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),

Woods Hole Oceanographic Institution

is authorized to discharge from the facility located at

Woods Hole Oceanographic Institution
Environmental Systems Laboratory
171 Oyster Pond Road
Woods Hole, MA 02543

to receiving water named

Vineyard Sound (Cape Cod Coastal Drainage Area, MA-96)

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

This permit shall become effective December 1, 2007.

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 September 17, 2001.

This permit consists of 11 pages in Part I including effluent limitations, monitoring requirements, and state permit conditions; 25 pages in Part II, Standard Conditions; and Attachment A – Marine Acute Toxicity Test Procedures and Protocols.

Signed this 27th day of September, 2007.

/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 LIMITS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number **001** to the receiving water (Vineyard Sound). Such discharge shall be limited and monitored by the permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the effluent.

Effluent Characteristic	**Units**	**Discharge Limitation**			**Monitoring Requirement**	
		Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type**
Flow	MGD	0.79	----	Report	Continuous[1]	Recorder
pH	std units	(See Condition I.A.3)			1/Week	Grab
Temperature[2]	^{o} Celsius	Report	----	29.4	1/Week	Grab
Acute Whole Effluent Toxicity Testing [3, 4, 5, 7]	%	Acute $LC_{50} \geq$ 100%			1/Quarter [7]	6-Hour Composite[6]

Footnotes:

1. For each operating date, daily flows shall be recorded and the average monthly and maximum daily values shall be reported.

2. The temperature of the effluent shall not exceed 29.4^{o} Celsius at any time. The average monthly temperature shall not exceed 26.7^{o} Celsius. The rise in receiving water temperature due to the discharge shall not exceed 0.8^{o} Celsius during July through September, and shall not exceed 2.2^{o} Celsius during October through June.

3. The permittee is required to conduct Whole Effluent Toxicity (WET) testing following EPA Region I Protocols. The test species are Mysid Shrimp (Mysidopsis bahia) and Inland silverside (Menidia beryllina). Toxicity test samples shall be collected in the months of March, June, September, and December and should be collected during a cleaning/filter backwash event. The test results shall be submitted by the last day of the month following completion of the test. A test must be performed in accordance with test procedures

and protocols specified in **Attachment A** of this permit. The permit may be reopened based on WET sampling results to include a toxicity reduction evaluation (TRE) or to include specific effluent limitations for toxic parameters.

4. The acute Whole Effluent Toxicity test limit is LC_{50} equal to or greater than 100%. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than 50% mortality.

5. 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/region1/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**.

6. A 6-hour composite sample will consist of at least six (6) grab samples taken at approximately equal intervals during one working day.

7. Up to three quarterly acute Whole Effluent Toxicity tests may be suspended per year if there has been no change in the operational process that may effect the discharge or if there has been no introduction of new chemical additives to the facility's culture water since the previous passing acute toxicity test ($LC_{50} \geq 100\%$). If tests are suspended because the previous test has met the permit limit ($LC_{50} \geq 100\%$) and there have been no changes to the operational process at the facility (including the introduction of new chemical additives to the culture water), then "No-Discharge" shall be reported on the DMR.

I.A. (Continued)

2. The discharge shall not cause a violation of the water quality standards of the receiving waters.

3. The pH of the effluent shall not be less than 6.5 nor greater that 8.5 standard units (SU) at any time, unless caused by natural causes such as low pH of the source water. To demonstrate that pH values of the effluent are outside this pH range due to natural causes, the permittee must show that pH measurements of the source water and the effluent are the same. Documentation of such conditions must be submitted by the permittee with the discharge monitoring reports.

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

5. The effluent shall not contain visible oil sheen, foam, floating solids, or settleable solids at any time.

6. The permittee shall not discharge into the receiving water any pollutant or combination of pollutants in toxic amounts.

7. There shall be no discharge of untreated wastewaters resulting from cleaning accumulated solids in the raceways, culture tanks, screens, and associated equipment.

8. The results of sampling for any parameter done more often than its required frequency in accordance with EPA approved methods must also be reported.

9. The permittee shall notify EPA and the MassDEP within 24-hours upon the occurrence of a water quality induced mortality of greater than 25 percent in any aquatic species under culture at the facility in accordance with reporting requirements in Section D.1.e. of the Part II Standard Conditions of this permit.

10. The permittee shall notify the Director as soon as it knows or has reason to believe:

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

        (1) One hundred micrograms per liter (100 ug/L);

        (2) Two hundred micrograms per liter (200 ug/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/L) for 2,4-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

        (3) 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
        (4) Any other notification level established by the Director in accordance with 40 CFR

§122.44(f) and Massachusetts regulations.

(5)

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":

(1) Five hundred micrograms per liter (500 ug/L);

(2) One milligram per liter (1 mg/L) for antimony;

(3) 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

(4) Any other notification level established by the Director in accordance with 40 CFR §122.44(f) and Massachusetts regulations.

c. That it has begun or expects 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.

11. No components of the effluent shall result in any demonstrable harm to aquatic life or violate any 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, with the permittee being so notified.

12. This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable standard or limitation promulgated 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 the permit; or

b. Controls any pollutants not limited in the permit.

13. Medications and Disease Control Chemicals

a. The permittee shall use only medications and disease control chemicals in dosages and combinations as included in the Best Management Practices (BMP) plan [See Part I.B.d.iv.] and as approved for appropriate uses by the U.S. Food and Drug Administration (USFDA), U.S. Fish and Wildlife Service (USF&WS), EPA and the Commonwealth of Massachusetts.

b. The permittee shall use these medications and chemicals as needed to treat a disease or disease-causing conditions. The prophylactic use of disease control medications is prohibited.

c. The permittee shall notify, within 24 hours by telephone and within 5 working days in writing, the Regional Administrator at EPA-Region I, the U.S. Fish and Wildlife Service, the Massachusetts Division of Marine Fisheries, and the Massachusetts Department of Environmental Protection (MassDEP) of the emergency use or the immediate intended use of any medication and/or chemical not specifically identified in the Best Management Practices Plan as described below.

d. The Regional Administrator or the Director will notify the permittee when the use of a specific chemical described in item c., immediately above, is unacceptable or that the dosage concentration or frequency level must be modified to protect the aquatic community in the receiving water.

14. If it is necessary to use formalin for the control of disease, all wastewater that contains trace amounts of formaldehyde shall be collected and disposed of through the permittee's hazardous waste collection system. No wastewater containing formaldehyde shall be released to the environment

I.B. BEST MANAGEMENT PRACTICES (BMP) PLAN

a. The Best Management Practices (BMP) plan shall be updated. The plan shall identify Best Management Practices (BMPs) to be followed in operating the facility, cleaning the raceways/culture tanks, screens and other equipment and disposing of any solid waste. Best Management Practices 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. The purpose of the plan is to identify and to describe the practices which prevent or minimize the amounts of pollutants (biological, chemical and medicinal) discharged to surface waters.

b. The updated BMP plan shall be completed and signed within **90 days after the effective date** of this permit. The permittee shall certify the BMP plan has been updated and that it meets the requirements of this permit. The certification shall be signed in accordance with the requirements identified in 40 CFR §122.22. A copy of the certification shall be sent to EPA and MassDEP within **120 days after the effective date** of this permit. Also, a copy of this initial BMP plan shall be sent to MassDEP and the Massachusetts Division of Marine Fisheries within **120 days after the effective date** of this permit. A current copy of the plan shall be maintained at the facility.

c. The BMP plan shall be amended as necessary and appropriate during the life of the permit. Specifically, the permittee shall amend and sign the BMP plan within **30 days following a change** in facility design, construction, operation, or maintenance which affects the potential for the discharge of pollutants into surface waters. The amended BMP plan shall be certified and the amended plan and certification shall be forwarded to the regulatory agencies as described in item b above within **60 days after the facility change**.

d. The BMP Plan shall include, at a minimum, the following items:

i. During operations:

(1) A description of the pollution control equipment or methods used to enhance solids collection.

(2) A description of how excessive solids buildup will be identified to trigger more frequent cleaning of the raceways/culture tanks and equipment thereby preventing more suspended and dissolved materials in the discharge.

(3) A description of feeding methods used to minimize the amount of feed residual in the discharge.

(4) A description of the preventative maintenance program for cleaning equipment so that delays in cleaning due to equipment failures are avoided.

(5) A description of the analyses and model (if one is used) used to determine the time of maximum concentration based on dosage, injection point, facility flow, etc.

ii. Biological Pollution

(1) Describe, in detail, the precautions that will be exercised by the facility to prevent aquatic organisms that are not indigenous to the New England area and/or the United States from becoming established in the local surface waters.

(2) A description for storage and treatment of Outfall 001 discharge during plant upsets to prevent biological pollution (non-native organisms, fish parasites, and fish diseases) from entering the receiving water in the case of an untreated discharge bypass.

iii. Cleaning of culture tanks/raceways and other equipment

(1) Describe in detail how the accumulated solids are to be removed, dewatered and methods of disposal.

(2) Describe where the removed material is to be placed and the techniques used to prevent it from re-entering the surface waters from any on-site storage. If the material is to be removed from the site, describe who receives the material and its method of disposal and/or reuse.

iv. Medications and chemicals used in the facility

(1) List in the plan all medications and chemicals that are expected to be used in the culture tanks/raceways. For each medication or chemical, identify:

(a) Product name of the medication or chemical.

(b) The chemical formulation of the medication or chemical.

(c) The purpose or use of the chemical.

(d) The dosage concentration, frequency of application (hourly, daily, etc.) and the duration (hours, days) of treatment.

(e) The method of application.

(f) Material Safety Data Sheets (MSDS), Chemical Abstracts Service (CAS) Registry number for each active therapeutic ingredient.

(g) The method or methods used to detoxify the wastewater prior to discharge following application of chemical and/or medication.

(h) Information on the persistence and toxicity of each medication or chemical.

(i) Information on the Food and Drug Administration (USFDA) approval for the use of said medication or chemical on fish or fish related products used for human consumption.

(j) Available aquatic toxicity data for each medication or chemical used (vendor data, literature data, etc.); LC_{50} at 48 and/or 96 hours and No Observed Effect Level (NOEL) concentrations for typical aquatic organisms (salmon, trout, daphnia, fathead minnow, etc.).

v. Personnel Training

(1) Describe the training to be provided for employees to assure they understand the goals and objectives of the BMPs, the requirements of the NPDES Permit and their individual responsibilities for complying with the goals and objectives of the BMP Plan and the NPDES permit.

vi. BMP Records Maintenance

(1) Records of the calculations done at the time of sampling must be maintained at the facility in order that an inspector may verify that the sampling was properly conducted

I.C. SPECIAL NOTIFICATION REQUIREMENT

Notwithstanding any other provision of this permit, the permittee shall notify EPA and MassDEP immediately upon any decision to start, and at least 180 days prior to initiation of, any new research project involving new species or new chemicals at the facility which were not described in the current permit renewal application. This notification will constitute an application for permit modification to incorporate any requirements necessary to protect the environment when the new research begins. Based on the notification, EPA will determine if a permit modification must be issued before the new research project is initiated and notify the permittee of its determination.

I.D. 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 are not authorized by this permit and shall be reported in accordance with Section D.1.e. (1) of the Part II Standard Conditions of this permit (Twenty-four hour reporting).

I.E. MONITORING AND REPORTING

Monitoring results obtained during each calendar month shall be summarized and reported on Discharge Monitoring Form(s) postmarked no later that the 15th day of the following month.

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

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

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

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

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

A copy of all technical information associated with medications and chemicals used for disease/parasite control and complementary aquatic toxicology and biological pollution information shall be submitted to the following within 120 days after the effective date of this permit:

U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, Massachusetts 01035-9589

Massachusetts Department of Environmental Protection
Division of Watershed Management-2nd Floor
627 Main Street
Worcester, MA 01608

Massachusetts Division of Marine Fisheries
Attn: Dr. Jack Schwartz
30 Emerson Avenue
Gloucester, Massachusetts 01930

Additional monitoring and recordkeeping requirements are contained in Section C of the Part II Standard Conditions of this permit. Section C includes, but is not limited to, the requirements to record: the date, exact place, and time of sampling, measurements, and analyses; the individual(s) who performed the sampling, measurements, and analyses; the analytical techniques or methods used; and the results of such analyses. Section C of Part II also includes the requirements to retain records of all monitoring information, including all data, for a period of at least 3 years from the date of the sample, measurement, report or application. Additional reporting requirements are contained in Section D of the Part II Standard Conditions of this permit. Section D requires reporting of monitoring results on a Discharge Monitoring Report (DMR), as well as reporting within 24 hours of any noncompliance which may endanger health or the environment. Section D also requires reporting to EPA if a variety of conditions exist, including planned

changes to the facility and anticipated or unanticipated noncompliance. This section also sets the signatory and public availability requirements of reports sent to EPA.

I.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.