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),

Battelle Duxbury Operations

is authorized to discharge from the facility located at

Battelle Duxbury Operations
397 Washington Street
Duxbury, MA 02332

to receiving water named

Duxbury Bay (MA94-15)

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 following 60 days after signature.

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

This permit supersedes the permit issued on August 25, 1999.

This permit consists of 10 pages in Part I including effluent limitations, monitoring requirements, and state permit conditions, Attachment A, Marine Acute Toxicity Test Protocol, Attachment B, Marine Chronic Toxicity Protocol and 25 pages in Part II including Standard Conditions.

Signed this 18th day of January, 2008

/S/ SIGNATURE ON FILE

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

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

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge **flow through seawater, culture water used for culturing and testing marine organisms, wash water from the laboratories, air conditioning condensate, and treated tank water from the New England Aquarium Rehabilitation Center that is located on the property** from **outfall 001**. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirement[1]	
		Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Flow	gpd	400,000	462,600	Continuous	Meter
pH[2]	s.u.	6.5-8.5 range (See I.A.3. Page 5)		1 / Week	Grab
Fecal Coliform Bacteria	MPN/ 100 ml	14	28	1 / Month	Grab
Enterococcus Bacteria	MPN/ 100 ml	*****	Report	1 / Month	Grab
Total Copper[3]	µg/l	3.1	4.8	1 / Week	Composite[4]
Whole Effluent Toxicity (WET) **Acute LC_{50}[5]** **Chronic NOEC[6]**	 % %	 ***** *****	 ≥100% 100%	 1 / Event[7,8] 1 / Event[7,8]	 Composite[4] Composite[4]

See Page 3 for Footnotes:

Footnotes:

1. Samples taken in compliance with the monitoring requirements specified above shall be taken at the end of the discharge pipe and free from storm water and/or tidal influence.

2. Required for State Certification.

3. The concentration of total copper in the effluent shall be reported once (1) per week for the entire permit cycle. The copper limitations are subject to the compliance schedule set forth in Part C of this permit. Two years after the effective date of the permit, the discharge must be in compliance with the copper limits listed in Part I.A.1. unless the permittee can demonstrate to MassDEP that the limits should be adjusted due to naturally occurring conditions in the receiving water. The permittee may then submit a written request to the EPA-New England requesting an adjustment in the permitted copper limits to reflect the naturally occurring conditions. The permittee's written request must include an approval letter from the State. MassDEP's letter shall state that the permittee has demonstrated to MassDEP's satisfaction that the naturally occurring background copper concentrations are higher than the National Recommended Water Quality Criteria and therefore the permit limits should be adjusted accordingly [314 4.05 (5)(e)]. Numeric copper limits shall consider the average of at least one year of background data prorated based on the ratio of freshwater to seawater used by the facility. Until written notice is received by certified mail from the EPA-New England indicating the copper limits have been adjusted, the permittee is required to meet the copper limits listed in Part I.A.1. of this permit.

4. Composite samples shall consist of at least four (4) grab samples taken at equal intervals on a flow weighted basis for the duration of the discharge period when the discharge is free from tidal influences.

5. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms.

6. 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 100% limit is defined as a sample which is composed of 100% effluent.

7. In the event that new work involving chemical and/or biological testing that generates wastewater is performed at the facility, the permittee shall conduct an acute and a chronic toxicity test. The tests must be performed in accordance with the test procedures and protocols specified in **Attachment A** and **Attachment B** of this permit. If no WET testing occurs within a reporting period, enter a No Data Indicator Code (NODI) '9' for that month.

8. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in **Attachment A**, Section IV., DILUTION WATER in order to obtain permission to use alternate dilution water.

   In lieu of individual approvals for alternate dilution water required in **Attachment A**, EPA-New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") which may be used to obtain automatic approval of alternate dilution water, including the appropriate species for use with that water. If this Guidance document is revoked, the permittee shall revert to obtaining approval as outlined in **Attachment A**. The "Guidance Document" is included in Attachment G of the *NPDES Permit Program Instructions for the Discharge Monitoring (DMR) Forms* available at http://www.epa.gov/region1/enforcementandassistance/dmr.html and is not intended as a direct attachment to this permit.

Part I.A (continued)

2. The discharges either individually or in combination shall not cause a violation of State Water Quality Standards of the receiving waters which have been or may be promulgated.

3. The pH of the effluent shall be neither less than 6.5 nor greater than 8.5 at any time, unless these values are exceeded due to natural causes.

4. The discharge shall not cause an objectionable discoloration of the receiving waters.

5. The effluent shall contain neither visible oil sheen, foam, nor floating solids at any time.

6. The discharges shall not contain materials in concentrations or combinations which are hazardous or toxic to human health, aquatic life of the receiving surface waters or which would impair the uses designated by its classification.

7. The discharges shall not impart color, taste, turbidity, toxicity, radioactivity or other properties which cause those waters to be unsuitable for the designated uses and characteristics ascribed to their use.

8. Notwithstanding specific conditions of this permit, the effluent must not lower the quality of any classified body of water below such classification, or lower the existing quality of any body of water if the existing quality is higher than the classification.

9. Medications

   a. The permittee shall use only medications and disease control chemicals in dosages and combinations that are appropriate to control short term outbreaks of disease and non-native organisms.

   b. **Annually, upon the anniversary of the effective date of the permit**, the permittee shall provide to EPA and MassDEP the current list of all medications and chemicals that are

used in all tanks and aquaria. For each medication or chemical, the permittee shall identify:

- The product name and chemical formulation of the medication or chemical
- The purpose of the chemical
- The dosage rate, frequency of application (hourly, daily, etc.), and the duration of treatment
- The method of application
- The method or methods used to detoxify the wastewater prior to discharge, if necessary
- Information on the persistence and toxicity of each medication or chemical such as may be found on a Material Safety Data Sheet (MSDS)
- Information on the U.S. Food and Drug Administration (FDA) approval for use of the medication or chemical for human consumption, if applicable.

c. The permittee must ensure the proper storage of medications and disease control chemicals in a manner designed to prevent spills that may result in the discharges of these items to the receiving water. The permittee shall implement procedures for properly containing, cleaning, and disposing of any spilled material.

10. Battelle shall notify the Massachusetts Department of Environmental Protection (MassDEP), the Massachusetts Division of Marine Fisheries (DMF), Massachusetts Coastal Zone Management (CZM) and the US EPA before any toxic organisms or any non-native species are to be cultured or tested. The DMF should be notified by the permittee prior to any shellfish being used at the facility that have been transported in from another country, state or town and are placed in a non-disinfected flow through system at the facility. Notifications shall be submitted according to Part E. of this permit.

11. At least 45 days prior to the initiation of new work on substances involving biological and/or chemical testing and the generation of wastewater, the permittee shall submit a report to EPA and MassDEP that identifies and describes the work and the potential characteristics of the wastewater generated as a result of that work. Based upon the data provided by the permittee, EPA and MassDEP may require additional analytical requirements, upgrading the aquaria pollutant removal equipment or termination of the tests until proper mitigation procedures or equipment are installed. In addition, the permittee shall submit a yearly report to EPA and MassDEP that identifies and describes the work on substances undergoing biological and/or chemical testing performed throughout the prior calendar year. The yearly report shall be **submitted by January 15th of each year** along with the monthly DMR.

12. The results of sampling for any parameter above its required frequency must also be reported, in accordance with 40 CFR § 122.41(l)(4)(ii).

13. The permittee shall notify the regulatory agency in writing of any changes in the operations, including the use of chemical additives, at the facility that may have an effect on the permitted discharge of wastewater from the facility.

14. EPA may modify this permit in accordance with EPA regulations in 40 CFR §122.62 and §122.63 to incorporate more stringent effluent limitations, increase the frequency of analyses, or impose additional sampling and analytical requirements.

15. This permit shall be modified, or revoked and reissued to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:

    a. contains different conditions or is otherwise more stringent than any effluent limitation in this permit; or

    b. controls any pollutant not limited by this permit.

    If the permit is modified or reissued, it shall be revised to reflect all currently applicable requirements of the Act.

16. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe (40 CFR § 122.42):

    a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

        (i) One hundred micrograms per liter (100 µg/l);

        (ii) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4- dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

        (iii) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or

        (iv) The level established by the Director in accordance with 40 CFR §122.44(f).

    b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

        (i) Five hundred micrograms per liter (500 µg/l);

        (ii) One milligram per liter (1 mg/l) for antimony;

        (iii) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or

(iv) The level established by the Director in accordance with 40 CFR §122.44(f).

c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

17. 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.

18. 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. BEST MANAGEMENT PRACTICES

1. The permittee shall develop, implement, and maintain a Best Management Practices (BMP) Plan designed to reduce, or prevent, the discharge of pollutants to the receiving waters identified in this permit.

2. The BMP plan shall be completed or updated and signed by the permittee within **90 days after the effective date** of this permit. A current copy of the plan shall be maintained at the facility.

3. The BMP plan shall be prepared in accordance with good engineering practices, identify potential sources of pollution, and describe and ensure implementation of practices which will be used to reduce the pollutants and assure compliance with this permit. The plan shall provide a systematic approach by which 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. This includes, but is not limited to, culturing and testing of marine and freshwater organisms, tank cleaning, air drying procedures for glassware, discharges from laboratory sinks etc.

4. The permittee shall amend and update the BMP plan within 14 days for any changes at the facility affecting the BMP plan. Changes which may affect the BMP plan include,

but are not limited to, the following activities: a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the waters of the United States; a release of a reportable quantity of pollutants as described in 40 CFR §302; or a determination by the permittee that the BMP plan appears to be ineffective in achieving the general objectives of controlling pollutants in discharges associated with industrial activity.

C. COMPLIANCE SCHEDULE

1. Compliance with the copper water quality-based effluent limit (WQBEL) in Part I.A.1. of this permit is deferred until two (2) years after the effective date of the permit according to the following schedule:

   a. Within 12 months of permit issuance, the permittee shall:

      i. Monitor copper concentrations in both seawater and freshwater influent at a minimum frequency of once (1) per month.

      ii. Evaluate possible sources of copper contamination including pipes, building materials, and copper containing compounds used in the labs.

      iii. Submit a report to EPA and MassDEP describing the evaluation and containing all analytical data collected pursuant to this investigation.

   b. Within 24 months of permit issuance, the permittee shall:

      i. Replace, to the maximum extent practicable, all sources of copper contamination.

      ii. Submit a report to EPA and MassDEP describing what changes were made and the impact of those changes on the concentration of copper in the effluent.

2. The compliance dates established in above may be extended by EPA and/or MassDEP for good cause. The permittee shall obtain written approval from EPA and MassDEP for any extension of the compliance dates established above.

D. UNAUTHORIZED DISCHARGES

This permit authorizes the permittee to discharge only in accordance with the terms and conditions of this permit and only from the outfall listed in Part I A. of this permit. Discharges of wastewater from any other point sources which are not authorized by this permit or other NPDES permits shall be reported in accordance with Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

E. MONITORING AND REPORTING

Monitoring results obtained during each calendar month shall be summarized and reported on Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the following month. Other monitoring results shall be submitted as required by this permit.

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

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

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

In addition, copies of all Discharge Monitoring Reports required by this permit shall also be submitted to the State at following address:

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

Notifications listed in Section I.A.10. shall be submitted to Massachusetts Division of Marine Fisheries at the following address:

Dr. Jack Schwartz
Massachusetts Division of Marine Fisheries
Annisquam River Marine Fisheries Station
30 Emerson Avenue
Gloucester, MA 01930
FAX: 617-727-3337

F. 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.