

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),

**South Essex Sewerage District**

is authorized to discharge from the facility located at

**South Essex Wastewater Treatment Facility  
50 Fort Avenue  
Salem, MA 01970**

to the receiving water named

**Salem Sound**

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

This permit shall become effective sixty (60) days after the date of signature.

This permit and the authorization to discharge expire at midnight, four (4) years from the effective date.

This permit supersedes the permit issued on September 26, 1994 and modified on September 15, 1999.

This permit consists of 11 pages in Part I including effluent limitations, monitoring requirements; Attachment A, Marine Acute Toxicity Test Procedure & Protocol; Attachment B, local limits; Attachment C, Pretreatment Requirements; Sludge Guidance; and 35 pages in Part II including General Conditions and Definitions.

Signed this 9<sup>th</sup> day of February, 2001

/Signature on File/

Linda M. Murphy  
Director  
Office of Ecosystem Protection  
Environmental Protection Agency  
Boston, MA

Acting Assistant Commissioner  
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 treated effluent from outfall serial number 001. Such 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 Monthl y</u>	<u>Average Weekly</u>	<u>Maximum Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow	MGD	29.71 <sup>1</sup>	----	Report	Continuous <sup>2</sup>	Recorder
CBOD <sub>5</sub>	mg/l	25	40	Report	1/Day <sup>3</sup>	24-Hour Composite <sup>4</sup>
TSS	mg/l	30	45	Report	1/Day <sup>3</sup>	24-Hour Composite <sup>4</sup>
pH	S.U.	(See Condition I.A.1.b on Page 4)			1/Day	Grab
Oil & grease <sup>5</sup>	mg/l	-----	----	Report	1/Month	Grab
Fecal Coliform Bacteria <sup>6</sup>	cfu/100 ml	200	----	400	3/Day	Grab
Total Residual Chlorine <sup>7</sup>	mg/l	0.24	----	0.338	3/Day	Grab
Total Nitrate	mg/l	----	----	Report	1/Month <sup>3,5</sup>	24-Hour Comp. <sup>4</sup>
Total Ammonia Nitrogen, as N	mg/l	----	----	Report	1/Month <sup>3,5</sup>	24-Hour Comp. <sup>4</sup>
Total Kjeldahl Nitrogen	mg/l	----	----	Report	1/Month <sup>3,5</sup>	24-Hour Comp. <sup>4</sup>
LC <sub>50</sub> <sup>8</sup>	%	----	----	≥ 100	4/year <sup>9</sup>	24-Hour Comp. <sup>4</sup>

Effluent samples shall be taken after dechlorination and prior to discharge to the effluent pipe for the parameters oil and grease, pH,

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TRC and fecal coliform. Sampling for all other parameters can be taken prior to chlorination.

## Footnotes:

1. This is an annual average limit, which shall be reported as a rolling average. The first value will be calculated using the monthly average flow for the first full month ending after the effective date of the permit and the eleven previous monthly average flows. (e.g. If the permit is effective on 9/15/00, the first reported annual average will be taken from the October 2000 DMR and the previous eleven monthly average flows.) Each subsequent month's DMR will report the annual average flow for the previous 12 months.
2. For flow, report maximum and minimum daily rates and total flow for each operating date.
3. Sampling required for influent and effluent.
4. A 24-hour composite sample will consist of at least twenty four (24) grab samples taken during a consecutive 24 hour period.
5. US EPA Test Method 1664 shall be used for oil & grease analysis. After at least one year of monitoring for oil & grease, nitrate, ammonia nitrogen and Kjeldahl nitrogen under this permit, the permittee may submit a written request to remove any of these monitoring requirements from the permit if there is sufficient data to indicate that the levels of these parameters in the discharge will not cause or contribute to any water quality standards violations. The permittee shall continue testing for these parameters until the EPA approves of such modification request in writing.
6. Fecal coliform monitoring will be conducted year round. This is a State certification requirement. The monthly average limit is expressed as a geometric mean. The geometric mean of the three daily values shall be reported as the maximum daily result.
7. The minimum detection level (ML) for total residual chlorine is defined as 50 ug/l. This value is the minimum detection level for chlorine using EPA approved methods found in Standard Methods f or the Examination of Water and Wastewater, 20th Edition, Method 4500 CL-E and G, or USEPA Manual of Methods of Analysis of Water and Wastes, Method 330.5. One of these methods must be used to determine total residual chlorine. Sample results of 50 ug/l or less shall be reported as zero on the discharge monitoring report.
8. The LC<sub>50</sub> 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. The permittee shall conduct acute toxicity tests four times per year. The chronic test may be used to calculate the acute LC<sub>50</sub> at the 48 hour exposure interval. The permittee shall test the Mysid shrimp, Mysidopsis bahia and the Inland silverside, Menidia beryllina. Toxicity test samples shall be collected during the months of February, April, June and August. Results are to be submitted by the 30th day of the month after the sample i.e. March, May, July, and September. See Permit Attachment A, Toxicity Test Procedure and Protocol.

Part I.A. (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 nor greater than 8.5 at any time, unless these values are exceeded due to natural causes or as a result of the approved treatment processes.
- c. The discharge shall not cause objectionable discoloration of the receiving waters.
- d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
- e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand during dry weather. The use percent removal shall be based on monthly average values. The permittee may use CBOD values to calculate the percent removal.
- f. The permittee shall minimize the use of chlorine while maintaining adequate bacterial control.

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

- a. Any new introduction of pollutants into that POTW from an indirect discharger in a primary industry category discharging process water; and
- b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
- c. For purposes of this paragraph, adequate notice shall include information on:
  - (1) the quantity and quality of effluent introduced into the POTW; and
  - (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

3. 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.
- b. If, within 30 days after notice of an interference or pass through violation has been sent by EPA to the POTW, and to persons or groups who have requested such notice,

the POTW fails to commence appropriate enforcement action to correct the violation, EPA may take appropriate enforcement action.

#### 4. Limitations for Industrial Users:

The permittee shall develop and enforce specific effluent limits (local limits) for Industrial User(s), and all other users, as appropriate, which together with appropriate changes in the POTW's Facilities or operation, are necessary to ensure continued compliance with the POTW's NPDES permit or sludge use or disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice and an opportunity to respond. Within 180 days after the effective date of this permit, the permittee shall prepare and submit a written technical report to EPA analyzing local limits. In preparing this evaluation, the permittee may use the attached form, **Attachment B**, to assist in developing local limits. Justifications and conclusions should be based on actual plant data if available and should be included in the report. As part of this analysis, the permittee shall sample and assess the impacts of toxic pollutants on its effluent, sludge and receiving waters. The Permittee shall carry out the local limits analysis in accordance with EPA Guidance Manual for the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program (December, 1987).

#### 5. 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.

#### 6. Numerical Effluent Limitations for Toxicants

EPA or DEP 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. UNAUTHORIZED DISCHARGES**

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from outfalls 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).

### C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

#### 1. Infiltration/Inflow

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions:

- a. A summary report of all actions taken to reduce infiltration/inflow by permittee and its member communities during the previous twelve (12) months shall be submitted to EPA and the MADEP by the 28<sup>th</sup> day of February of each year.
- b. The permittee shall develop and implement an operation and maintenance program for its sewer system and shall require, through appropriate agreements, that all member sewer communities develop and implement a routine operation and maintenance program. The operation and maintenance programs shall be designed to provide an understanding of the sewerage system, identify all potential and actual sanitary sewer overflow points and prevent sanitary sewer overflows (SSOs) due to equipment malfunction or failure. Documentation of the operation and maintenance program shall be required within one year of the effective date of the permit and annual implementation assessments shall be required each year thereafter.
- c. The permittee shall provide written reports of all SSOs from its collection system to DEP and EPA in accordance with requirements found at 40 C.F.R. §122.41(1)(6). The information reported shall include the date, location, duration, and volume of discharge as well as the cause of the overflow and the receiving water. The permittee shall require that each of its member sewer communities provide written reports of all SSOs to the permittee on at least a quarterly basis and to DEP within 24 hours of the event.
- d. The permittee shall develop and make available to all sewer communities, an education and outreach program/curriculum on ways to reduce I/I and shall continue to support I/I reduction demonstration projects.

#### 3. 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).

#### 4. Chlorination System Report

Within 3 months of the effective date of the permit, the permittee will submit a report documenting the effectiveness of the chlorination and dechlorination systems. The report will specifically address how flow variability and chlorine demand variability affect compliance

with the TRC and fecal coliform limits at all times. Sampling data shall be provided to support conclusions on how hourly and daily flow and chlorine demand variability affect permit compliance. The report will include a description of the chlorination and dechlorination systems and the methods for dosage control. The report will identify all changes necessary to ensure compliance with the TRC and fecal coliform limits at all times, including equipment modifications and upgrades, operational procedures (including calibration procedures and alarm/response procedures), and sampling protocols. The report will include a schedule for implementing all of the necessary changes. An annual report shall be submitted on November 30th of each year summarizing all exceedances of the TRC and fecal coliform effluent limits during the previous year, the estimated or measured fecal coliform and chlorine discharge levels during the exceedance, and measures taken to fix the problem(s) and to prevent future occurrences.

#### **D. INDUSTRIAL PRETREATMENT PROGRAM**

1. The permittee shall implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, procedures, and financial provisions described in the permittee's approved Pretreatment Program, and the General Pretreatment Regulations, 40 CFR 403. At a minimum, the permittee must perform the following duties to properly implement the Industrial Pretreatment Program ("IPP"):
  - a. Carry out inspection, surveillance, and monitoring procedures which will determine, independent of information supplied by the industrial user, whether the industrial user is in compliance with the Pretreatment Standards. At a minimum, all significant industrial users shall be sampled and inspected at the frequency established in the approved IPP but in no case less than once per year and maintain adequate records.
  - b. Issue or renew all necessary industrial user control mechanisms within 120 days of their expiration date or within 180 days after the industry has been determined to be a significant industrial user.
  - c. Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement; and
  - d. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.
2. The permittee shall provide the EPA and the MA DEP with an annual report describing the permittee's pretreatment program activities over the twelve month period ending 60 days prior to the due date in accordance with 40 CFR 403.12(I). The annual report shall be consistent with the format described in **Attachment C** of this permit and shall be submitted no later than March 1 of each year.
3. The permittee must obtain approval from EPA prior to making any significant changes to the industrial pretreatment program in accordance with 40 CFR 403.18(c).



4. The permittee must assure that applicable National Categorical Pretreatment Standards are met by all categorical industrial users of the POTW. These standards are published in the Federal Regulations at 40 CFR 405 et. seq.

#### **E. AMBIENT MONITORING PROGRAM**

An ambient monitoring program will be conducted in Salem Sound and shall focus on the benthic community in the vicinity of Outfall 001. Previous monitoring data have shown that the benthic community in the vicinity of the discharge was degraded. This monitoring will be a follow up to previous studies to assess whether the benthic community has improved in recent years, especially since the permittee has initiated secondary wastewater treatment. The permittee will propose a study which will be similar to previous studies it has conducted in Salem Sound. This proposal will be submitted to EPA and DEP for review within ninety (90) days after the effective date of the permit. This plan shall specifically include sample collection and preservation techniques and sample processing methods.

This sampling will be done during within the first year after the effective date of the permit and once every two years thereafter. This sampling shall be conducted in June, August and October of each of these years. An effort shall be made to collect samples from the coordinates provided in the revised 301(h) waiver application of 1986. Samples shall be taken from at least 6 locations which shall include the existing outfall location, a reference station and the following locations relative to the existing outfall: 50 meters south, 500 meters south, 50 meters north and 500 meters north.. In the 301(h) application, these locations are labeled as B9, B5, B4, B3, B1 and B2 respectively. At a minimum, the parameters to be sampled for shall include benthic infaunal species diversity, benthic infaunal biomass, sediment grain size and total organic carbon content of the sediment.

#### **F. SLUDGE CONDITIONS**

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.
2. The permittee shall comply with the more stringent of either the state or federal (40 CFR part 503), requirements.
3. The requirements and technical standards of 40 CFR part 503 apply to facilities which perform one or more of the following use or disposal practices.
  - a. Land application - the use of sewage sludge to condition or fertilize the soil
  - b. Surface disposal - the placement of sewage sludge in a sludge only landfill
  - c. Sewage sludge incineration in a sludge only incinerator

- 4. The 40 CFR part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions also do not apply to facilities which do not dispose of sewage sludge during the life of the permit but rather treat the sludge (lagoons- reed beds), or are otherwise excluded under 40 CFR 503.6.
- 5. The permittee shall use and comply with the attached compliance guidance document to determine appropriate conditions. Appropriate conditions contain the following elements:
  - General requirements
  - Pollutant limitations
  - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
  - Management practices
  - Record keeping
  - Monitoring
  - Reporting

Depending upon the quality of material produced by a facility, all conditions may not apply to the facility.

- 6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year

less than 290	1/ year
290 to less than 1500	1 /quarter
1500 to less than 15000	6 /year
15000 +	1 /month

- 7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR 503.8.
- 8. The permittee shall submit an annual report containing the information specified in the guidance. Reports are due annually by February 19. Reports shall be submitted to the address contained in the reporting section of the permit.

**G. MONITORING AND REPORTING**

1. Reporting

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

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

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

The State Agency is:

Massachusetts Department of Environmental Protection  
Bureau of Resource Protection  
Northeast Regional Office  
205A Lowell Street  
Wilmington, MA 01887

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

Notification to United States Food and Drug Administration (USFDA) and Massachusetts Division of Marine Fisheries (MADMF):

The permittee shall notify the Shellfish Program Specialist at the USFDA's Northeast Regional Office and the Director of the MADMF Office in Gloucester, MA of any chlorination system failure at the SESD facility within twenty four (24) hours of its occurrence, by telephone, specifying the time and relevant details of the event and the approximate volume and duration of the wastewater discharged during such event.

#### **H. STATE PERMIT CONDITIONS**

This discharge permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP) 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 MA DEP 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.