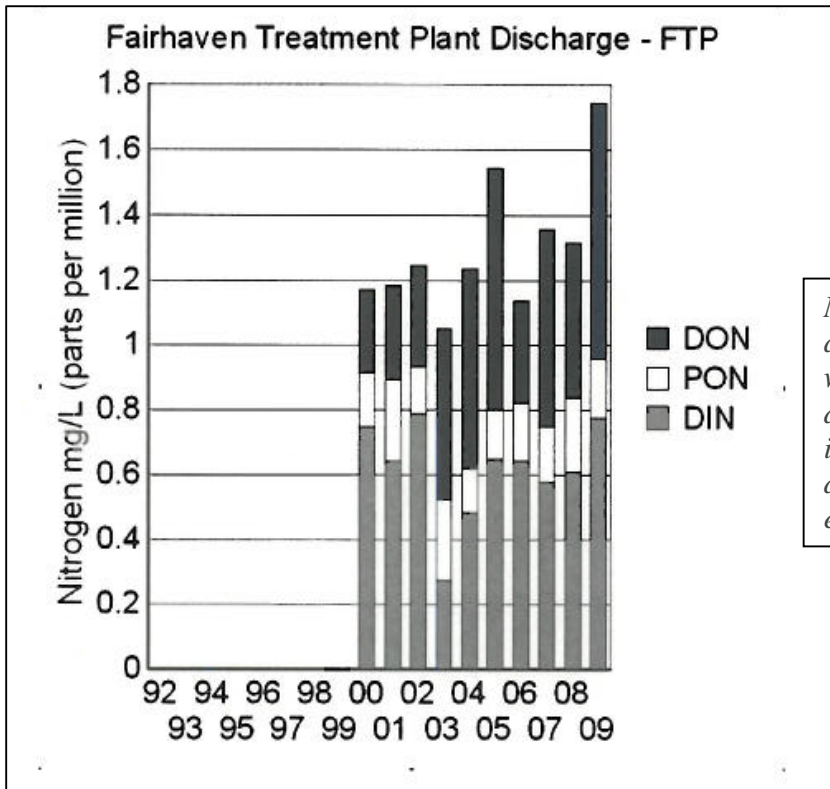
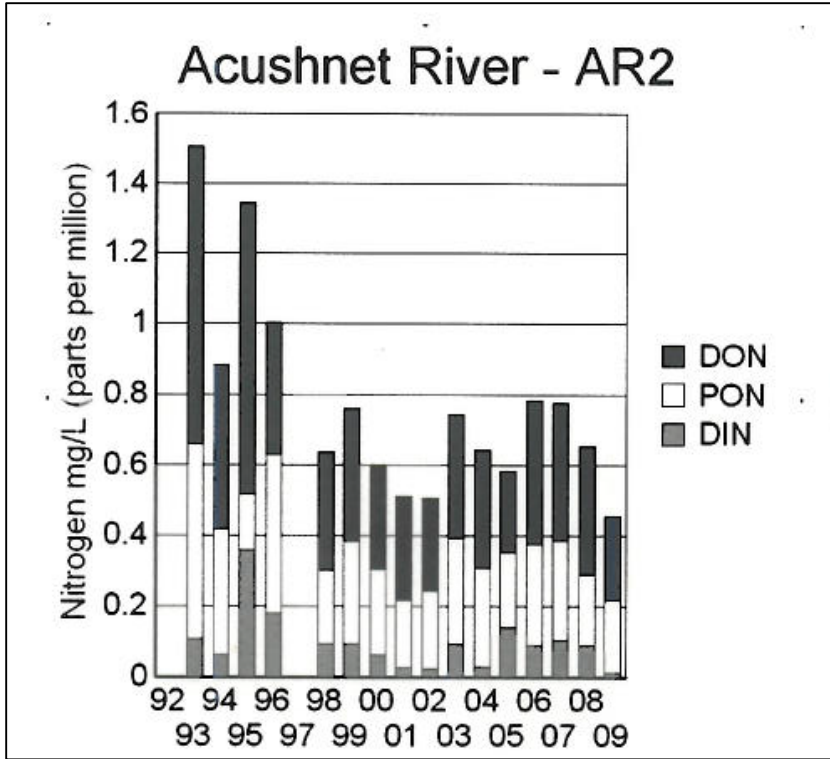
The greatest threat to the health of Buzzards Bay and its more than 30 harbors and coves, including the Acushnet River and Inner New Bedford Harbor, is nitrogen pollution. It is well established that nitrogen from wastewater treatment plant discharges, septic systems, stormwater runoff, and combined sewage overflows are severely degrading the river and harbor.

Nearly two decades of water quality data collected by The Coalition clearly shows that the harbor is suffering from nitrogen pollution. High nitrogen and chlorophyll a concentrations together with low dissolved oxygen levels are obvious indications that the harbor is overloaded with nitrogen. In fact, water quality in the river and harbor have reached such critical levels of pollution as to warrant being listed on the Massachusetts Year 2008 Integrated List of Waters as a Category 5 water for nutrients, not achieving water quality standards and requiring a Total Maximum Daily Load (“TMDL”).¹ The Acushnet River and Inner New Bedford Harbor are classified as “SB” waters under the state water quality standards. SB waters are required to support habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation, and shall have consistently good aesthetic value.² It is clear that these water quality standards are not being met due to nitrogen pollution.

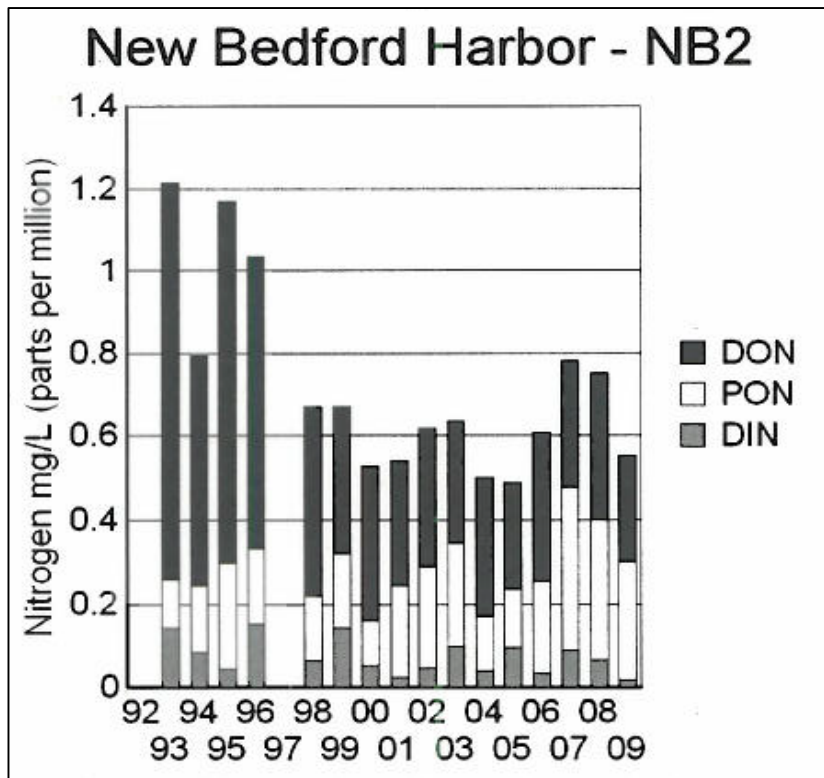
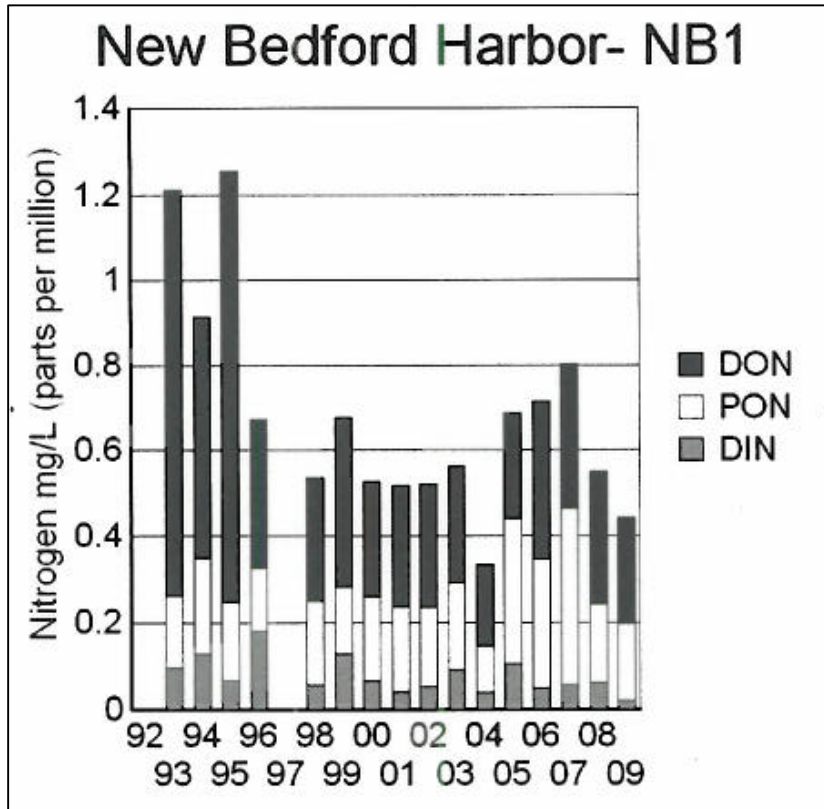
The summary graphs below highlight the elevated levels of total nitrogen found between 1993 and 2009 at the four stations we monitor within New Bedford Harbor. Our nutrient dataset for these sites is included as an attachment to these comments.

¹ Fact Sheet at 2.

² Fact Sheet at 2. Massachusetts Surface Water Quality Standards. 314 CMR 4.05(4)(b).



Note: Sample taken at surface of the water above the discharge location in the Harbor, not directly from the effluent pipe.



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Response to Comment No. B.1

EPA agrees with the Commenter that New Bedford Harbor is not meeting water quality standards for nutrients. EPA notes the comment as part of the administrative record

Comment No. B.2

B. Nitrogen Limits Needed for Fairhaven Wastewater Pollution Control Facility

The Fact Sheet for the draft NPDES permit cites to several studies identifying the Fairhaven WPCF as a major source of nitrogen to the harbor.³ Reports produced by the Buzzards Bay National Estuary Program consistently find that the WPCF is the "single largest source of nitrogen to the estuary."⁴ In short, in order to reduce nitrogen from the river and harbor in compliance with the Clean Water Act a nitrogen limit for the WPCF must be included. It is clear that the water quality in the river and harbor will benefit from a nitrogen limit at the Fairhaven WPCF.

EPA regulations require NPDES permits to contain effluent limits which will achieve state water quality standards and limit those pollutants that may be discharged at a level that caused, has reasonable potential to cause, or contributes to a violation of water quality standards.⁵ Therefore, The Coalition supports a nitrogen limit for the WPCF of 3 mg/l at this time. This nitrogen limit represents the reasonable limit of technology and puts the WPCF on par with other wastewater treatment plants discharging to Buzzards Bay.⁶ Upgrading the Fairhaven WPCF to a discharge limit of 3mg/l, with the current discharge of 1.99MGD, will effectively reduce the nitrogen load to the river and harbor by 200lbs⁷ each day.

Response to Comment No. B.2

EPA agrees that the Fairhaven WPCF contributes to the impairment of New Bedford Harbor and has set a water quality-based TN effluent limit of 125 lbs/day which is equivalent to a TN concentration limit of

³ Fact Sheet at 7.

⁴ Final Buzzards Bay Comprehensive Conservation and Management Plan available at <http://www.buzzardsbay.org/ccmpold/buzzards-bay-ccmp-1992.pdf> (August 1991); A Buzzards Bay Embayment Sub-watershed Evaluation: Establishing Priorities for Nitrogen Management Action (1994); A Refined Evaluation of Nitrogen Loading and Water Quality of New Bedford Inner Harbor (Acushnet River) as it relates to the Fairhaven Wastewater Treatment Facility (March 1998); A Preliminary Evaluation of Nitrogen Loading and Water Quality of New Bedford Inner Harbor (Acushnet River) as it relates to the Fairhaven Wastewater Treatment Facility (July 2000); Massachusetts Estuaries Project - Linked Watershed-Embayment Model to Determine Critical Nitrogen Loading Thresholds for the New Bedford Inner Harbor Embayment System, New Bedford, MA (December 2008).

⁵ 40 CFR § 122.44(d)(1).

⁶ The Wareham Water Pollution Control Facility has a seasonal nitrogen permit limit of 4 mg/l from April to October and during those months the plant achieved a total nitrogen monthly average as low as 0.96 mg/l and routinely operated under 2 mg/l. The Falmouth Wastewater Treatment Facility is designed to achieve a nitrogen concentration of 3 mg/l.

⁷ Current Load = (1,990,000 gallons/day * 3.785 l/gallon * 15.3 mg/l) / (454,000 mg/lb) = 254 lbs/day
Reduced Load = (1,990,000 gallons/day * 3.785 l/gallon * 3 mg/l) / (454,000 mg/lb) = 50 lbs/day

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3.0 mg/L at the design flow for the WPCF (5 MGD). See also Responses to Comment Nos. A.2 and B.6.

Comment No. B.3

C. A Final TMDL May Determine that the Limit of Technology for this Wastewater Treatment Plant is Not Enough to Achieve Water Quality Standards.

The Fact Sheet is clear that a nitrogen limit of 3 mg/l at the WPCF may not be enough to meet water quality standards and "a total nitrogen effluent limit of 3 mg/l at the facility design flow of 5 MGD (coupled with significant reductions in other sources of nitrogen) is necessary to attain water quality standards."⁸ If a final EPA approved TMDL finds that this discharge at 3mg/l does not meet water quality standards, the permit will be required to be reopened and stricter limits established. The Clean Water Act and implementing regulations require that a NPDES permit set effluent limitations to protect water quality standards.⁹ It is the Coalition's position that the nitrogen limit of 3mg/l in this NPDES permit is sufficient at this time, however, once a TMDL is established for the Acushnet River and Inner New Bedford Harbor, this permit must be reopened to assess whether additional source reductions are required in order to meet water quality standards for the receiving waters.

Response to Comment No. B.3

As of this writing, a TMDL has not been completed for New Bedford Inner Harbor. When a TMDL is ultimately completed and approved, the effluent limitation in any subsequently issued NPDES permit must be consistent with the assumptions and recommendations of the wasteload allocations in the TMDL.

Comment No. B.4

The Massachusetts Estuaries Report Must be Amended and Release Expedited

This permit relies on the findings of a draft MEP report.¹⁰ While the Fact Sheet seems to indicate that MassDEP has completed the December 2008 report, it is The Coalition's understanding that this version has not been approved by MassDEP and therefore should still be considered a draft. Most importantly, a review of the draft MEP report by Dr. Joe Costa from the Buzzards Bay National Estuary Program, indicates several land use errors resulting in serious over-estimates of loading from sources other than the Fairhaven WPCF.¹¹ The Coalition believes that Dr. Costa's comments should be incorporated into a final MEP Report for the Acushnet River and Inner New Bedford Harbor (reports attached for your review) but identifies three critical errors here:

⁸ Fact Sheet at 10, emphasis added.

⁹ 40 CFR § 122.44(d).

¹⁰ Fact Sheet at 7.

¹¹ September 4, 2009, review letter to Dennis Dunn, DEP DWM Program Director from Joseph E. Costa PhD, Executive Director of Buzzards Bay National Estuary Program, Re: MEP TMDL review- Linked Watershed-Embayment Model New Bedford Inner Harbor.

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1. Target Nitrogen Threshold Target – The draft MEP report establishes the target total nitrogen concentration for restoration of infaunal habitat within the estuary as ≤ 0.50 mg/l at the sentinel location. However, Dr. Costa's review states that in "MEP's support documents (2003 report Site-Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators), SB waters to achieve Good/Fair mesotrophic conditions are anticipated to range 0.39 to 0.50."¹² Clearly, establishing such a broad target concentration range for this estuary causes great uncertainty as to whether the draft report's .5 mg/l concentration target can achieve water quality standards. In addition, if water quality standards are only achieved at a concentration closer to .39 mg/l rather than the .5 mg/l chosen in the draft report, this may imply that the 3 mg/l total nitrogen limit for the WPCF is inadequate. Furthermore, such uncertainty must be taken into consideration in the Margin of Safety of the TMDL, potentially creating a more conservative TMDL in order to insure water quality standards are achieved.
2. Overestimate of Septic Systems – Dr. Costa's review indicates that the draft MEP report identified multiple parcels within the watershed as being served by septic systems when the properties were actually sewer. Furthermore, the draft MEP report overestimated the number of units by assuming that multiple joined parcels contained multiple units, when in fact multiple joined parcels only had one unit. These errors indicate that the MEP report seriously overestimated loading from septic systems in these watersheds and cumulatively these errors may equal a 15,000 to 20,000kg over-estimate in annual loading?¹³ In addition, the draft MEP report seems to classify a large number of units in the town of Acushnet as having septic systems when in fact they are sewer.¹⁴ All these errors taken together indicate that the WPCF is a more important nitrogen source than originally concluded.
3. Underestimated Nitrogen Load from non CSO - Stormwater- Dr. Costa's review of impervious estimates in the draft MEP report finds that stormwater may contribute closer to 15 or 16% of the watershed nitrogen load rather than the 11% indicated in the draft report.¹⁵ Dr. Costa's review finds that the non-CSO impervious areas were 31% higher in the New Bedford Harbor South watershed, 79% higher in the New Bedford Harbor North subwatershed, and 46% higher in the Lower Acushnet River subwatershed. Furthermore, the draft MEP report utilized impervious surface figures that do not reflect the urbanized setting of a portion of the watershed, but instead used the same values for roof, driveway and lawn size as utilized on Cape Cod. This oversight may lower watershed loading from these sources by approximately 5,000 kg/year.¹⁶

In short, the conclusions reached in the MEP draft report may be inaccurate and EPA must ensure the accuracy of the load allocations in the MEP report if it is going to use the report as the basis for

¹² Id at 2.

¹³ Id at 3.

¹⁴ Id at 5.

¹⁵ March 10, 2010 letter to Dennis Dunn, DEP DWM Program Director from Dr. Joseph E. Costa, PhD Executive Director Buzzards Bay National Estuary Program, Re: Proposed solution to MEP TMDL impervious surface area calculation errors

¹⁶ September 4, 2010 letter from Joseph E. Costa at 16.

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establishing the TMDL. Establishing a TMDL for this water segment must be a top priority for EPA¹⁷ and given the fact that the MEP report for the Acushnet River and Inner New Bedford Harbor was originally due in 2004, and is now 6 years overdue, it is time for EPA to act and require the state to deliver a timely, accurate report upon which to develop a TMDL

Response to Comment No. B.4

EPA agrees that the 2008 MEP document contained land use errors, incorrect identification of impervious surfaces and parcels being served by septic systems, as noted by Dr. Costa. Comments on the 2008 report by Dr. Costa and by the Buzzards Bay Coalition and feedback from the regulatory agencies led to a revised analysis which corrected these errors and yielded a final Updated MEP Report in 2015. *See also* Response to Comment No. A.10. The revisions to the MEP Report did not result in any change in the TN target concentration of 0.5 mg/L or necessitate a change to the effluent limit proposed in the Draft Permit. In addition, as noted in Response to Comment No. B.3, a TMDL has not yet been completed, but once one is approved by EPA, the effluent limitation in any subsequently issued NPDES permit must be consistent with the assumptions and recommendations of the wasteload allocations of the approved TMDL.

Comment No. B.5

D. Sanitary Sewer Overflows (SSOs)

During peak rain events, flows entering the Fairhaven WPCF can reach up to 16 MGD. Since the plant is not designed to accommodate this additional flow, the wastewater can be released with little treatment. The additional nitrogen load from these SSO occurrences is unacceptable and remediation and elimination of SSOs must be a priority for the Fairhaven WPCF. While the draft permit clearly states that SSOs are an unauthorized discharge that must be reported, it is critical that the permit regulate the nitrogen from these SSOs and require their remediation.

Response to Comment B.5

As noted by the Coalition, under Part I.C of this permit, discharges of SSOs are not authorized. According to the Phase 2 Wastewater Management Plan for the WPCF, the maximum daily flow is projected to be 10.8 MGD. The current WPCF has an equalization tank that allows the storage of influent during peak conditions. The contents of the tank are fed into the treatment process so as to receive full treatment.

Comment No. B.6

E. Nitrogen Limit Expressed as a Concentration as Opposed to Load

¹⁷ *In* Friends of the Wild Swan, Inc. v. U.S. EPA, the Court recognized the importance of completing TMDLs for waterbodies with NPDES point source discharges when it found the state's TMDL submission "appropriate because TMDLs developed in conjunction with the issuance of a point source discharge permit may be submitted for approval when completed even though corresponding waterbody is designated as a low priority for TMDL development." Friends of the Wild Swan, Inc. v. U.S. EPA, 130 F. Supp.2d 1184, 1195 (D. Mt. 1999).

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The Coalition requests that the EPA explain why they have set a nitrogen limit in terms of lbs/day versus concentration. The Fact Sheet finds that at a treatment plant flow of 5.0 MGD and a nitrogen effluent concentration of 3 mg/l the plant should be discharging at 125 lbs/day. However, the Fact Sheet also notes that the plant is discharging approximately 1.99 MGD and not 5.0 MGD, which would allow for a higher nitrogen concentration in the effluent.

Response to Comment No. B.6

EPA has also reviewed its basis for including a mass limit for total nitrogen. As set forth in the MEP Report, the nitrogen analysis, is based on analysis of total loads to the Inner Harbor and is not dependent on any assumptions regarding concentration and flow from the WPCF. In this context, a mass-only limit equal to that in the Draft Permit is appropriate and protective of water quality standards in the Inner Harbor, without any corresponding concentration-based limit.

Concentration-based limits are authorized but not mandated under EPA's regulations, and EPA has imposed them in other permits for a variety of water quality-based rationales. In this case, mass-only limits are expected to be sufficient to meet the water quality requirements and will provide some flexibility to the facility to operate in a more cost-efficient manner. EPA notes that, if in the future, further analysis or data indicate that concentration-based limits are necessary to meet water quality requirements, EPA will include such limits in future permit reissuance. The Final Permit contains a seasonal average TN mass limit of 125 lbs/day.

Comment No. B.7

Conclusion

The Coalition supports the inclusion of a numeric limit for total nitrogen in this permit, but notes that 3 mg/l alone may not be strict enough to restore the Acushnet River and Inner New Bedford Harbor. We agree with EPA's assessment that the target nitrogen limit for Inner New Bedford Harbor will only be achieved through "a high level of removal at Fairhaven, as well as high levels of removals from CSO and septic tank sources."¹⁸

Response to Comment No. B.7

EPA notes the comment and support for the total nitrogen limit as part of the administrative record.

¹⁸ Fact Sheet at 10.

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),

Town of Fairhaven

is authorized to discharge from the facility located at

**Fairhaven Wastewater Pollution Control Facility
Arsene Street
Fairhaven, MA 02719**

to receiving water named

Acushnet River (New Bedford Inner Harbor; Buzzards Bay Watershed; State Code 95-42)

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

This permit shall become effective on (See ** below)

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

This permit supersedes the permit issued on March 4, 2003.

This permit consists of 13 pages in Part I including effluent limitations and monitoring requirements, Part II including Standard Conditions and Definitions, and Attachments A (Toxicity Protocol) and B (Summary of Report Submittals).

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 no sooner than 30 days after signature.

PART I

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

<u>EFFLUENT CHARACTERISTIC</u>	<u>EFFLUENT LIMITS</u>					<u>MONITORING REQUIREMENTS</u> ³	
<u>PARAMETER</u>	<u>AVERAGE MONTHLY</u>	<u>AVERAGE WEEKLY</u>	<u>AVERAGE MONTHLY</u>	<u>AVERAGE WEEKLY</u>	<u>MAXIMUM DAILY</u>	<u>MEASUREMENT FREQUENCY</u>	<u>SAMPLE</u> ³ <u>TYPE</u>
FLOW ²	*****	*****	5.0 MGD	*****	Report MGD	CONTINUOUS	RECORDER
FLOW ²	*****	*****	Report MGD	*****	*****	CONTINUOUS	RECORDER
BOD ₅ ⁴	1252 lbs/Day 569 kg/Day	1878 lbs/Day 854 kg/Day	30 mg/l	45 mg/l	Report mg/l	3/WEEK	24-HOUR COMPOSITE ⁵
TSS ⁴	1252 lbs/Day 569 kg/Day	1878 lbs/Day 854 kg/Day	30 mg/l	45 mg/l	Report mg/l	3/WEEK	24-HOUR COMPOSITE ⁵
pH RANGE ¹	6.5 - 8.5 SU (SEE PERMIT PAGE 5 OF 13, PARAGRAPH I.A.1.b.)					1/DAY	GRAB
FECAL COLIFORM ^{1,6}	*****	*****	88 cfu/100 ml	*****	260 cfu/100ml	2/WEEK	GRAB
ENTEROCOCCI ⁶	*****	*****	35 cfu/100 ml	*****	276 cfu/100ml	2/Week	GRAB
TOTAL NITROGEN (TKN + NITRATE + NITRITE) ⁴	125 lbs/day 57 kg/day	*****	Report mg/l	*****	Report mg/l	3/WEEK	24-HOUR COMPOSITE ⁵
WHOLE EFFLUENT TOXICITY ^{7,8,9,10}	Acute LC ₅₀ ≥ 100% Chronic C-NOEC ≥ 12.2%					2/YEAR	24-HOUR COMPOSITE ⁵

Sampling Location: All effluent sampling shall be conducted at the outlet of the ultraviolet disinfection system.

Footnotes:

1. Required for State Certification.
2. Report annual average, monthly average, and the maximum daily flow. The limit is an annual average, which shall be reported as a rolling average. The value will be calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flows of the previous eleven months.
3. All required effluent samples shall be collected at the point specified on page 2. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP.

A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the week each month. Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented in correspondence appended to the applicable discharge monitoring report.

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.

4. Sampling required for influent and effluent.
5. 24-hour composite samples will consist of at least twenty four (24) grab samples taken during one consecutive 24 hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportionally to flow.
6. The monthly average limits for fecal coliform and enterococci are expressed as a geometric mean.
7. The permittee shall conduct chronic (and modified acute) toxicity tests two times per year. The chronic test may be used to calculate the acute LC_{50} at the 48 hour exposure interval. The permittee shall test the Inland silverside and Sea urchin. Toxicity test samples shall be collected during months of March and September. The test results shall be submitted by the last day of the month following the completion of the test. The results are due April 30 and October 31 respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.

Test Dates	Submit Results By:	Test Species	Acute Limit LC ₅₀	Chronic Limit C-NOEC
March and September	April 30 and October 31	Inland silverside and Sea urchin	≥ 100%	≥ 12.2%

After submitting **two years** and a **minimum** of **four** consecutive sets of WET test results, all of which demonstrate compliance with the WET permit limits, the permittee may request a reduction in the WET testing requirements. The permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from the EPA that the WET testing requirement has been changed.

8. 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.
9. 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 "12.2% or greater" limit is defined as a sample which is composed of 12.2% (or greater) effluent, the remainder being dilution water.
10. The permittee will submit a map or GIS coordinates of the receiving water sampling point with the first toxicity test under this permit. 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 may be 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 Program Instructions for the Discharge Monitoring Report Forms (DMRs) which is sent to all permittees with their annual set of DMRs and

may also be found on the EPA, Region I web site at <http://www.epa.gov/region01/enforcementandassistance/dmr.html>. If this guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in **Attachment A**. 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**.

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 or greater than 8.5 at any time.
- c. The discharge shall not cause objectionable discoloration of the receiving waters.
- d. The effluent shall not contain a visible oil sheen, foam, or 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 results of sampling for any parameter done in accordance with EPA approved methods above its required frequency must also be reported.
- g. If a future TMDL for the Acushnet River is completed and approved during the term of the permit, EPA may either modify or reissue the permit as necessary to incorporate any nitrogen limits mandated by the TMDL.

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

- a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; 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.

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. PRETREATMENT

Within 120 days of the effective date of the permit, the permittee shall submit the results of an industrial user survey including identification of industrial users and the character and volume of pollutants contributed to the Publicly Owned Treatment Works (POTW) by the industrial users. The industrial user survey shall as a minimum include the following:

- (i) Industries discharging wastes which are or may be in the future subject to local limitations or the national prohibited discharge standards found in 40 CFR Part 403.5; and
- (ii) Industries discharging wastewater from processes in one or more primary industry categories (See Appendix A to 40 CFR Part 122 or Appendix C of 40 CFR Part 403).

C. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge 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 (Twenty-four hour reporting).

Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes DEP 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>.

Bypasses of treatment units are not authorized. If during peak flow there are emergency bypasses of any treatment unit, the permittee shall take hourly grab samples of the final effluent and test for fecal coliform and enterococci. Each incident shall be documented in a report that includes the monitoring results, and the date, time, duration of bypass and volume by-passed. This report shall be attached to the monthly DMR.

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 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 Plan:

The permittee shall update its 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 program 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 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 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 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. Alternate 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).

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, including EPA regulations promulgated at 40 CFR Part 503, which prescribe "Standards for the Use or Disposal of Sewage Sludge" pursuant to Section 405(d) of the CWA, 33 U.S.C. § 1345(d).
2. If both state and federal requirements apply to the permittee's sludge use and/or disposal practices, the permittee shall comply with the more stringent of the applicable requirements.
3. The requirements and technical standards of 40 CFR Part 503 apply to the following sludge 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 requirements of 40 CFR Part 503 do not apply to facilities which dispose of sludge in a municipal solid waste landfill. 40 CFR § 503.4. These requirements also do not apply to facilities which do not use or 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 40 CFR. Part 503 requirements including the following elements:
 - General requirements
 - Pollutant limitations
 - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
 - Management practices
 - Record keeping
 - Monitoring
 - Reporting

Which of the 40 C.F.R. Part 503 requirements apply to the permittee will depend upon the use or disposal practice followed and upon the quality of material produced by a facility. The EPA Region 1 Guidance document, "EPA Region 1 - NPDES Permit Sludge Compliance Guidance" (November 4, 1999), may be used by the permittee to

assist it in determining the applicable requirements.¹

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods) and pathogen vector attraction reduction (land application and surface disposal) 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 1,500	1 /quarter
1,500 to less than 15,000	6 /year
15,000 +	1 /month

Sampling of the sewage sludge shall use the procedures detailed in 40 CFR 503.8.

7. Under 40 CFR § 503.9(r), the permittee is a “person who prepares sewage sludge” because it “is ... the person who generates sewage sludge during the treatment of domestic sewage in a treatment works” If the permittee contracts with *another* “person who prepares sewage sludge” under 40 CFR § 503.9(r) – i.e., with “a person who derives a material from sewage sludge” – for use or disposal of the sludge, then compliance with Part 503 requirements is the responsibility of the contractor engaged for that purpose. If the permittee does not engage a “person who prepares sewage sludge,” as defined in 40 CFR § 503.9(r), for use or disposal, then the permittee remains responsible to ensure that the applicable requirements in Part 503 are met. 40 CFR §503.7. If the ultimate use or disposal method is land application, the permittee is responsible for providing the person receiving the sludge with notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.
8. The permittee shall submit an annual report containing the information specified in the 40 CFR Part 503 requirements (§ 503.18 (land application), § 503.28 (surface disposal), or § 503.48 (incineration)) by **February 19** (*see also* “EPA Region 1 - NPDES Permit Sludge Compliance Guidance”). Reports shall be submitted to the address contained in the reporting section of the permit. If the permittee engages a contractor or contractors for sludge preparation and ultimate use or disposal, the annual report need contain only the following information:
- Name and address of contractor(s) responsible for sludge preparation, use or disposal
 - Quantity of sludge (in dry metric tons) from the POTW that is transferred to the sludge contractor(s), and the method(s) by which the contractor will prepare and use or dispose of the sewage sludge.

¹ This guidance document is available upon request from EPA Region 1 and may also be found at: <http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf>

F. MONITORING AND REPORTING

1. **For a period of one year from the effective date of the permit**, the permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR, a web-based tool that allows permittees to electronically submit discharge monitoring reports (DMRs) and other required reports via a secure internet connection. **Beginning no later than one year after the effective date of the permit**, the permittee shall begin reporting using NetDMR, unless the facility is able to demonstrate a reasonable basis that precludes the use of NetDMR for submitting all DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

- a. Submittal of Reports Using NetDMR

NetDMR is accessed from: <http://www.epa.gov/netdmr>. Within one year of the effective date of the Permit, the permittee shall begin submitting DMRs and reports required under this permit electronically to EPA using NetDMR, unless the facility is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt out request").

DMRs shall be submitted electronically to EPA no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA, including the MassDEP Monthly Operations and Maintenance Report, as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees shall continue to send hard copies of reports other than DMRs (including Monthly Operation and Maintenance Reports) to MassDEP until further notice from MassDEP.

- b. Submittal of NetDMR Opt Out Requests

Opt out requests must be submitted in writing to EPA for written approval at least sixty (60) days prior to the date a facility would be required under the Permit to begin using NetDMR. This demonstration shall be valid for twelve (12) months from the date of EPA approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to EPA unless the permittee submits a renewed opt out request and such request is approved by EPA. All opt out requests should be sent to the following addresses:

Attn: NetDMR Coordinator
U.S. Environmental Protection Agency, Water Technical Unit
5 Post Office Square, Suite 100 (OES04-4)
Boston, MA 02109-3912

And

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

c. Submittal of Reports in Hard Copy Form

Hard copy DMR submittals shall be completed and postmarked no later than the 15th day of the month following the completed reporting period. MassDEP Monthly Operation and Maintenance Reports shall be submitted as an attachment to the DMRs. Signed and dated originals of the DMRs, and all other reports required herein, shall be submitted to the appropriate State addresses and to the EPA address listed below:

**U.S. Environmental Protection Agency
Water Technical Unit
5 Post Office Square, Suite 100 (OES04-4)
Boston, MA 02109-3912**

The State Agency addresses are:

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

And

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

Signed and dated Industrial Pretreatment Program Reports should be sent to:

**U.S. Environmental Protection Agency
Office of Ecosystem Protection
5 Post Office Square, Suite 100 (OEP06-03)
Boston, MA 02109-3912
Attn. Justin Pimpare**

And

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

G. 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.

**MARINE CHRONIC
TOXICITY TEST PROCEDURE AND PROTOCOL**

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable silverside chronic (and modified acute) and sea urchin chronic toxicity tests in accordance with the appropriate test protocols described below:

- **Inland Silverside (Menidia beryllina) Larval Growth and Survival Test.**
- **Sea Urchin (Arbacia punctulata) 1 Hour Fertilization Test.**

Chronic and acute toxicity data shall be reported as outlined in Section VIII. The chronic Menidia test can be used to calculate an LC50 at the end of 48 hours of exposure when both an acute (LC50) and a chronic (C-NOEC) test is specified in the permit.

II. METHODS

Methods to follow are those recommended by EPA in:

Klemm, D.J. et al. Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters To Marine and Estuarine Organisms, Second Edition. Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, July 1994, EPA/600/4-91/003. <https://www.epa.gov/cwa-methods/whole-effluent-toxicity-methods>

Any exceptions are stated herein.

III. SAMPLE COLLECTION

For each sampling event involving the Menidia beryllina, three discharge samples shall be collected. Fresh samples are necessary for Days 1, 3, and 5 (see Section V. for holding times). A single sample is necessary for the Arbacia punctulata test. The sample shall be analyzed chemically (see Section VI). The initial sample (Day 1) is used to start the tests, and for test solution renewal on Day 2. The second sample is collected for use at the start of Day 3, and for renewal on Day 4. The third sample is used on Days 5, 6, and 7. The initial (Day 1) sample will be analyzed chemically (see Section VI). Day 3 and 5

renewal samples will be held until test completion. If either the Day 3 or 5 renewal sample is of sufficient potency to cause lethality to 50 percent or more test organisms in any of the dilutions for either species, then a chemical analysis shall be performed on the appropriate sample(s) as well.

Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for the chemical and physical analyses. The remaining sample shall be dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual oxidants (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1 mg/L chlorine. A thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) should also be run.

All samples held overnight shall be refrigerated at 4°C.

IV. DILUTION WATER

Grab samples of receiving water used for chronic toxicity testing shall be collected from one or several distances away from the discharge. It may be necessary to test receiving water at several distances in a separate chronic test to determine the extent of the zone of toxicity. Avoid collecting near areas of obvious road or agricultural runoff, storm sewers or other point source discharges. An additional control (0% effluent) of a standard laboratory water of known quality shall also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a conductivity, salinity, total suspended solids, organic carbon, and pH similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternative dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection
U. S. Environmental Protection Agency-New England
JFK Federal Building (CAA)
Boston, MA 02203

It may prove beneficial to the permittee to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

EPA New England requires that tests be performed using four replicates of each control and effluent concentration because the on-parametric statistical tests cannot be used with data from fewer replicates. Also, if a reference toxicant test was being performed concurrently with an effluent or receiving water test and fails, both tests must be repeated.

The following tables summarize the accepted Menidia and Arbacia toxicity test conditions and test acceptability criteria:

**EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE SEA URCHIN,
ARBACIA PUNCTULATA, FERTILIZATION TEST¹**

1. Test type	Static, non-renewal
2. Salinity	30 o/oo \pm 2 o/oo by adding dry ocean salts
3. Temperature	20 \pm 1°C
4. Light quality	Ambient laboratory light during test preparation
5. Light intensity	10-20 uE/m ² /s, or 50-100 ft-c (Ambient Laboratory Levels)
6. Test vessel size	Disposal (glass) liquid scintillation vials (20 ml capacity), presoaked in control water
7. Test solution volume	5 ml
8. Number of sea urchins	Pooled sperm from four males and pooled eggs from four females are used per test
9. Number of egg and sperm cells per chamber	About 2000 eggs and 5,000,000 sperm cells per vial
10. Number of replicate chambers per treatment	4
11. Dilution water	Uncontaminated source of natural seawater or deionized water mixed with artificial sea salts
12. Dilution factor	Approximately 0.5
13. Test duration	1 hour and 20 minutes
14. Effects measured	Fertilization of sea urchin

eggs

15. Number of treatments per test² 5 and a control. An additional dilution at the permitted effluent concentration (% effluent) is required.
16. Acceptability of test Minimum of 70% fertilization in controls. Effluent concentrations exhibiting greater than 70% fertilization, flagged as statistically significantly different from the controls, will not be considered statistically different from the controls for NOEC reporting.
17. Sampling requirements For on-site tests, samples are to be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection.
18. Sample volume required Minimum 1 liter
-

Footnotes:

1. Adapted from EPA/600/4-91/003, July 1994.
2. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE INLAND SILVERSIDE, MENIDIA BERYLLINA, GROWTH AND SURVIVAL TEST¹

1.	Test type	Static, renewal
2.	Salinity	5 o/oo to 32 o/oo \pm 2 o/oo by adding artificial sea salts
3.	Temperature	25 \pm 1°C
4.	Light quality	Ambient laboratory light
5.	Light intensity	10-20 uE/m ² /s, or 50-100 ft-C (Ambient Laboratory Levels)
6.	Photoperiod	16 hr light, 8 hr darkness
7.	Test vessel size	600 - 1000 mL beakers or equivalent (glass test chambers should be used)
8.	Test solution volume	500-750 mL/replicate loading and DO restrictions must be met)
9.	Renewal of test solutions	Daily using most recently collected sample.
10.	Age of test organisms	Seven to eleven days post hatch; 24 hr range in age.
11.	Larvae/test chamber	15 (minimum of 10)
12.	Number of replicate chambers	4 per treatment
13.	Source of food	Newly hatched and rinsed <u>Artemia</u> nauplii less than 24 hr old
14.	Feeding regime	Feed once a day 0.10 g wet wt <u>Artemia</u> nauplii per replicate on days 0-2; feed 0.15 g wet wt <u>Artemia</u> nauplii per replicate on days 3-6
15.	Cleaning	Siphon daily, immediately before test solution renewal and feeding

16. Aeration²

None

17. Dilution water	Uncontaminated source of natural seawater; or deionized water mixed with artificial sea salts.
18. Effluent concentrations ³	5 and a control. An additional dilution at the permitted effluent concentration (% effluent) is required.
19. Dilution factor	≥ 0.5
20. Test duration	7 days
21. Effects measured	Survival and growth (weight)
22. Acceptability of test	The average survival of control larvae is a minimum of 80%, and the average dry wt of unpreserved control larvae is a minimum of 0.5 mg, or the average dry wt of preserved control larvae is a minimum of 0.43 mg if preserved not more than 7 days in 4% formalin or 70% ethanol.
23. Sampling requirements	For on-site tests, samples are collected daily and used within 24 hours of the time they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection.
24. Sample Volume Required	Minimum of 6 liters/day.

Footnotes:

- ¹ Adapted from EPA/600/4-91/003, July 1994.
- ² If dissolved oxygen (D.O.) falls below 4.0 mg/L, aerate all chambers at a rate of less than 100 bubbles/min. Routine D.O. checks are recommended.
- ³ When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

VI. CHEMICAL ANALYSIS

As part of each daily renewal of the Menidia test, pH, dissolved oxygen, salinity, and temperature must be measured at the beginning and end of each 24 hour period in each dilution and in the controls. It must also be done at the start of the Arbacia test. The following chemical analyses shall be performed for each sampling event.

<u>Parameter</u>	<u>Effluent</u>	<u>Diluent</u>	Minimum Quanti- fication Level(mg/L)
pH	x	x	---
Salinity	x	x	PPT(o/oo)
Total Residual Oxidants* ¹	x	x	0.05
Total Solids and Suspended Solids	x	x	

Ammonia	x	x	
	0.1		
Total Organic Carbon	x	x	
	0.5		
<u>Total Metals</u>			
Cd	x		0.001
Cr	x		0.005
Pb	x		0.005
Cu	x		0.0025
Zn	x		0.0025
Ni	x		0.004
Al	x		0.02

Superscripts:

*¹ Total Residual Oxidants
 Either of the following methods from the 18th Edition of the APHA (1992) Standard Methods for the Examination of Water and Wastewater must be used for these analyses:

- Method 4500-CL E the Amperometric Titration Method (the preferred method);
- Method 4500-CL G the DPD Photometric Method.

or use USEPA Manual of Methods Analysis of Water or Wastes, Method 330.5.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See flow chart on page 56 of EPA/600/4-91/003 for appropriate point estimation method to use on a given data set.

Chronic No Observed Effect Concentration (C-NOEC)

Methods of Estimation:

- Dunnett's Procedure
- Bonferroni's T-Test
- Steel's Many-One Rank Test
- Wilcoxin Rank Sum Test

Reference flow charts on pages 191, 192, and 321 of EPA/600/4-91/003 for the appropriate method to use on a given data set.

In the case of two tested concentrations causing adverse effects but an intermediate concentration not causing a statistically significant effect, report the C-NOEC as the lowest concentration where there is no observable effect. The definition of NOEC in the EPA Technical Support Document only applies to linear dose-response data.

VIII. TOXICITY TEST REPORTING

A report of results will include the following:

- Description of sample collection procedures, site description;
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody; and
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)

- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.

Attachment B

Summary of Required Report Submittals*

Required Report	Date Due	Submitted By:	Submitted To: ** (see bottom of page for key)
Discharge Monitoring Report (DMR)	Monthly, postmarked by the 15 th of the month following the monitoring month (e.g. the March DMR is due by April 15 th).	Town of Fairhaven	1, 2, 3
Whole Effluent Toxicity (WET) Test Report (Part I.A.1)	April 30 and October 31 of each year	Town of Fairhaven	1, 2, 3
Pretreatment: Industrial User Survey (Part I.B.b.)	Within 120 days of permit effective date	Town of Fairhaven	1, 2, 4
I/I Control Plan (Part I.D.2)	Within 6 months of permit effective date	Town of Fairhaven	1,2
I/I Annual Report (Part I.D.2)	March 31 each year	Town of Fairhaven	1,2
Annual Sludge Report (Part I.E.8.)	February 19 each year	Town of Fairhaven	1,2

*This Table is a summary of reports required to be submitted under this NPDES permit as an aid to the permittee. If there are any discrepancies between the permit and this summary, the permittee shall follow the permit requirements.

**The addresses are for the submittal of hard copies. When the permittee begins reporting using NetDMR, submittal of hard copies of many of the required reports will not be necessary. See permit conditions for details.

1. Environmental Protection Agency
Water Technical Unit
5 Post Office Square, Suite 100 (OES04-4)
Boston, Massachusetts 02109-3912

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

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

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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
EPA NEW ENGLAND OFFICE
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

FACT SHEET

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

NPDES PERMIT NO.: MA0100765

NAME AND ADDRESS OF APPLICANT:

William Fitzgerald, Supervisor
Fairhaven Water Pollution Control Facility
Arsene Street
Fairhaven, MA 02719

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Fairhaven Water Pollution Control Facility
Arsene Street
Fairhaven, MA 02719

RECEIVING WATER: Acushnet River (New Bedford Inner Harbor), Buzzards Bay Watershed
(MA 95-42).

CLASSIFICATION: SB

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

The above named applicant has requested that the U.S. Environmental Protection Agency (EPA) re-issue its NPDES permit to discharge into the designated receiving water. **Attachment A** shows the locations of the outfall and the wastewater treatment facility. The facility is engaged in collection and treatment of domestic wastewater. The discharge is from a secondary wastewater treatment facility.

The Town of Fairhaven owns and operates a 5 million gallon per day (MGD) activated sludge wastewater treatment facility. Wastewater treatment includes preliminary, primary and secondary processes. Final effluent is disinfected using ultraviolet rays and is discharged to the Acushnet River. Sludge is sent off-site to Woonsocket, RI for incineration.

The segment of the Acushnet River receiving the Fairhaven discharge (New Bedford Inner

Harbor) is classified as SB. The designated uses for 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. Where designated, SB waters shall be suitable for shellfish harvesting with depuration.

The Massachusetts Year 2008 Integrated List of Waters lists the receiving water (New Bedford Inner Harbor, Coggeshall Street Bridge to hurricane barrier, Fairhaven/New Bedford) as a Category 5 water, not achieving water quality standards and requiring a total maximum daily load (TMDL). The water is listed for priority organics, metals, nutrients, organic enrichment/low DO, pathogens, oil and grease, taste, odor and color, and objectionable deposits.

II. Description of Discharge.

A quantitative description of the discharge in terms of significant effluent parameters, based on Discharge Monitoring Reports (DMRs) from January 2006 to February 2008, is shown on **Attachment B**.

III. Limitations and Conditions.

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

IV. Permit Basis and Explanation of Effluent Limitation Derivation

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 Section 402 and 301(b) of the Act. Section 301(b)(1)(B) requires that Publicly Owned Treatment Works achieve limits based on secondary treatment. Secondary treatment is defined at 40 CFR Section 133.102.

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

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The Massachusetts Surface Water Quality Standards 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 site specific criteria is established.

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

non-point sources of pollution, variability 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 requirements 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. Conventional Pollutants

Under Section 301(b)(1)(B) of the CWA, POTWs must have achieved effluent limitations based upon secondary treatment by July 1, 1977. The secondary treatment requirements are set forth at 40 CFR Part 133. The regulations describe the secondary treatment requirements for biochemical oxygen demand (BOD), total suspended solids (TSS), and pH. The "Average Monthly" and "Average Weekly" BOD and TSS limitations are based on the requirements of 40 CFR 133.102. Numerical limitations for pH and fecal coliform requirements are based on state certification requirements under Section 401(a)(1) of the CWA, as described in 40 CFR 124.53.

Monitoring frequency for BOD and TSS have been increased from 1/week to 3/week and monitoring frequency for bacteria has been increased from 1/week to 2/week to conform with requirements of similar wastewater treatment facilities.

New monitoring requirements and effluent limitations for enterococci are included in the draft permit based on water quality criteria recently adopted by MassDEP and approved by EPA.

B. Non-Conventional Pollutants

1. Toxics

a. Whole Effluent Toxicity

EPA's *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges entering the nation's waterways. EPA-New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect aquatic life and human health. Pollutant-specific approaches such as those in the Gold Book and State regulations address individual chemicals, whereas, the whole effluent toxicity (WET) approach evaluates interactions between pollutants thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the "additive" and/or "antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not,

thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The Massachusetts Surface Water Quality Standards (314 CMR 4.00), include the narrative statement that "All surface waters shall be free from pollutants in concentrations and combinations that are toxic to humans, aquatic life or wildlife." 314 CMR 4.05(5)(e).

Federal NPDES regulations at 40 CFR §122.44(d)(1)(v) require whole effluent toxicity limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an excursion above the State's narrative criterion for toxicity. WET tests of the Fairhaven WPCF's effluent show consistent compliance with effluent limitations, however the low dilution ratio (1:7.2) calculated for the discharge contributes to a "reasonable potential" that the discharge could cause an excursion of the no toxics provision in the State's regulations. Inclusion of the whole effluent toxicity limit in the Draft Permit will ensure compliance with the State's narrative water quality criterion of "no toxics in toxic amounts".

Moreover, the Massachusetts Department of Environmental Protection's Division of Watershed Management's toxics policy requires whole effluent toxicity testing for all major dischargers such as the Fairhaven POTW (Implementation Policy for the Control of Toxic Pollutants in Surface Waters, MassDEP 1990).

Therefore, based on the potential for toxicity from domestic contributions, the low level of dilution, water quality standards and in accordance with EPA and MassDEP regulation and policy, the draft permit includes acute and chronic effluent toxicity limitation 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 Toxic Control). 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; and (3) pollutants for which there are inadequate chemical analytical methods or criteria can be addressed.

The type of test (acute and/or chronic) and the effluent limitations are based on available dilution. The Draft Permit requires the permittee to perform acute toxicity tests twice per year using Inland Silverside and Sea Urchin and contains an LC50 limit of 100% effluent concentration. The LC50 is defined as the concentration of toxicant, or in this draft permit, as the percentage of effluent lethal to 50% of the test organisms during a specific length of time.

The Draft Permit also requires chronic tests twice per year using Inland Silverside and Sea Urchin and contains a Chronic-No Observed Effect Concentration (C-NOEC) limit of 14 percent. C-NOEC is defined as the highest concentration to which test organisms are exposed in a life cycle or partial life cycle test, which causes no adverse effect on growth, survival or reproduction during a specific time of observation. The C-NOEC limit was calculated as follows;

Chronic NOEC Limit Calculation:

$$\frac{1.0 * 100}{8.2} = 12.2\%$$

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.

b. Chlorine

In April 2004, the Town of Fairhaven completed construction of an ultraviolet light (U/V) disinfection system and has ceased using chlorine as a disinfectant. Accordingly, limitations and monitoring requirements for total residual chlorine have been removed from the permit.

c. Metals

Certain metals like copper, lead, cadmium and zinc can be toxic to aquatic life. EPA has evaluated (see below) the reasonable potential of toxicity on the concentration of metals in the effluent. Based on this evaluation EPA has determined that there is no reasonable potential for adverse impact on the aquatic life and no need to monitor and limit these metals.

Calculation of reasonable potential for copper, lead, zinc and cadmium:

All effluent metals data are taken from the Toxicity Test Reports from the period March 2004 to March 2008.

Total allowable Receiving Water Concentration, $C = \text{Criteria (Tot. Rec.)} \times \text{Dilution Factor/Conversion Factor}$

EPA 2002 National Recommended Water Quality Criteria for salt water and the dilution factor of 8.2 [calculated dilution ratio is 7.2:1 based on EPA approved UM Model with a discharge from a single 36 inches diameter port oriented at 90 degrees; dilution factor = $(7.2 + 1)/1 = 8.2$] are used to calculate effluent limits.

Copper: Chronic $C = 3.1 \times 8.2 / 0.83 = 30.6 \text{ ug/l}$ which is greater than the monthly average effluent concentration range of 10 - 20 ug/l. So, reasonable potential does not exist.

	Acute	$C = 4.8 \times 8.2 / 0.83 = 47.4 \text{ ug/l}$ which is greater than the maximum effluent concentration of 20 ug/l. So, reasonable potential does not exist.
Lead:	Chronic	$C = 8.1 \times 8.2 / 0.951 = 69.8 \text{ ug/l}$ which is greater than the monthly average effluent concentration range of 2.7 - 10 ug/l. So, reasonable potential does not exist.
	Acute	$C = 210 \times 8.2 / 0.951 = 1811 \text{ ug/l}$ which is greater than the maximum effluent concentration of 10 ug/l. So, reasonable potential does not exist.
Zinc:	Chronic	$C = 81 \times 8.2 / 0.946 = 702 \text{ ug/l}$ which is far greater than the monthly average effluent concentration range of 12 - 50 ug/l. So, reasonable potential does not exist.
	Acute	$C = 90 \times 8.2 / 0.946 = 780 \text{ ug/l}$ which is far greater than the maximum effluent concentration of 50 ug/l. So, reasonable potential does not exist.
Cadmium:	Chronic	$C = 9.3 \times 8.2 / 0.994 = 76.7 \text{ ug/l}$ which is greater than the monthly average effluent concentration of 0.5 - 10 ug/l. So, reasonable potential does not exist.
	Acute	$C = 42 \times 8.2 / .994 = 346 \text{ ug/l}$ which is far greater than the maximum effluent concentration of 10 ug/l. So, reasonable potential does not exist.

2. Nutrients

a. Nitrogen

As described earlier, the receiving water is listed as impaired due to, among other things, nutrients, organic enrichment/low DO, taste, odor and color, and objectionable deposits. Numerous studies, as summarized below, have identified nitrogen enrichment as causing or contributing to these impairments. Excessive nitrogen causes algae blooms that deplete dissolved oxygen, causes visible color and turbidity, and ultimately decay causing objectionable odors and oxygen demanding sediments.

The current permit required the Town to evaluate and implement optimization of nitrogen removal processes at the WPCF. In November 2004, the Town completed a Draft Nitrogen Removal Optimization Study which evaluated influent nitrogen loadings and control options, and also evaluated the practicable extent to which nitrogen removal at the existing treatment facility could be further optimized. The study found that during the period from July 2000 to July

2004, the total nitrogen (TN) concentration in the treatment plant influent ranged from 11 to 53 mg/l with an average concentration of 29 mg/l. For the same period, TN in the effluent ranged between 5 to 22 mg/l with an average concentration of 13 mg/l. This translates to an average removal efficiency of 55%. The study concluded that with some operational changes, this efficiency could be improved to 70%. At an influent concentration of 29 mg/l and a removal rate of 70 %, the resulting effluent concentration would be about 9 mg/l.

Recent discharge monitoring reports (DMRs) for the months of January 2006 to February 2008 show an average effluent TN concentration of 15.3 mg/l, suggesting that the operational changes were not implemented.

Past Studies

The final Buzzards Bay Comprehensive Conservation and Management Plan dated August 1991, identified nitrogen loading as one of the most serious problems threatening many embayments around Buzzards Bay.

In 1994, the Buzzards Bay Project published a draft report titled “ A Buzzards Bay Embayment Sub-watershed Evaluation: Establishing Priorities for Nitrogen Management Action”. This report highlighted the major sources of nitrogen to New Bedford Inner Harbor and all other Buzzards Bay embayments. The report identified the Fairhaven wastewater treatment plant as the major source of nitrogen to the Inner Harbor.

On March 6, 1998 a refined evaluation of nitrogen loading and water quality of New Bedford Inner Harbor (Acushnet River) as it relates to the Fairhaven wastewater treatment facility was completed by the Buzzards Bay Project. The report concluded that the Fairhaven wastewater plant is the single largest source of nitrogen to the estuary.

On July 28, 2000, another report by the Buzzards Bay Project titled “A Preliminary Evaluation of Nitrogen Loading and Water Quality of New Bedford Inner Harbor (Acushnet River) as it relates to the Fairhaven Wastewater Treatment Facility”, further refined the nitrogen loadings and again concluded that the Fairhaven wastewater plant is the single largest source of nitrogen.

MassDEP has completed a report (dated December 2008) entitled “Massachusetts Estuaries Project – Linked Watershed-Embayment Model to Determine Critical Nitrogen Loading Thresholds for the New Bedford Inner Harbor Embayment System, New Bedford, MA.” The report documents nitrogen-caused impacts on the Acushnet River - New Bedford Inner Harbor embayment system from its headwaters to the hurricane barrier in New Bedford. The report uses historic sources as well as data collected for the study, quantifies sources of nitrogen to the receiving waters, summarizes hydrodynamic and water quality models developed to analyze the impacts of nitrogen loads, establishes a target nitrogen concentration necessary to achieve water quality standards, and using the water quality model evaluates scenarios for achieving the nitrogen target.

In determining the nitrogen threshold for the embayment, the study focused on habitat parameters (particularly infauna¹ since eelgrass has not grown in the receiving waters for at least 50 years), sediment characteristics, and nutrient-related water quality information (particularly dissolved oxygen, chlorophyll *a*² and macroalgae).

Benthic animal populations are influenced by dissolved oxygen and sediment quality. Low organic matter loading and high dissolved oxygen (DO) concentrations generally support healthy habitat and high organic matter loading and low DO do not support healthy habitat. Depletion of oxygen may occur only infrequently yet may have severe effect on system health. High chlorophyll *a* indicates large amounts of algae in the receiving water, which can cause large diurnal swings in dissolved oxygen as the algae produce oxygen during daylight hours and consume it during hours of darkness. Algae blooms also reduce sunlight penetration into the water column, generate high sediment oxygen demands as it dies and decays, and cause odors and visual impairments.

The study found impairment of infaunal habitat quality due to oxygen depletion, the magnitude of daily oxygen excursions, and organic matter enrichment from phytoplankton production (chlorophyll *a* level) at all monitoring locations. These impacts are indicative of nutrient enriched waters, specifically moderate to high nitrogen loading rates.. The study concluded that nitrogen enrichment is related to the dissolved oxygen depletion. Additionally, due to the increased phytoplankton production, the dissolved oxygen levels can rise significantly during daylight hours, due to photosynthesis, to concentrations above atmospheric equilibration. Oxygen levels above atmospheric equilibration is indicative of enriched nitrogen and associated organic matter. All monitoring locations showed periodic oxygen depletions below 5 mg/l and generally less than 4 mg/l.

The upper basin has a moderately impaired benthic habitat due to macroalgal accumulation, high chlorophyll *a* levels, frequent depletions of DO, and a preponderance of stress tolerant species.

The middle basin is a depositional area with sediments consisting of organic rich mud. The middle basin has moderate to high chlorophyll levels, frequent DO depletions and a moderately impaired infaunal community.

The lower basin is slightly to moderately impaired by nitrogen enrichment with significant impairment in localized areas of physical disturbance or altered flushing. The lower basin experiences moderate oxygen depletions and elevated chlorophyll *a* levels.

1 Infauna are benthic animals that live in the substrate of a body of water, especially in a soft sea bottom. Infauna usually construct tubes or burrows and are commonly found in deeper and subtidal waters. Clams, tubeworms, and burrowing crabs are infaunal animals.

2 Chlorophyll is the green pigment found in all plants. Chlorophyll *a* is measured to estimate the abundance of phytoplankton in the water. More chlorophyll *a* indicates that there are more phytoplankton present. Most chlorophyll *a* is found near the surface of the water because there is less light at depth. Chlorophyll *a* concentrations are often highest just below the surface, not at the surface of the water.

In general, the data indicate a gradient in oxygen depletion and chlorophyll a levels from the upper to the lower basins. Consistent with the estuarine response to over-enrichment from nitrogen, the extent of bottom water oxygen depletion parallels the levels of phytoplankton biomass.

Limit Derivation:

The “Massachusetts Estuaries Project – Linked Watershed-Embayment Model to Determine Critical Nitrogen Loading Thresholds for the New Bedford Inner Harbor Embayment System, New Bedford, MA” report developed a loading scenario which would achieve the target total nitrogen concentration of 0.5 mg/l at the most highly impacted “sentinel” location at the head of the middle basin of the Acushnet River (see figure VIII-I) of the report.

The water quality model was first run assuming the elimination of loads from CSOs and the elimination of the Fairhaven WPCF discharge. Under this scenario, the desired nitrogen target of 0.5 mg/l was not achieved. A 13 percent reduction of loads from septic tank discharges was then added, resulting in attainment of the desired target. The estimated loads under this scenario were:

Current total nitrogen load = 310 kg/day (sum of loads from Fairhaven WPCF, New Bedford CSOs, septic, runoff, and fertilizer)

- CSO load eliminated = 25.7 kg/day reduction

- Fairhaven TN load is eliminated = 39236 kg/year = 107.5 kg/day reduction

- 13 percent of septic load eliminated = 11.4 kg/day reduction

Load meeting target TN concentration = 310 kg/day – 107.5 kg/day - 25.7 kg/day - 11.4 kg/day
= 165.4 kg/day

The analysis shows that a TN load of about 165 kg/day is necessary to achieve the target concentration at the sentinel location. The Fairhaven treatment plant currently discharges about 256 lbs/day (116 kg/day) of TN (calculated 2006-2007 average load based on a flow of 1.99 MGD and 15.43 mg/l, which is somewhat greater than the 107.5 kg/day used for the study estimate). The treatment plant discharge of TN therefore has the reasonable potential to cause or contribute to the exceedance of the target concentration given that the current discharge represents about 37 percent of the current loading and 70 percent of the loading that will achieve the target concentration.

Regulations at 40 CFR Part 122.44(d)(1) require that effluent limitations must be included for any pollutant discharge at a level that has the reasonable potential to cause, or contribute to an excursion above any State water quality standard.

Additional scenarios evaluated in the Massachusetts Estuaries Project (MEP) report included the

Fairhaven treatment plant discharging at 3.0 mg/l total nitrogen and various levels of CSO remediation and septic system elimination (see page 173-176). These scenarios provide the necessary detail to determine the extent of CSO remediation and septic system elimination that will need to be accomplished in addition to reducing the Fairhaven treatment plant loading to the limit of technology (3.0 mg/l total nitrogen). Given the magnitude of the overall load reduction necessary to achieve the target load (about 165 kg/day) a high level of removal at Fairhaven, as well as high levels of removal from CSO and septic tank sources are necessary.

A TMDL has not been completed for this receiving water, but the information discussed above shows the reasonable potential for nitrogen discharges from the Fairhaven WPCF to cause or contribute to exceedances of water quality standards and shows that a total nitrogen effluent limit of 3 mg/l at the facility design flow of 5 MGD (coupled with significant reductions in other sources of nitrogen) is necessary to attain water quality standards. Accordingly, EPA and MassDEP have included a monthly average limitation of 57 kg/day (125 lbs/day), which corresponds to treatment plant flow of 5.0 MGD and an effluent concentration of 3 mg/l TN.

The draft permit requires total nitrogen monitoring three times per week. Following completion of the TMDL, EPA will either modify or reissue the permit as necessary to incorporate the nitrogen limits mandated by the TMDL.

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. Pretreatment Program

Pollutants introduced into POTW's by a nondomestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

The permittee will perform an Industrial User Survey as stated in the draft permit.

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. 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 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 U.S. Department of Commerce on March 3, 1999.

Attachment C is the list of 16 managed species that are believed to be present during one or more life-stage 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 quantity of discharge from the WWTF is 5.0 mgd monthly average; Effluent receives as a minimum secondary treatment using activated sludge processes;
- Effluent is discharged into the Acushnet River (New Bedford Inner Harbor) with an estimated dilution ratio of 7.2:1;
- Use of chlorine has been discontinued due to installation of a new Ultra - Violet (U/V) ray system to disinfect fecal coliform;
- A new monthly average total nitrogen limit of 125 lbs/day is established in the draft permit;
- Acute and chronic toxicity tests will be conducted on Inland Silverside and Sea urchin two 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.

G. Endangered Species

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) grants authority to and imposes requirements upon Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (“listed species”) and habitat of such species that has been designated as critical (a “critical habitat”). The ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of Interior, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical

habitat. The United States Fish and Wildlife Service (USFWS) typically administers Section 7 consultations for bird, terrestrial, and freshwater aquatic species. The National Marine Fisheries Service (NMFS) typically administers Section 7 consultations for marine species and anadromous fish.

EPA has reviewed the federal endangered or threatened species of fish and wildlife to see if any listed species might potentially be impacted by the re-issuance of this NPDES permit. The review has focused primarily on Bristol County since the discharge is into the Buzzards Bay. Sea Turtles (Green, Kemp's Ridley Leatherback) are listed as endangered species and Sea Turtles (Green and Loggerhead) are listed as threatened species. Based on the conditions in the permit, which are as, or more stringent than in the present permit, EPA has determined that there will be no adverse effects on these species (see section F, EFH for a discussion of the pertinent permit conditions).

EPA is coordinating a review of this finding with NMFS and/or USFWS through the Draft Permit and Fact Sheet and consultation under Section 7 of the ESA with NMFS and/or USFWS is not required. If adverse impacts are detected as a result of this permit action, NMFS and/or USFWS will be notified and a consultation will be promptly initiated.

H. Anti-degradation

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 anti-degradation review is warranted.

V. 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.

VI. 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 the arguments in full by the close of the public comment period, to the U.S. EPA, MA NPDES Municipal Permit Branch 5, Post Office Square, Suite 100 (OEP 6-4), Boston, Massachusetts 02109-3912. 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.

VII. Monitoring and Reporting

The effluent monitoring requirements have been established to yield data representative of the discharge under authority of Section 308 (a) of the CWA in accordance with 40 CFR §§122.41 (j), 122.44 (l), and 122.48.

The Draft Permit includes new provisions related to Discharge Monitoring Report (DMR) submittals to EPA and the State. The Draft Permit requires that, no later than one year after the effective date of the permit, the permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR, unless the permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports (“opt out request”).

In the interim (until one year from the effective date of the permit), the permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR.

NetDMR is a national web-based tool for regulated Clean Water Act permittees to submit discharge monitoring reports (DMRs) electronically via a secure Internet application to U.S. EPA through the Environmental Information Exchange Network. NetDMR allows participants to discontinue mailing in hard copy forms under 40 CFR 122.41 and 403.12. NetDMR is accessed from the following url: <http://www.epa.gov/netdmr> Further information about NetDMR, including contacts for EPA Region 1, is provided on this website.

The Draft Permit requires the permittee to report monitoring results obtained during each calendar month using NetDMR no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees must continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP.

The Draft Permit also includes an “opt out” requests process. Permittees who believe they can not use NetDMR due to technical or administrative infeasibilities, or other logical reasons, must demonstrate the reasonable basis that precludes the use of NetDMR. These permittees must submit the justification, in writing, to EPA at least sixty (60) days prior to the date the facility would otherwise be required to begin using NetDMR. Opt outs become effective upon the date of written approval by EPA and are valid for twelve (12) months from the date of EPA approval. The opt outs

expire at the end of this twelve (12) month period. Upon expiration, the permittee must submit DMRs and reports to EPA using NetDMR, unless the permittee submits a renewed opt out request 60 days prior to expiration of its opt out, and such a request is approved by EPA.

Until electronic reporting using NetDMR begins, or for those permittees that receive written approval from EPA to continue to submit hard copies of DMRs, the Draft Permit requires that submittal of DMRs and other reports required by the permit continue in hard copy format.

VIII. 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, P.E.
Municipal Permits Branch
Environmental Protection Agency
5 Post Office Square, Suite 100 (OEP 6-4)
Boston, MA 02109-3912
Telephone: (617) 918-1693
E-Mail: sarker.soupy@epa.gov

Date

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

MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION
COMMONWEALTH OF MASSACHUSETTS
1 WINTER STREET
BOSTON, MASSACHUSETTS 02108

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY
OFFICE OF ECOSYSTEM PROTECTION
REGION I
BOSTON, MASSACHUSETTS 02203

JOINT PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO THE WATERS OF THE UNITED STATES UNDER SECTION 301 AND 402 OF THE CLEAN WATER ACT (THE "ACT"), AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE ACT.

DATE OF NOTICE: July 8, 2010

PERMIT NUMBER: MA0100765

PUBLIC NOTICE NUMBER: MA-020-10

NAME AND MAILING ADDRESS OF APPLICANT:

Fairhaven Water Pollution Control Facility
Arsene Street
Fairhaven, Massachusetts 02719

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Fairhaven Water Pollution Control Facility
Arsene Street
Fairhaven, Massachusetts 02719

RECEIVING WATER: Acushnet River (New Bedford Inner Harbor)

RECEIVING WATER CLASSIFICATION: Class SB

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency, (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) have cooperated in the development of a permit for the above identified facility. The effluent limits and permit conditions imposed have been drafted to assure that State Water Quality Standards and provisions of the Clean Water Act will be met. EPA has formally requested that the State certify this draft permit pursuant to Section 401 of the Clean Water Act and expects that the draft permit will be certified.

INFORMATION ABOUT THE DRAFT PERMIT:

A fact sheet or a statement of basis (describing the type of facility; type and quantity of wastes; a brief summary of the basis for the draft permit conditions; and significant factual, legal and policy questions considered in preparing the draft permit) may be obtained at no cost at

http://www.epa.gov/region1/npdes/draft_permits_listing_ma.html or by writing or calling EPA's contact person named below:

Suproakash Sarker
US EPA
5 Post Office Square
Suite 100
Mail Code – OEP06-1
Boston, MA 02109-3912
Telephone: (617) 918-1693

The administrative record containing all documents relating to this draft permit is on file and may be inspected at the EPA Boston office mentioned above between 9:00 a.m. and 5:00 p.m., Monday through Friday, except holidays.

PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

All persons, including applicants, who believe any condition of this draft permit is inappropriate, must raise all issues and submit all available arguments and all supporting material for their arguments in full by **August 6, 2010**, to the U.S. EPA, 5 Post Office Square, Suite 100, (OEP 06-1) Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing to EPA and the State Agency for a public hearing to consider this draft permit. 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 this draft permit the Regional Administrator will respond to all significant comments and make the responses available to the public at EPA's Boston office.

FINAL PERMIT DECISION:

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.

Glenn Haas, Director
DIVISION OF WATERSHED
MANAGEMENT
MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION

Stephen Perkins, Director
OFFICE OF ECOSYSTEM PROTECTION
ENVIRONMENTAL PROTECTION
AGENCY

MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION
COMMONWEALTH OF MASSACHUSETTS
1 WINTER STREET
BOSTON, MASSACHUSETTS 02108

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY
OFFICE OF ECOSYSTEM PROTECTION
REGION I
BOSTON, MASSACHUSETTS 02203

JOINT EXTENSION OF THE PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO THE WATERS OF THE UNITED STATES UNDER SECTION 301 AND 402 OF THE CLEAN WATER ACT (THE "ACT"), AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE ACT.

DATE OF NOTICE: August 6, 2010

PERMIT NUMBER: MA0100765

PUBLIC NOTICE NUMBER: MA-029-10

NAME AND MAILING ADDRESS OF APPLICANT:

Fairhaven Water Pollution Control Facility
Aesene Street
Fairhaven, Massachusetts 02719

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Fairhaven Water Pollution Control Facility
Arsene Street
Fairhaven, Massachusetts 02719

RECEIVING WATER: Acushnet River (New Bedford Inner Harbor)

RECEIVING WATER CLASSIFICATION: Class SB

REASON FOR EXTENDING THE PUBLIC NOTICE PERIOD:

This Public Notice is hereby extended (40 C.F.R. Section 124.10) in response to a request submitted to the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) for additional time to review the draft permit and submit comments. Please note that any comments submitted during the initial public notice period of July 8, 2010 through August 6, 2010 are considered to be valid and part of the official record. There is no need to resubmit any comments during the extended period.

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency, (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) have cooperated in the development of a permit for the above identified facility. The effluent limits and permit conditions imposed have been drafted to assure

that State Water Quality Standards and provisions of the Clean Water Act will be met. EPA has formally requested that the State certify this draft permit pursuant to Section 401 of the Clean Water Act and expects that the draft permit will be certified.

INFORMATION ABOUT THE DRAFT PERMIT:

A fact sheet or a statement of basis (describing the type of facility; type and quantity of wastes; a brief summary of the basis for the draft permit conditions; and significant factual, legal and policy questions considered in preparing the draft permit) may be obtained at no cost at http://www.epa.gov/region1/npdes/draft_permits_listing_ma.html or by writing or calling EPA's contact person named below:

Suproakash Sarker
US EPA
5 Post Office Square Suite 100 (OEP6-1)
Boston, MA 02109-3912
Telephone: (617) 918-1693

The administrative record containing all documents relating to this draft permit is on file and may be inspected at the EPA Boston office mentioned above between 9:00 a.m. and 5:00 p.m., Monday through Friday, except holidays.

PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

All persons, including applicants, who believe any condition of this draft permit is inappropriate, must raise all issues and submit all available arguments and all supporting material for their arguments in full by **10/4/10**, to the U.S. EPA, 5 Post Office Square, Suite 100, (OEP 06-1) Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing to EPA and the State Agency for a public hearing to consider this draft permit. 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 this draft permit the Regional Administrator will respond to all significant comments and make the responses available to the public at EPA's Boston office.

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