

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),

The Swansea Water District

is authorized to discharge from the facility located at

**298 Vinnicum Road
Swansea, MA 02777**

to the receiving water named

**Palmer River
Narragansett Bay Watershed**

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

This permit and the authorization to discharge expire at midnight, five (5) years from the last day of the month preceding the effective date. The effective date of the permit is May 1, 2008.

This permit consists of 9 pages in Part I including effluent limitations and monitoring requirements, Attachment A – Marine Chronic Toxicity Test Procedure and Protocol, Attachment B – Marine Acute Toxicity Test Procedure and Protocol, and 25 pages in Part II. Standard Conditions.

Signed this 21st day of February, 2008

/S/ SIGNATURE ON FILE

Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

Director
Division of Watershed Management
Bureau of Resource Protection
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 expiration, the permittee is authorized to discharge blended brine and treated water from the sludge drying beds to the Palmer River from outfall serial number 001. The discharge is authorized for a six hour period beginning three hours before high tide and ending three hours after high tide. The discharge shall be limited and monitored by the permittee as specified below.

<u>Effluent Characteristic</u>	<u>Units</u>	<u>Discharge Limitation</u>			<u>Monitoring Requirement</u>	
		<u>Average Monthly</u>	<u>Average Weekly</u>	<u>Maximum Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type²</u>
Flow ¹	MGD	2.71	*****	Report	Continuous	Recorder
TSS ³	mg/l	20	30	Report	2/Week	Composite ⁴
TDS ³	mg/l	Report	*****	Report	1/Week	Grab
pH	S.U.	(See Condition I.A.1.b. on Page 6)			1/Day	Grab
Dissolved Oxygen	mg/l	(See Footnotes 3 and 5)			1/Day	Grab
Chlorides	mg/l	Report	*****	Report	1/Week	Grab
Salinity ^{3,7}	ppt	(See Footnote 7)			Continuous	Recorder
Total Residual Chlorine ⁶	ug/l	7.5	*****	13	1/Discharge cycle	Grab
Copper, Total ⁸	ug/l	Report	*****	Report	1/Month	Composite ⁴
Lead, Total ⁸	ug/l	Report	*****	Report	1/Month	Composite ⁴

<u>Effluent Characteristic</u>	<u>Units</u>	<u>Discharge Limitation</u>			<u>Monitoring Requirement</u>	
		<u>Average Monthly</u>	<u>Average Weekly</u>	<u>Maximum Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type²</u>
Arsenic ⁸	ug/l	Report	*****	Report	1/Month	Composite ⁴
Ammonia-Nitrogen	mg/l	Report	*****	Report	1/Week	Composite ⁴
Total Kjeldahl Nitrogen	mg/l	Report	*****	Report	1/Month	Composite ⁴
Nitrite/Nitrate	mg/l	Report	*****	Report	1/Month	Composite ⁴
C-NOEC ^{10,12}	%	77	*****	*****	4/Year ⁹	Composite ⁴
LC ₅₀ ^{11,12}	%	≥ 100	*****	*****	4/Year ⁹	Composite ⁴

During the period beginning the effective date and lasting through expiration, the permittee shall monitor the influent and effluent of the sludge drying beds as specified below.

<u>Characteristic</u>	<u>Units</u>	<u>Discharge Limitation</u>			<u>Monitoring Requirement</u>	
		<u>Average Monthly</u>	<u>Average Weekly</u>	<u>Maximum Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type²</u>
BOD ₅ ^{13,14}	mg/l	Report	*****	Report	1/Month	Composite ⁴
	lbs/day	Report	*****	Report	1/Month	Composite ⁴
TSS ^{13,14}	mg/l	Report	*****	Report	1/Month	Composite ⁴
	lbs/day	Report	*****	Report	1/Month	Composite ⁴

Footnotes:

1. For flow, report maximum and minimum daily rates and total flow for each operating date. This is a monthly average limit.

The permittee shall also report the intake flow volume for each intake event. This data shall be attached to the monthly monitoring report.

2. Effluent samples taken in compliance with monitoring requirements specified in this permit shall be taken at a representative point prior to mixing with the receiving water. Final effluent samples shall be representative of the brine effluent that is discharged to the Palmer River. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP.

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.

3. Sampling required for intake and effluent. Intake samples for dissolved oxygen and salinity shall be grab samples taken within thirty minutes of the end of an intake cycle. Effluent samples shall be composite samples collected from the discharge following the sampled intake cycle.

4. A composite sample will consist of one grab sample per hour taken during the discharge cycle and shall be combined proportional to flow.

5. The dissolved oxygen concentration of the final effluent shall be greater than or equal to 6 mg/l. The dissolved oxygen concentration of the effluent shall also be equal to or greater than concentration in the receiving water.

The permittee shall report the minimum daily intake and effluent concentrations on its pre-printed discharge monitoring report, and record the number of times the effluent limit was violated during the month (i.e., the number of times the effluent concentration was less than the intake concentration) in the "No. Ex" column of the row containing the effluent sampling data. The permittee shall attach a summary including all of the intake and effluent data collected during the month to the pre-printed discharge monitoring report form.

6. Liquid chlorine or cleaning solutions that have liquid chlorine as an ingredient will be neutralized and dechlorinated prior to final discharge. Whenever chlorine is added to wastewater flow, the effluent shall be sampled for total residual chlorine (TRC) at the frequency required by the permit. The effluent limitation on TRC is year round and is a State Certification Requirement.

When chlorine sampling is required, the permittee shall collect at least one TRC grab sample per day. For every day that more than one grab sample is taken, the monthly DMR shall include an attachment documenting the individual grab sample results for that day, the date and time of each sample, the method used for analysis, and a summary of any operational modifications implemented in response to the sample results. All test results using EPA approved methods shall be used in the calculation and reporting of maximum daily data submitted on the DMR (see Part II. Section D.1.d.(2)).

7. The salinity of the final effluent shall be less than or equal to 32 parts per thousand.

The permittee shall report the average intake and effluent salinity concentrations on its pre-printed discharge monitoring report, and record the number of times the effluent limit was violated during the month in the "No. Ex" column of the row containing the effluent sampling data.

The permittee shall attach a summary of the average ambient salinity concentrations for each discharge cycle and the effluent salinity data collected during the month in its pre-printed discharge monitoring report form.

8. The permittee may request a reduction in the sampling requirement, if after submitting a **minimum** of one year of data, all data demonstrate that the discharge meets water quality criteria. 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 sampling requirement has been changed.
9. The permittee shall conduct acute and chronic (modified acute) toxicity tests four times per year. The chronic test may be used to calculate the acute LC₅₀ at the 48 hour exposure. The permittee shall test the (sea urchin) Arbacia punctulata for the chronic test only, the (inland silverside) Menidia beryllina for the chronic and modified acute tests, and the (mysid shrimp) Mysidopsis bahia for the acute test only using synthetic sea water. At least two of the toxicity tests each year shall be conducted when the effluent is a mix of brine from the RO units and the treated CIP and strainer wastewater.

Toxicity test samples shall be collected during the months of March, June, September and December. 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, July 31, October 31 and January 31, respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachments A and B** of this permit. The permittee shall use the protocol in Attachment A for the (sea urchin) Arbacia punctulata and the (inland silverside) Menidia beryllina. The permittee shall use the protocol in Attachment B for the (mysid shrimp) Mysidopsis bahia.

Test Dates in:	Submit Results by:	Test Species	Acute Limit LC ₅₀	Chronic Limit C-NOEC
March	April 30	<u>Arbacia punctulata</u>	-----	77%
June	July 31	(sea urchin)		
September	October 31	<u>Menidia beryllina</u>	≥ 100 %	77%
December	January 31	(silverside)		
		<u>Mysidopsis bahia</u>	≥ 100 %	-----
		(mysid shrimp)		
		See Attachments A&B		

After submitting 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 number of species used in the WET testing requirements. The permittee is required to continue testing at the frequency and with the same number of species specified in the permit until notice is received by certified mail from the EPA that the WET testing requirement has been changed.

The permittee may request a reduction in the frequency of tests conducted, if after submitting a **minimum** of two years worth of data, all data demonstrate that the discharge meets water quality criteria. The permittee is required to continue the frequency of testing in the permit until notice is received by certified mail from the EPA that the sampling requirement has been changed.

10. C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing where the test results exhibit a linear dose-response relationship.

However, where the test results do not exhibit a linear dose-response relationship, the permittee must report the lowest concentration where there is no observable effect.

11. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate. The "77%" or greater" limit is defined as a sample which is composed of 77% (or greater) effluent, the remainder being dilution water. This is a maximum daily limit derived as a percentage of the inverse of the dilution factor of 1.3.
12. 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. Marine Chronic Toxicity Test Procedure and Protocol, Section IV. DILUTION WATER** in order to obtain permission to use an 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 an 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" has been sent to all permittees with their annual set of DMRs and Revised Updated Instructions for Completing EPA's Pre-Printed NPDES Discharge Monitoring Report (DMR) Form 3320-1 and is not intended as a direct attachment to this permit. Any modification or revocation to this "Guidance Document" 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**.
13. The permittee shall monitor CIP flow before and after the sludge drying bed treatment each month for one year after the treatment plant begins operating. This sampling requirement shall expire after one year worth of data unless, based on its review of the data, EPA provides the permittee with written notice that it be continued.
14. The permittee shall monitor back wash from the microfiltration membranes before and after the sludge drying bed treatment each month for one year after the treatment plant begins operation. This sampling requirement shall expire after one year's worth of data unless, based on its review of the data, EPA provides the permittee with written notice that it be continued.

Part I.A.1. (Continued)

- a. The discharge shall not cause a violation of the water quality standards in the receiving water.
- b. The pH of the effluent shall not be less than 6.5 nor greater than 8.5. There shall be no change from background conditions that would impair any use assigned to this class.
- c. The discharge shall not cause objectionable discoloration or turbidity of the receiving water.
- d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

- e. Wastewater from the pretreatment system strainer and microfiltration membranes shall be treated in the dewatering sludge drying beds prior to mixing with the final effluent.
- f. The results of sampling for any parameter above its required frequency must also be reported on the monthly discharge monitoring report.

2. Toxics Control

- a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.
- b. Any toxic component 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.

3. 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. AMBIENT MONITORING PLAN

Within six months after the effective date of the permit, the permittee shall develop and submit to MassDEP and EPA, an ambient monitoring plan to verify the dilution provided by the diffuser, to confirm the size of the mixing zone, and to confirm that water quality standards are achieved at the edge of the mixing zone. The monitoring plan shall be implemented within 30 days after initiating the discharge.

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, are not authorized by this permit and shall be reported in accordance with Section D.1.e. (1) of Part II. Standard Conditions of the permit. (See page 8 of 25 - twenty-four hour reporting).

D. PERMIT REOPENER

Revisions may be made to the permit pursuant to the Reopener Clause, on page 3 of 25, in Part II. Standard Conditions, Section A. General Conditions.

E. OPERATION AND MAINTENANCE OF THE DESALINATION PLANT

Operation and maintenance of the 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 malfunctions or failures of the system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges.

F. MONITORING AND REPORTING

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

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

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

The State Agency address for all reports except toxicity tests is:

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

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

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

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.

The following requirements are a condition of the State's water quality certification:

Swansea Water District shall conduct the monitoring program as described in Section 7.0 of the Swansea Desalination Project's National Discharge Elimination System Permit Application (October 6, 2006) and as updated in Section 5.0 of its Supplemental Information Document (April 5, 2007).

The permittee shall comply with the 65 Residential Gallons per Capita Day (RGPCD) and 10 % Unaccounted-for Water (UAW) performance standards included in the Massachusetts Water Resources Commission's State Water Conservation Standards (July 2006) as soon as feasible but no later than **December 31, 2017**. The permittee shall annually document its actual RGPCD and UAW in the Annual Statistical Reports (ASRs) it files with the Department, commencing with its ASR for calendar year 2008. The permittee's ASRs shall document that it is making demonstrable progress towards meeting the performance standards for RGPCD and UAW. Commencing with its ASR for calendar year 2017, and for each year thereafter, the permittee shall document that it is in full compliance with the performance standards for both RGPCD and UAW.

If the permittee's ASR for calendar year 2009 indicates that the permittee is exceeding 80 RGPCD and/or 15% UAW, then the permittee shall develop and implement an annual compliance plan(s) designed to meet the 65 RGPCD and 10% UAW performance standards by December 31, 2017. The Department will make the MassDEP Model Conservation Plan(s), including a menu of best management practices (BMPs), available to the permittee for adoption or consideration in developing its own compliance plan(s). The permittee shall submit a copy of its first compliance plan(s) to the Department by December 31, 2010, and begin implementation upon submittal.

If the permittee's ASR for calendar year 2012 indicates that the permittee is exceeding 65 RGPCD or 10% UAW, then the Registrant shall develop and implement an annual compliance plan(s) designed to meet the 65 RGPCD and 10% UAW performance standards by December 31, 2017, unless it has done so already. The permittee shall submit a copy of its first compliance plan(s) to the Department by December 31, 2013, and begin implementation upon submittal.