



RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
235 Promenade Street, Providence, Rhode Island 02908

July 11, 2018

CERTIFIED MAIL

Ms. Gayle Corrigan
Town Manager
East Greenwich Town Hall
125 Main Street
PO Box 111
East Greenwich, RI 02818

**RE: East Greenwich WWTP Upgrades Project – Schedule Extension Granted
RIPDES Permit No. RI0100030**

Dear Ms. Corrigan:

Enclosed is your final Rhode Island Pollutant Discharge Elimination System (RIPDES) Permit issued pursuant to the referenced application. State regulations, promulgated under Chapter 46-12 of the Rhode Island General Laws of 1956, as amended, require this permit to become effective on the date specified in the attached permit.

Also enclosed is a copy of the Department's response to the comments received on the draft permit and information relative to hearing requests and stays of RIPDES Permits.

Please note that a requirement has been added to Part I.D. of the permit, requiring your facility to submit a Resiliency Plan to DEM within two years of the effective date of the permit. See Comment 3 in the Response to Comments section of today's letter for further information about the Resiliency Plan requirement.

We appreciate your cooperation throughout the development of this permit. Should you have any questions concerning this permit, feel free to contact Samuel Kaplan of the State Permits Staff at (401) 222-4700, extension 7046, or samuel.kaplan@dem.ri.gov.

Sincerely,

Joseph B. Haberek, PE
Supervising Sanitary Engineer

JBH:sk

Enclosures

cc: Topher Hamblett, Save The Bay
Shawn O'Neill, East Greenwich WWTF
ecc: Crystal Charbonneau, RIDEM-OWR
Matt Puglia, P.E., RIDEM-OWR

Joseph Duarte, P.E., Town of East Greenwich
Bill Patenaude, RIDEM-OWR

RESPONSE TO COMMENTS

A public notice draft of this RIPDES permit was noticed in the Providence Journal on September 18, 2017. The public comment period lasted from September 18, 2017 through October 27, 2017. During the public comment period, the RIPDES Program received one comment letter on the draft permit from Save the Bay. The following is the DEM's responses to the comments from Save the Bay's comment letter:

Comment 1: The effluent dye study used to determine actual dilution factors was conducted in 1995. Similar studies were conducted at that time by other permittees and continue to be used in evaluating water quality based limits. Given that the studies are over two decades old, they should be updated to ensure that the dilution factors continue to be valid and protect water quality.

DEM Response: As indicated in Attachment A-1 of the facility's Permit Development Document, the average daily flow for the facility over the last five years of data that was evaluated when creating the permit was 0.8576 million gallons per day. This is very close to the average flow rate of 0.8 million gallons per day for the facility at the time of the 1995 dye study. Therefore, since the current average flow rate is consistent with the flow rate during the 1995 dye study, the dye study's results are still valid and it is not necessary to update the dye study prior to reissuing the permit.

Comment 2: The permit should be amended to require additional monitoring. Monitoring of Greenwich Cove should be conducted and used in subsequent permits to develop permit limits, understand the ecosystem response to lower nutrient levels, and address the impairment of Greenwich Bay. Wastewater Treatment Facilities, as major dischargers, must be required to conduct the monitoring needed.

DEM Response: Rhode Island has an established strategy for the monitoring of surface waters, the Rhode Island Water Monitoring Strategy, which documents the surface water monitoring activities that are needed to achieve the goal of comprehensively assessing Rhode Island's waters. The DEM has a leading role in implementing this strategy by both conducting monitoring programs and supporting monitoring by other entities. Since 2008, a network of 13 fixed sites in Narragansett Bay has been established to study how the ecosystem responds to nutrient loading and what natural processes control the magnitude of the impacts, in particular low dissolved oxygen levels (hypoxia). Temperature, salinity, pH, DO, chlorophyll, and turbidity are among the most important parameters needed to assess the hypoxia issue. In addition to data from the two fixed stations in Greenwich Bay, the grab sample spatial survey data since 2005 is available which includes two locations in Greenwich Cove <http://nbep.org/publications/NBEP-16-132.pdf>. At this point in time, the DEM is not requiring that East Greenwich perform in situ monitoring to further assess potential impacts from the WWTF.

Comment 3: Treatment plants must address the issue of climate resilience and storm hazards. RIPDES permits, including the East Greenwich permit, should require long-term planning for events related to increased sea levels and intense storms. Flooding and loss of system reliability is an issue of great concern for the health of Narragansett Bay because any plant failure during a storm could have disastrous consequences. The East Greenwich Wastewater Treatment Facility has been identified in a vulnerability study conducted by the Rhode Island Department of Environmental Management (RIDEM) for the Executive Climate Change Coordinating Council as one of the "treatment plants that would be predominantly inundated during a 100-year storm" and the "top 10 treatment plants most at risk from climate change." RIDEM should impose a condition requiring resiliency planning, similar to the one required in the Final 2017 Bucklin Point Permit, page 28, E.4. The condition should require a Resiliency Plan and schedule of short and long-term actions that will be taken to, minimize unpermitted discharges, maintain operations and protect key collection and treatment systems assets. The plan should be consistent with DEM's Guidance for the Consideration of Climate Change impacts in the Planning and Design of Municipal Wastewater Collection and Treatment Infrastructure and include consideration of the findings of the 2017 DEM report Implications of Climate Change for Rhode Island Wastewater Collection and Treatment Infrastructure. The analysis should include component and system design life and sea-level rise projections developed by the Coastal Resources Management Council.

DEM response: A permit condition which requires resiliency planning, similar to that from the Final 2017 Bucklin Point Permit, has been added to Part I.D. of the East Greenwich facility's final permit. This condition requires a Resiliency Plan to be developed with a schedule of short and long-term actions that will be taken to minimize unpermitted discharges, maintain operations, and protect key collection and treatment systems assets. The plan should be consistent with DEM's Guidance for the Consideration of Climate Change impacts in the Planning and Design of Municipal Wastewater Collection and Treatment Infrastructure and include consideration of the findings of the 2017 DEM report Implications of Climate Change for Rhode Island Wastewater Collection and Treatment Infrastructure. The analysis shall also consider component and system design life and sea-level rise projections.

HEARING REQUESTS

If you wish to contest any of the provisions of this permit, you may request a formal hearing within thirty (30) days of receipt of this letter. The request should be submitted to the Administrative Adjudication Division at the following address:

Michelle Janvrin, Clerk
Department of Environmental Management
Office of Administrative Adjudication
235 Promenade Street
3rd Floor, Rm 350
Providence, RI 02908

Any request for a formal hearing must conform to the requirements of Rule 49 of the State Regulations.

STAYS OF RIPDES PERMITS

Should the Department receive and grant a request for a formal hearing, the contested conditions of the permit will not automatically be stayed. However, the permittee, in accordance with Rule 50, may request a temporary stay for the duration of adjudicatory hearing proceedings. Requests for stays of permit conditions should be submitted to the Office of Water Resources at the following address:

Angelo S. Liberti, P.E.
Chief of Surface Water Protection
Office of Water Resources
235 Promenade Street
Providence, Rhode Island 02908

All uncontested conditions of the permit will be effective and enforceable in accordance with the provisions of Rule 49.

AUTHORIZATION TO DISCHARGE UNDER THE
RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Chapter 46-12 of the Rhode Island General Laws, as amended, the

The Town of East Greenwich
111 Peirce Street
P.O. Box 111
East Greenwich, Rhode Island 02818

is authorized to discharge from a facility located at the

East Greenwich Wastewater Treatment Facility
Crompton Avenue
East Greenwich, Rhode Island 02818

to receiving waters named

Greenwich Cove

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

This permit shall become effective on October 1, 2018.

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

This permit supersedes the permit issued on September 28, 2011.

This permit consists of 23 pages in Part I including effluent limitations, monitoring requirements, etc. and 10 pages in Part II including General Conditions.

Signed this 11th day of July, 2018.



Angelo S. Liberti, P.E., Chief of Surface Water Protection
Office of Water Resources
Rhode Island Department of Environmental Management
Providence, Rhode Island

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001A. (final discharge after ultraviolet disinfection)

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>					<u>Monitoring Requirement</u>	
	<u>Quantity - lbs./day</u>		<u>Concentration - specify units</u>			<u>Measurement Frequency</u>	<u>Sample Type</u>
	<u>Average Monthly</u>	<u>Maximum Daily</u>	<u>Average Monthly</u> *(<u>Minimum</u>)	<u>Average Weekly</u> *(<u>Average</u>)	<u>Maximum Daily</u> *(<u>Maximum</u>)		
Flow	1.70 MGD	---				Continuous	Recorder
BOD ₅ (November 1 – April 30)	310 lbs./day	517 lbs./day	30 mg/l	45 mg/l	50 mg/l	3/Week	24-Hr. Comp.
BOD ₅ (May 1 – October 31)	155 lbs./day	259 lbs./day	15 mg/l	20 mg/l	25 mg/l	3/Week	24-Hr. Comp.
BOD ₅ - % Removal			85%			1/Month	Calculated
TSS (November 1 – April 30)	310 lbs./day	517 lbs./day	30 mg/l	45 mg/l	50 mg/l	3/Week	24-Hr. Comp.
TSS (May 1 – October 31)	155 lbs./day	259 lbs./day	15 mg/l	20 mg/l	25 mg/l	3/Week	24-Hr. Comp.
TSS - % Removal			85%			1/Month	Calculated
Settleable Solids				--- ml/l	--- ml/l	1/Day	Grab

--- Signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

Sampling for BOD₅ and TSS shall be performed on the influent and effluent Tuesday, Thursday, and Saturday with appropriate allowances for hydraulic detention (flow-through) time. Sampling for Flow and Settleable Solids shall be performed Sunday-Saturday.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Outfall 001A (final discharge after UV disinfection).

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001A. (final discharge after ultraviolet disinfection)

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirement</u>		
	Quantity - lbs./day	Concentration - specify units		Measurement	Sample	
	<u>Average Monthly</u>	<u>Maximum Daily</u>	<u>Average Monthly</u> *(<u>Minimum</u>)	<u>Average Weekly</u> *(<u>Average</u>)	<u>Maximum Daily</u> *(<u>Maximum</u>)	<u>Frequency</u> <u>Type</u>
Enterococci			35 cfu ¹ 100 ml		276 cfu ¹ 100 ml	3/Week Grab
Fecal Coliform			--- MPN ¹ 100 ml		--- MPN ¹ 100 ml	3/Week Grab
UV Intensity ²			(--- mW/cm ²)	(--- mW/cm ²)	(--- mW/cm ²)	Continuous Recorder
UV Transmittance ²			(--- %)	(--- %)	(---%)	Continuous Recorder
UV Dosage ²			(--- mW-s/cm ²) ³	(--- mW-s/cm ²) ³	(--- mW-s/cm ²) ³	Continuous Recorder
pH			(6.0 SU)		(9.0 SU)	2/Day Grab

--- Signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

¹Two (2) of the three (3) Enterococci samples are to be taken on Tuesday and Thursday. The Fecal Coliform samples shall be taken at the same time as the Enterococci samples. The Geometric Mean shall be used to obtain the "monthly average". The facility shall report any fecal coliform sample result that exceeds 400 MPN/100 ml to the DEM in accordance with the 24-hour reporting requirements under Part II(i)(5) of the permit.

²UV intensity, Transmittance, and Dosage readings shall be recorded continuously to provide a record that proper disinfection was achieved at all times.

³UV Dosage is defined as the UV Intensity (mW/cm²) multiplied by the Exposure Time(s).

*Values in parentheses () are to be reported as Minimum/Average/Maximum for the reporting period rather than Average Monthly / Average Weekly / Maximum Daily.

Sampling for pH, UV Intensity, UV Transmittance, and UV Dosage shall be performed Sunday – Saturday.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Outfall 001A (final discharge after UV disinfection).

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

3. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001A. (final discharge after ultraviolet disinfection)

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>					<u>Monitoring Requirement</u>	
	<u>Quantity - lbs./day</u>		<u>Concentration - specify units</u>			<u>Measurement Frequency</u>	<u>Sample Type</u>
	<u>Average Monthly</u>	<u>Maximum Daily</u>	<u>Average Monthly</u> *(Minimum)	<u>Average Weekly</u> *(Average)	<u>Maximum Daily</u> *(Maximum)		
Copper, Total ¹			48.0 ug/L		89.0 ug/L	1/Quarter	24-Hr. Comp.
Cyanide ²			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Cadmium, Total ²			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Chromium, Total ²			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Lead, Total ²			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Zinc, Total ²			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Nickel, Total ²			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Aluminum, Total ²			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.

--- Signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

¹Copper compliance may be evaluated in using Copper monitoring data obtained in conjunction with bioassay testing.

²Monitoring data may be obtained in conjunction with bioassay testing.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Outfall 001A (final discharge after UV disinfection).

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

4. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001A. (final discharge after ultraviolet disinfection)

Such discharges shall be monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>			<u>Concentration - specify units</u>		<u>Monitoring Requirement</u>	
	Quantity - lbs. per day <u>Average Monthly</u>	<u>Maximum Daily</u>	<u>Average Monthly</u>	<u>Average Weekly</u>	<u>Maximum Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Oil and Grease					--- mg/l	1/Month	3 Grabs ¹
Nitrogen, Total (TKN + NO ₂ -N, +NO ₃ -N) [November 1 – April 30]	--- lbs./day		--- mg/l		---mg/l	2/Month	Calculated
Nitrogen, Total (TKN + NO ₂ -N, +NO ₃ -N) [May 1 – October 31]	71 lbs./day		5.0 mg/l		---mg/l	1/Week	Calculated
TKN [November 1 – April 30]			--- mg/l		--- mg/l	2/Month	24-Hr. Comp.
TKN [May 1 – October 31]			--- mg/l		--- mg/l	1/ Week	24-Hr. Comp.
Nitrite, Total (as N) [Nov 1 – April 30]			--- mg/l		--- mg/l	2/Month	24-Hr. Comp.
Nitrite, Total (as N) [May 1 – Oct 31]			--- mg/l		--- mg/l	1/ Week	24-Hr. Comp.
Nitrate, Total (as N) [Nov 1 – April 30]			--- mg/l		--- mg/l	2/Month	24-Hr. Comp.
Nitrate, Total (as N) [May 1 – Oct 31]			--- mg/l		--- mg/l	1/ Week	24-Hr. Comp.

¹Three (3) grab samples shall be equally spaced over the course of one (1) eight (8) hour shift with a minimum of three (3) hours between grabs. Each grab sample must be analyzed individually and the maximum values reported.

--- signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday through Friday at the following locations: Outfall 001A (final discharge after UV disinfection).

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

5. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001A. (final discharge after ultraviolet disinfection)

Such discharges shall be monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>		<u>Concentration - specify units</u>			<u>Monitoring Requirement</u>	
	Quantity - lbs. per day						
	<u>Average Monthly</u>	<u>Maximum Daily</u>	<u>Average Monthly</u>	<u>Average Weekly</u>	<u>Maximum Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
<u>Mysidopsis bahia</u> LC50 ¹					≥ 100% ²	1/Quarter ⁴	24-Hr. Comp.
<u>Arbacia punctulata</u> C-NOEC ³					--- %	1/Quarter ⁴	24-Hr. Comp.

¹LC₅₀ is defined as the concentration of wastewater that causes mortality to 50% of the test organisms

²The 100% or greater limit is defined as a sample which is composed of 100% effluent.

³C-NOEC is defined as the highest concentration of toxicant or effluent at which no adverse effects are observed.

⁴Samples shall be taken Monday-Friday.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: Outfall 001A (in accordance with Part I.B. of the permit).

6.
 - a. The pH of the effluent shall not be less than 6.0 nor greater than 9.0 standard units at any time, unless these values are exceeded due to natural causes or as a result of the approved treatment processes.
 - b. The discharge shall not cause visible discoloration of the receiving waters.
 - c. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
 - d. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and 5-day biochemical oxygen demand. The percent removal shall be based on monthly average values.
 - e. When the effluent discharged for a period of ninety (90) consecutive days exceeds 80 percent of the designed flow, the permittee shall submit to the permitting authorities a projection of loadings up to the time when the design capacity of the treatment facility will be reached, and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans.
 - f. The permittee shall analyze its effluent annually for the EPA Priority Pollutants as listed in 40 CFR 122, Appendix D, Tables II and III. Such analysis shall be conducted during the third calendar quarter bioassay sampling event. The effluent sample shall be collected during the same twenty-four (24) hour period as the bioassay sample. The results of these analyses shall be submitted to the Department of Environmental Management by October 15th of each year. All sampling and analysis shall be done in accordance with EPA Regulations, including 40 CFR, Part 136; grab and composite samples shall be taken as appropriate.
 - g. This permit serves as the State's Water Quality Certificate for the discharges described herein.
 - h. This permit authorizes the use of chlorine disinfection only for emergency purposes in accordance with the Bypass and Upset provisions from part II of the permit. Any emergency uses of chlorination shall be in accordance with the facility's Operation and Maintenance Manual and shall be reported on the cover letter to the DMRs. The chlorination usage reporting must include the reason why chlorine was used, the duration of its use, and any sampling/analytical data.

B. BIOMONITORING REQUIREMENTS AND INTERPRETATION OF RESULTS

1. General

Beginning on the effective date of the permit, the permittee shall perform four (4) chronic and four (4) acute toxicity tests per year on samples collected from discharge Outfall 001A. The permittee shall conduct the tests during dry weather periods (no rain within forty-eight (48) hours prior to or during sampling unless approved by RIDEM) according to the following test frequency and protocols. Chronic toxicity data shall be collected from Arbacia punctulata tests. Acute toxicity data shall be collected from the Mysidopsis bahia tests. Chronic and acute data shall be reported as outlined in Section 10. The State may require additional screening, range finding, definitive acute or chronic bioassays as deemed necessary based on the results of the initial bioassays required herein. Indications of toxicity could result in requiring a Toxicity Reduction Evaluation (TRE) to investigate the causes and to identify corrective actions necessary to eliminate or reduce toxicity to an acceptable level.

2. Test Frequency

On four (4) sampling events, (one (1) each calendar quarter) the permittee shall conduct toxicity tests on the two (2) species listed below. A total of four (4) acute toxicity tests on the first species and four (4) chronic toxicity tests on the second species are required each year. This requirement entails performing two-species testing as follows:

<u>Species</u>	<u>Test Type</u>	<u>Frequency</u>
	Two Species Test (Four Times Annually)	
Mysids (<u>Mysidopsis bahia</u>)	Definitive 48-Hour Acute Static (LC ₅₀)	Quarterly
<u>Arbacia punctulata</u>	Sea Urchin 1 Hour Test Fertilization Test (Chronic)	Quarterly

3. Testing Methods

Toxicity tests shall be conducted in accordance with protocols listed in 40 CFR Part 136.

4. Sample Collection

For each sampling event a twenty-four- (24) hour flow proportioned composite effluent sample shall be collected at a location just after ultraviolet disinfection during dry weather (no rain forty-eight (48) hours prior to or during sampling unless approved by RIDEM). This sample shall be kept cool (a 4°C) and testing shall begin within twenty-four (24) hours after the last sample of the composite is collected. In the laboratory, the sample will be split into two (2) subsamples, after thorough mixing, for the following:

- A: Chemical Analysis
- B: Acute Toxicity Testing

All samples held overnight shall be refrigerated at 4°C. Grab samples must be used for pH and temperature.

5. Salinity Adjustment

Prior to the initiation of testing, the effluent must be adjusted to make the salinity of the effluent equal to that of the marine dilution water. The test solution must be prepared by adding non-toxic dried ocean salts to a sufficient quantity of 100% effluent to raise the salinity to the desired level. After the addition of the dried salts, stir gently for thirty (30) to sixty (60) minutes, preferably with a magnetic stirrer, to ensure that the salts are in solution. It is important to check the final salinity with a refractometer or salinometer. Salinity adjustments following this procedure and in accordance with EPA protocol will ensure that the concentrations (% effluent) of each dilution are real and allow for an accurate evaluation with the LC₅₀ ≥ 100% effluent permit limit and Chronic monitoring requirements.

6. Dilution Water

Dilution water used for marine acute toxicity analysis should be of sufficient quality to meet minimum acceptability of test results (See Sections 7 and 8). For both species, natural seawater shall be used as the dilution water. This water shall be collected from

Narragansett Bay off the dock at the URI's Graduate School of Oceanography on South Ferry Road, Narragansett. It is noted that the University claims no responsibility for the personal safety on this dock. The permittee shall observe the rules posted on the dock. If this natural seawater diluent is found to be, or suspected to be toxic or unreliable, an alternate source of natural seawater or, deionized water mixed with hypersaline brine or artificial sea salts of known quality with a salinity and pH similar to that of the receiving water may be substituted AFTER RECEIVING WRITTEN APPROVAL FROM RIDEM.

7. Effluent Toxicity Test Conditions for Mysids
(Mysidopsis bahia)

a.	Test Type	48-Hour Static Acute Definitive
b.	Salinity	25 ppt \pm 10% for all dilutions
c.	Temperature (C)	25 \pm 1 $^{\circ}$ C
d.	Light Quality	Ambient laboratory illumination
e.	Photoperiod	8-16 Hour Light / 24-Hour
f.	Test Chamber Size	250 ml
g.	Test Solution Volume	200 ml
h.	Age of Organisms	1 – 5 Days
i.	No. Mysids Per Test Chamber	10
j.	No. of Replicate Test Chamber Per Concentration	2
k.	Total No. Mysids Per Test Concentration	20
l.	Feeding Regime	Light feeding (two (2) drops concentrated brine shrimp nauplii, approx. 100 nauplii per mysid twice daily).
m.	Aeration	None, unless dissolved oxygen concentration falls below 40% of saturation at which time gentle single-bubble aeration should be started
n.	Dilution Water	Narragansett Bay water as discussed above
o.	Dilutions	Five (5) dilutions plus a control: 100%, 50%, 25%, 12.5%, 6.25% and 0% effluent.
p.	Effect Measured and Test	Mortality- no movement of body test duration or appendages on gentle prodding, 48-hour LC50 and NOAEL.

- | | | |
|----|------------------------|---|
| q. | Test Acceptability | 90% or greater survival of test organisms in control solution. |
| r. | Sampling Requirements | Samples are collected and used within 24 hours after the last sample of the composite is collected. |
| s. | Sample Volume Required | Minimum four (4) liters |
8. Effluent Toxicity Conditions for Arbacia punctulata Fertilization Test¹
- | | | |
|----|---|---|
| a. | Test Type | Static |
| b. | Salinity | 30 0/00 \pm 2 0/00 |
| c. | Temperature (C) | 20° \pm 1°C |
| d. | Light Quality | Ambient laboratory light during test preparation. |
| e. | Light Intensity | 10-20 uE/m ² /s, or 50-100 ft-c (Ambient Laboratory Levels). |
| f. | Test Vessel Size | Disposable (glass) liquid scintillation vials (20 ml capacity), not pre-cleaned |
| g. | Test Solution Volume | 5 ml |
| h. | Number of Sea Urchins | Pooled sperm from four (4) males and pooled eggs from four (4) females are used per test. |
| i. | Number of Egg and Sperm Cells Per Chamber | About 2,000 eggs and 5,000,000 sperm cells per vial. |
| j. | No. of Replicate Chambers Per Concentration | 4 (Minimum of 3) |
| k. | Dilution Water | Narragansett Bay water as discussed above. |
| l. | Dilution Factor | Approximately 0.5 |
| m. | Test Duration | 1 Hour and 20 Minutes |
| n. | Effects Measured | Fertilization of sea urchin eggs. |
| o. | Number of Treatments Per Test | Minimum of five (5) effluent concentrations and a control. An additional dilution at the permitted effluent concentration (% effluent) is required. |

¹ Adapted from EPA/600/4-87/028

p. Acceptability of Test Results Recommended sperm: egg ratio should result in fertilization of a minimum of 70% of the eggs in the control chambers.

q. Sample Volume Required Minimum 2 liters

9. Chemical Analysis

The following chemical analysis shall be performed for every two-specie sampling event.

<u>Parameter</u>	<u>Effluent</u>	<u>Saline Diluent</u>	<u>Detection Limit (mg/l)</u>
PH	X	X	---
Specific Conductance	X	X	---
Total Solids and Suspended Solids	X	X	---
Ammonia	X	X	0.1
Total Organic Carbon	X		0.5
Cyanide	X		0.01
Total Phenols	X		0.05
Salinity	X	X	PPT (0/00)

During the first, second, and fourth calendar quarter bioassay sampling events the following chemical analyses shall be performed:

<u>Total Metals</u>	<u>Saline Effluent</u>	<u>Diluent</u>	<u>Detection Limit (ug/l)</u>
Total Cadmium	X	X	0.1 ug/L
Hexavalent Chromium	X	X	20.0 ug/L
Total Copper	X	X	1.0 ug/L
Total Lead	X	X	1.0 ug/L
Total Zinc	X	X	5.0 ug/L
Total Nickel	X	X	1.0 ug/L
Total Aluminum	X	X	5.0 ug/L

The above analyses may be used to fulfill, in part or in whole, monitoring requirements in the permit for these specific metals.

During the third calendar quarter bioassay sampling event, the final effluent sample collected during the same twenty-four (24) hour period as the bioassay sample, shall be analyzed for priority pollutants (as listed in Tables II and III of Appendix D of 40 CFR 122). The bioassay priority pollutant scan shall be a full scan and may be coordinated with other permit conditions to fulfill any priority pollutant scan requirements.

10. Toxicity Test Report Elements

A report of results will include the following:

- Description of sample collection procedures and site description.
- Names of individuals collecting and transporting samples, times, and dates of sample collection and analysis.
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests (quality assurance); light and temperature regime; dilution water description; other information on test conditions if different than procedures recommended.
- The method used to adjust the salinity of the effluent must be reported.
- All chemical and physical data generated (including detection limits).
- Raw data and bench sheets.
- Any other observations or test conditions affecting test outcome.

Toxicity test data shall include the following:

Acute

- Survival for each concentration and replication at time twenty-four (24) and forty-eight (48) hours.
- LC₅₀ and 95% confidence limits shall be calculated using one of the following methods in order of preference: Probit, Trimmed Spearman Karber, Moving Average Angle, or the graphical method. All printouts (along with the name of the program, the date, and the author(s)) and graphical displays must be submitted. When data is analyzed by hand, worksheets should be submitted. The report shall also include the No Observed Acute Effect Level (NOAEL) which is defined as the highest concentration of the effluent (in % effluent) in which 90% or more of the test animals survive.
- The Probit, Trimmed Spearman Karber, Moving Average Angle methods of analyses can only be used when mortality of some of the test organisms are observed in at least two (2) of the (percent effluent) concentrations tested (i.e., partial mortality). If a test results in a 100% survival and 100% mortality in adjacent treatments ("all or nothing" effect), an LC₅₀ may be estimated using the graphical method.

Chronic

- The endpoints of toxicity tests using sea urchin are based on the reduction in percent of eggs fertilized. Chronic test data shall undergo hypothesis testing to determine if the distribution of results is normal using the Shapiro-Wilks test. The variance must also be tested for homogeneity using Bartlett's Test. Then the endpoint estimates, NOEC and LOEC must be determined using Dunnett's Procedure, Bonferroni's T-Test, Steel's Many-One Rank Test, or Wilcoxon Rank Sum Test. The choice of test depends on the number of replicates and whether the variance is homogeneous or not. See EPA/600/4-87/028 for details. (All printouts and graphical displays must be submitted along with the name of the program, the

date, and the authors (s). When data is analyzed by hand, the worksheets should be submitted.)

- C-NOEC: Chronic No Observed Effect Concentration
- LOEC: Lowest Observed Effect Concentration
- MATC: Maximum Allowable Toxicant Concentration

11. Special Condition

Due to the fact that the suggested dilution water for this facility to use in conducting the bioassays is from the end of the dock at the URI's Narragansett Bay Campus, a Letter of Agreement must be signed and submitted to the Graduate School of Oceanography. Requests to use another source of dilution water will have to be approved by the Department of Environmental Management, Division of Water Resources.

12. Reporting of Bioassay Testing

Bioassay Testing shall be reported as follows:

<u>Quarter Testing To be Performed</u>	<u>Results Submitted on DMR for</u>
January 1 – March 31	March
April 1 – June 30	June
July 1 – September 30	September
October 1 – December 31	December

Reports shall be maintained by the permittee and shall be made available upon request by RIDEM.

A signed copy of these, and all other reports required herein, shall be submitted to:

RIPDES Program
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, Rhode Island 02908-5767

C. INDUSTRIAL PRETREATMENT PROGRAM

1. Definitions

For the purpose of this permit, the following definitions apply.

- a. 40 CFR 403 and sections thereof refer to the General Pretreatment regulations, 40 CFR Part 403 as revised.
- b. Categorical Pretreatment Standards mean any regulation containing pollutant discharge limits promulgated by the USEPA in accordance with section 307(b) and (c) of the Clean Water Act(33 USC 1251), as amended, which apply to a specific category of industrial users and which appears in 40 CFR Chapter 1, subchapter N.

- c. Pretreatment Standards include all specific prohibitions and prohibitive discharge limits established pursuant to 40 CFR 403.5, including but not limited to, local limits, and the Categorical Pretreatment Standards.
- d. Regulated Pollutants shall include those pollutants contained in applicable categorical standards and any other pollutants listed in the Pretreatment Standards which have reasonable potential to be present in an industrial user's effluent.

2. Implementation

The authority and procedures of the Industrial Pretreatment Program shall at all times be fully and effectively exercised and implemented, in compliance with the requirements of this permit and in accordance with the legal authorities, policies, procedures and financial provisions described in the permittee's approved Pretreatment Program and Sewer Use Ordinance, the Rhode Island Pretreatment Regulations and the General Pretreatment Regulations 40 CFR 403. The permittee shall maintain adequate resource levels to accomplish the objectives of the Pretreatment Program.

3. Local Limits

Pollutants introduced into POTWs by a non-domestic source (user) shall not: pass through the POTW, interfere with the operation or performance of the works, contaminate sludge as to adversely effect disposal options, or adversely effect worker safety and health.

- a. The permittee has an approved Local Limits Monitoring Plan (LLMP) that shall continue to be implemented at all times.
- b. At the time of renewal of this permit and in accordance with 40 CFR 122.44(j)(2), the permittee shall submit to the DEM with its permit renewal application a written technical evaluation of the need to revise local limits. The evaluation shall be based, at a minimum, on information obtained during the implementation of the permittee's local limits monitoring plan and procedures required by Part I.C.3.a of this permit and current RIPDES permit discharge limits, sludge disposal criteria, secondary treatment inhibition, and worker health and safety criteria.

4. Enforcement Response Plan (ERP)

The permittee has an approved ERP that meets the requirements of 40 CFR 403.8(f)(5). The permittee shall continue to implement its approved ERP at all times.

5. General

- a. The permittee shall 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 Pretreatment Standards. At a minimum, all significant industrial users shall be inspected and monitored for all regulated pollutants at the frequency established in the approved Industrial Pretreatment Program but in no case less than once per year (one (1) year being determined as the reporting year established in Part I.C.7 of this permit). In addition, these inspections, monitoring and surveillance activities must be conducted in accordance with EPA's Industrial User Inspection and Sampling Manual for POTW's, April 1994. All inspections, monitoring, and surveillance activities shall be performed, and have records maintained, with sufficient care to produce evidence admissible in enforcement proceedings or judicial actions. The

permittee shall evaluate, at least every two years unless specific superseding 40 CFR 403 streamlining provisions have been adopted, whether each SIU requires a Slug Control Plan. If a Slug Control Plan is required, it shall include the contents specified by 40 CFR 403.8(f)(2)(vi).

- b. The permittee shall reissue all necessary Industrial User (IU) control mechanisms within thirty (30) days of their expiration date. The permittee shall issue, within sixty (60) days after the determination that an IU is a Significant Industrial User (SIU), all SIU control mechanisms. All SIU control mechanisms must contain, at a minimum, those conditions stated in 40 CFR 403.8(f)(1)(iii)(B). All control mechanisms must be mailed via Certified Mail, Return Receipt Requested. A complete bound copy of the control mechanism with the appropriate receipt must be kept as part of the Industrial User's permanent file. In addition, the permittee must develop a fact sheet describing the basis for the SIU's permit and retain this fact sheet as part of the SIU's permanent file.
- c. The permittee must identify each instance of noncompliance with any pretreatment standard and/or requirement and take a formal documented action for each instance of noncompliance. Copies of all such documentation must be maintained in the Industrial User's permanent file.
- d. The permittee shall prohibit Industrial Users from the dilution of a discharge as a substitute for adequate treatment in accordance with 40 CFR 403.6(d).
- e. The permittee shall comply with the procedures of 40 CFR 403.18 for instituting any modifications of the permittee's approved Pretreatment Program. Significant changes in the operation of a POTW's approved Pretreatment Program must be submitted and approved following the procedures outlined in 40 CFR 403.18(b) and 403.9(b). However, the endorsement of local officials responsible for supervising and/or funding the pretreatment program required by 403.9(b)(2) will not be required until DEM completes a preliminary review of the submission. The DEM will evaluate and review the permittee's initial proposal for a modification and provide written notification either granting preliminary approval of the proposed modifications or stating the deficiencies contained therein. DEM's written notification will also include a determination whether the submission constitutes a substantial or non-substantial program modification as defined by 40 CFR 403.18. Should DEM determine that a deficiency exists in the proposed modification, the permittee shall submit to DEM, within thirty (30) days of the receipt of said notice, a revised submission consistent with DEM's notice of deficiency.

Pretreatment program modifications which the permittee considers Non-substantial, shall be deemed to be approved within forty-five (45) days after submission of the request for modification, unless DEM determines that the modification is in fact a substantial modification or notifies the permittee of deficiencies. Upon receipt of notification that DEM has determined the modification is substantial, the permittee shall initiate the procedures and comply with the deadlines for substantial modifications, which are outlined below.

For substantial modifications, the permittee shall, within sixty (60) days (unless a longer time frame is granted) of the receipt of DEM's preliminary approval of the proposed modification, submit documentation (as required by 403.9(b)(2)) that any local public notification/participation procedures required by law have been completed, including any responses to public comments, and a statement that the local officials will endorse and/or approve the modification upon approval by DEM.

Within thirty (30) days of DEM's final approval of the proposed modification(s), the permittee shall implement the modification and submit proof that the local officials have endorse and/or approved the modification(s) to the DEM. Upon final approval by the DEM and adoption by the permittee, this modification(s) shall become part of the approved pretreatment program and shall be incorporated into this permit in accordance with 40CFR 122.63(g).

- f. All sampling and analysis required of the permittee, or by the permittee of any Industrial User, must be performed in accordance with the techniques described in 40 CFR 136.
- g. For those Industrial Users with discharges that are not subject to Categorical Pretreatment Standards, the permittee shall require appropriate reporting in accordance with 40 CFR 403.12(h).
- h. The permittee shall, in accordance with 40 CFR 403.12(f), require all Industrial Users to immediately notify the permittee of all discharges by the Industrial User that could cause problems to the POTW, including slug loadings, as summarized in 40 CFR 403.5.
- i. The permittee shall require all Industrial Users to notify the permittee of substantial changes in discharge as specified in 40 CFR 403.12(j) and the permittee shall also notify DEM of each such substantial change in discharge prior to acceptance.
- j. The permittee shall require New Sources to install and have in operation all pollution control equipment required to meet applicable Pretreatment Standards before beginning to discharge. In addition, the permittee shall require New Sources to meet all applicable Pretreatment Standards within the shortest feasible time which shall not exceed ninety (90) days in accordance with 40 CFR 403.6(b).
- k. The permittee shall require all Industrial Users who are required to sample their effluent and report the results of analysis to the POTW to comply with signatory requirements contained in 40 CFR 403.12(l) when submitting such reports.
- l. The permittee shall determine, based on the criteria set forth in 40 CFR 403.8(f)(2)(viii), using the EPA method of "rolling quarters", the compliance status of each Industrial User. Any Industrial User determined to meet Significant Non-Compliance (SNC) criteria shall be included in an annual public notification as specified in 40 CFR 403.8(f)(2)(viii).
- m. The permittee shall require Industrial Users to comply with the notification and certification requirements of 40 CFR 403.12(p)(1), (3) and (4) pertaining to the discharge of substances to the POTW, which if disposed of otherwise, would be a hazardous waste under 40 CFR Part 261.
- n. The permittee shall continue to designate, as SIUs, those Industrial Users (IUs) which meet the definition contained in 40 CFR 403.3 and the permittee's sewer use ordinance.

The permittee shall notify each newly designated SIU of its classification as an SIU within thirty (30) days of identification and shall inform the SIU of the requirements of an SIU contained in 40 CFR 403.12.

6. Categorical Industrial Users (CIUs)

- a. The permittee shall require Industrial Users to comply with applicable Categorical Pretreatment Standards in addition to all applicable Pretreatment Standards and Requirements. The permittee shall require of all Categorical Industrial Users (CIUs), all reports on compliance with applicable Categorical Pretreatment Standards and Categorical Pretreatment Standard deadlines as specified in and in accordance with Sections (b), (d), (e) and (g) of 40 CFR 403.12. In addition, the permittee shall require Categorical Industrial Users to comply with the report signatory requirements contained in 40 CFR 403.12(1) when submitting such reports.
- b. If the permittee applies the Combined Wastestream Formula (CWF) to develop fixed alternative discharge limits of Categorical Pretreatment Standards, the application of the CWF and the enforcement of the resulting limits must comply with 40 CFR 403.6(e). The permittee must document all calculations within the control mechanism fact sheet and the resulting limits within the CIU's control mechanism. The permittee must ensure that the most stringent limit is applied to the CIU's effluent at end-of-pipe based upon a comparison of the resulting CWF limits and the permittee's local limits.
- b. If the permittee has or obtains the authority to apply and enforce equivalent mass-per-day and/or concentration limitations of production-based Categorical Pretreatment Standards, then the permittee shall calculate and enforce the limits in accordance with 40 CFR 403.6(c). The permittee must document all calculations within the control mechanism fact sheet and the resulting limits within the CIU's control mechanism.

7. Annual Report

The annual report for the permittee's program shall contain information pertaining to the reporting year which shall extend from April 1st through March 31st and shall be submitted to the DEM by June 15th. Each item below must be addressed separately and any items which are not applicable must be so indicated. If any item is deemed not applicable a brief explanation must be provided. The annual report shall include the following information pertaining to the reporting year:

- a. A listing of Industrial Users which complies with requirements stated in 40 CFR 403.12(i)(1). The list shall identify all Categorical Industrial Users, Significant Industrial Users and any other categories of users established by the permittee;
- b. A summary, including dates of any notifications received by the permittee of any substantial change in the volume or character of pollutants being introduced into the POTW by new or existing IUs. If applicable, an evaluation of the quality and quantity of influent introduced into the POTW and any anticipated impact due to the changed discharge on the quantity or quality of effluent to be discharged from the POTW shall be included;
- c. A summary of the Compliance status of each Industrial User (IU), as of the end of last quarter covered by the annual report. The list shall identify all IUs in non-compliance, the pretreatment program requirement which the IU failed to meet, and the type, and date of the enforcement action initiated by the permittee in response to the violation. If applicable, the list shall also contain the date which IUs in non-compliance returned to compliance, a description of corrective actions ordered, and the penalties levied.

- d. A list of industries which were determined, in accordance with Part I.C.5.(l) of this permit, to be in significant non-compliance required to be published in a local newspaper and a copy of proof of publication from the newspaper that the names of these violators has been published.
- e. A summary of inspection and monitoring activity performed by the permittee, including;
 - significant industrial users inspected by the POTW (include inspection dates for each industrial user);
 - significant industrial user sampled by the POTW (include sampling dates and dates of analysis for each industrial user);
- f. A summary of permit issuance/reissuance activities including the name of the industrial user, expiration date of previous permit, issuance date of new permit, and a brief description of any changes to the permit;
- g. A list including the report/notification type, due date, and receipt date for each report/notification required by 40 CFR 403.12.
- h. A summary of public participation efforts including meetings and workshops held with the public and/or industry and notices/newsletters/bulletins published and/or distributed;
- i. A program evaluation in terms of program effectiveness, local limits application and resources which addresses but is not limited to:
 - A description of actions being taken to reduce the incidence of SNC by Industrial Users;
 - effectiveness of enforcement response program;
 - sufficiency of funding and staffing;
 - sufficiency of the SUO, Rules and Regulations and/or statutory authority;
- j. An evaluation of recent/proposed program modifications, both substantial and non-substantial, in terms of the modification type, implementation and actual/expected effect (note proposed modifications must be submitted under separate cover along with the information required by 40 CFR 403.18);
- k. A detailed description of all interference and pass-through that occurred during the past year and, if applicable;
 - A thorough description of all investigations into interference and pass-through during the past year;
 - A description of the monitoring, sewer inspections and evaluations which were done during the past year to detect interference and pass-through, specifying pollutants analyzed and frequencies;
- l. A summary of the average, maximum concentration, minimum concentration, and number of data points used for pollutant analytical results for influent, effluent, sludge and any toxicity or bioassay data from the wastewater treatment facility. The summary shall include a comparison of influent sampling results versus the maximum allowable headworks loadings contained in the approved local limits evaluation and effluent sampling results versus water quality standards. Such a comparison shall be based on the analytical results required in Parts I.A and I.C. of this permit and any additional sampling data available to the permittee; and

m. A completed Annual Pretreatment Report Summary Sheet.

8. Interjurisdictional Agreement

The DEM has no interjurisdictional agreements on file regarding the contribution of industrial wastewater to the East Greenwich WWTF. Any such interjurisdictional agreements which may become necessary must be submitted to the DEM in draft form for approval prior to signing and execution.

9. Sewer Use Ordinance

The permittee has an approved Sewer Use Ordinance which shall continue to be implemented at all times.

D. OPERATIONS 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. Bypasses

The permittee shall operate and improve the sewer system to minimize the discharge of pollutants from bypasses.

3. Inflow/Infiltration

The permittee shall minimize inflow/infiltration to the sewer system. A summary report of all actions taken to minimize infiltration/inflow during the previous year shall be submitted to DEM, Office of Water Resources, by the 15th day of January each year. The first report is due January 15, 2019.

4. Resiliency Planning

Within two years of the effective date of this permit, the permittee shall submit a Resiliency Plan and schedule of short and long term actions that will be taken to maintain operation and protect key collection and treatment system assets. The plan shall be consistent with the DEM's Guidance for the Consideration of Climate Change Impacts in the Planning and Design of Municipal Wastewater Collection and Treatment Infrastructure and include consideration of the findings of the 2017 DEM report Implications of Climate Change for Rhode Island Wastewater Collection and Treatment Infrastructure. The Resiliency Plan shall include, but not be limited to: (i) an assessment of current and projected impacts from natural hazards on critical components within the collection and treatment systems, as well as on the systems themselves; (ii) a plan to adapt and protect vulnerable components and systems; (iii) an analysis that provides justification for selected adaptation methods. The analysis must consider component and system design life and sea-level rise projections. For the purposes of this Resiliency Plan, critical components are considered those necessary to ensure the forward flow and treatment of wastewater in accordance with the limits set forth in this permit. The Resiliency Plan shall also consider impacts on the WWTF from neighboring facilities during high hazard events. This Plan shall be subject to DEM review

and approval. If DEM determines that modifications need to be made to the Plan, DEM shall notify the permittee in writing which elements of the Plan need to be modified and the reason for the needed modification. This notification shall include a schedule for making the changes. After such notification from the DEM, the permittee shall make changes to the Plan and submit the revisions to the DEM for their approval.

E. SLUDGE

The permittee shall conform and adhere to all conditions, practices and regulations as contained in the State of Rhode Island Rules and Regulations Pertaining to the Treatment, Disposal Utilization and Transportation of Wastewater Treatment Facility Sludge. The permittee shall comply with its RIDEM Order of Approval for the disposal of sludge.

F. DETECTION LIMITS

The permittee shall assure that all wastewater testing required by this permit, is performed in conformance with the method detection limits listed below. All sludge testing required by this permit shall be in conformance with the method detection limits found in 40 CFR 503.8. In accordance with 40 CFR Part 136, EPA approved analysis techniques, quality assurance procedures and quality control procedures shall be followed for all reports required to be submitted under the RIPDES program. These procedures are described in "Methods for the Determination of Metals in Environmental Samples" (EPA/600/4-91/010) and "Methods for Chemical Analysis of Water and Wastes" (EPA/600/4-79/020).

The report entitled "Methods for the Determination of Metals in Environmental Samples" includes a test which must be performed in order to determine if matrix interferences are present, and a series of tests to enable reporting of sample results when interferences are identified. Each step of the series of tests becomes increasingly complex, concluding with the complete Method of Standard Additions analysis. The analysis need not continue once a result which meets the applicable quality control requirements has been obtained. Documentation of all steps conducted to identify and account for matrix interferences shall be submitted along with the monitoring reports.

If, after conducting the complete Method of Standard Additions analysis, the laboratory is unable to determine a valid result, the laboratory shall report "could not be analyzed". Documentation supporting this claim shall be submitted along with the monitoring report. If valid analytical results are repeatedly unobtainable, DEM may require that the permittee determine a method detection limit (MDL) for their effluent or sludge as outlined in 40 CFR Part 136, Appendix B.

Therefore, all sample results shall be reported as: an actual value, "could not be analyzed", less than the reagent water MDL, or less than an effluent or sludge specific MDL. The effluent or sludge specific MDL must be calculated using the methods outlined in 40 CFR Part 136, Appendix B. Samples which have been diluted to ensure that the sample concentration will be within the linear dynamic range shall not be diluted to the extent that the analyte is not detected. If this should occur the analysis shall be repeated using a lower degree of dilution.

When calculating sample averages for reporting on discharge monitoring reports (DMRs):

1. "could not be analyzed" data shall be excluded, and shall not be considered as failure to comply with the permit sampling requirements;
2. results reported as less than the MDL shall be included as zeros.

LIST OF TOXIC POLLUTANTS

The following list of toxic pollutants has been designated pursuant to Section 307(a)(1) of the Clean Water Act. The Method Detection Limits (MDLs) represent the required Rhode Island MDLs

Volatiles - EPA Method 624		MDL ug/l (ppb)	Pesticides - EPA Method 608		MDL ug/l (ppb)
1V	acrolein	10.0	18P	PCB-1242	0.289
2V	acrylonitrile	5.0	19P	PCB-1254	0.298
3V	benzene	1.0	20P	PCB-1221	0.723
5V	bromoform	1.0	21P	PCB-1232	0.387
6V	carbon tetrachloride	1.0	22P	PCB-1248	0.283
7V	chlorobenzene	1.0	23P	PCB-1260	0.222
8V	chlorodibromomethane	1.0	24P	PCB-1016	0.494
9V	chloroethane	1.0	25P	toxaphene	1.670
10V	2-chloroethylvinyl ether	5.0	Base/Neutral - EPA Method 625		MDL ug/l (ppb)
11V	chloroform	1.0	1B	acenaphthene *	1.0
12V	dichlorobromomethane	1.0	2B	acenaphthylene *	1.0
14V	1,1-dichloroethane	1.0	3B	anthracene *	1.0
15V	1,2-dichloroethane	1.0	4B	benzidine	4.0
16V	1,1-dichloroethylene	1.0	5B	benzo(a)anthracene *	2.0
17V	1,2-dichloropropane	1.0	6B	benzo(a)pyrene *	2.0
18V	1,3-dichloropropylene	1.0	7B	3,4-benzofluoranthene *	1.0
19V	ethylbenzene	1.0	8B	benzo(ghi)perylene *	2.0
20V	methyl bromide	1.0	9B	benzo(k)fluoranthene *	2.0
21V	methyl chloride	1.0	10B	bis(2-chloroethoxy)methane	2.0
22V	methylene chloride	1.0	11B	bis(2-chloroethyl)ether	1.0
23V	1,1,2,2-tetrachloroethane	1.0	12B	bis(2-chloroisopropyl)ether	1.0
24V	tetrachloroethylene	1.0	13B	bis(2-ethylhexyl)phthalate	1.0
25V	toluene	1.0	14B	4-bromophenyl phenyl ether	1.0
26V	1,2-trans-dichloroethylene	1.0	15B	butylbenzyl phthalate	1.0
27V	1,1,1-trichloroethane	1.0	16B	2-chloronaphthalene	1.0
28V	1,1,2-trichloroethane	1.0	17B	4-chlorophenyl phenyl ether	1.0
29V	trichloroethylene	1.0	18B	chrysene *	1.0
31V	vinyl chloride	1.0	19B	dibenzo (a,h)anthracene *	2.0
Acid Compounds - EPA Method 625		MDL ug/l (ppb)	20B	1,2-dichlorobenzene	1.0
1A	2-chlorophenol	1.0	21B	1,3-dichlorobenzene	1.0
2A	2,4-dichlorophenol	1.0	22B	1,4-dichlorobenzene	1.0
3A	2,4-dimethylphenol	1.0	23B	3,3' -dichlorobenzidine	2.0
4A	4,6-dinitro-o-cresol	1.0	24B	diethyl phthalate	1.0
5A	2,4-dinitrophenol	2.0	25B	dimethyl phthalate	1.0
6A	2-nitrophenol	1.0	26B	di-n-butyl phthalate	1.0
7A	4-nitrophenol	1.0	27B	2,4-dinitrotoluene	2.0
8A	p-chloro-m-cresol	2.0	28B	2,6-dinitrotoluene	2.0
9A	pentachlorophenol	1.0	29B	di-n-octyl phthalate	1.0
10A	phenol	1.0	30B	1,2-diphenylhydrazine (as azobenzene)	1.0
11A	2,4,6-trichlorophenol	1.0	31B	fluoranthene *	1.0
Pesticides - EPA Method 608		MDL ug/l (ppb)	32B	fluorene *	1.0
1P	aldrin	0.059	33B	hexachlorobenzene	1.0
2P	alpha-BHC	0.058	34B	hexachlorobutadiene	1.0
3P	beta-BHC	0.043	35B	hexachlorocyclopentadiene	2.0
4P	gamma-BHC	0.048	36B	hexachloroethane	1.0
5P	delta-BHC	0.034	37B	indeno(1,2,3-cd)pyrene *	2.0
6P	chlordane	0.211	38B	isophorone	1.0
7P	4,4' -DDT	0.251	39B	naphthalene *	1.0
8P	4,4' -DDE	0.049	40B	nitrobenzene	1.0
9P	4,4' -DDD	0.139	41B	N-nitrosodimethylamine	1.0
10P	dieldrin	0.082	42B	N-nitrosodi-n-propylamine	1.0
11P	alpha-endosulfan	0.031	43B	N-nitrosodiphenylamine	1.0
12P	beta-endosulfan	0.036	44B	phenanthrene *	1.0
13P	endosulfan sulfate	0.109	45B	pyrene *	1.0
14P	endrin	0.050	46B	1,2,4-trichlorobenzene	1.0
15P	endrin aldehyde	0.062			
16P	heptachlor	0.029			
17P	heptachlor epoxide	0.040			

OTHER TOXIC POLLUTANTS

	MDL ug/l (ppb)
Antimony, Total	3.0
Arsenic, Total	1.0
Beryllium, Total	0.2
Cadmium, Total	0.1
Chromium, Total	1.0
Chromium, Hexavalent	20.0
Copper, Total	1.0
Lead, Total	1.0
Mercury, Total	0.2
Nickel, Total	1.0
Selenium, Total	2.0
Silver, Total	0.5
Zinc, Total	5.0
Asbestos	**
Cyanide, Total	10.0
Phenols, Total	50.0
Aluminum, Total	5.0
TCDD	**
MTBE (Methyl Tert Butyl Ether)	1.0

* Polynuclear Aromatic Hydrocarbons

** No Rhode Island Department of Environmental Management (RIDEM) MDL

NOTE:

The MDL for a given analyte may vary with the type of sample. MDLs which are determined in reagent water may be lower than those determined in wastewater due to fewer matrix interferences. Wastewater is variable in composition and may therefore contain substances (interferents) that could affect MDLs for some analytes of interest. Variability in instrument performance can also lead to inconsistencies in determinations of MDLs.

To help verify the absence of matrix or chemical interference the analyst is required to complete specific quality control procedures. For the metals analyses listed above the analyst must withdraw from the sample two equal aliquots; to one aliquot add a known amount of analyte, and then dilute both to the same volume and analyze. The unspiked aliquot multiplied by the dilution factor should be compared to the original. Agreement of the results within 10% indicates the absence of interference. Comparison of the actual signal from the spiked aliquot to the expected response from the analyte in an aqueous standard should help confirm the finding from the dilution analysis. (Methods for Chemical Analysis of Water and Wastes EPA-600/4-79/020).

For Methods 624 and 625 the laboratory must on an ongoing basis, spike at least 5% of the samples from each sample site being monitored. For laboratories analyzing 1 to 20 samples per month, at least one spiked sample per month is required. The spike should be at the discharge permit limit or 1 to 5 times higher than the background concentration determined in Section 8.3.2, whichever concentration would be larger. (40 CFR Part 136 Appendix B Method 624 and 625 subparts 8.3.1 and 8.3.11).

G. MONITORING AND REPORTING

The monitoring program in the permit specifies sampling and analysis, which will provide continuous information on compliance and the reliability and effectiveness of the installed pollution abatement equipment. The approved analytical procedures found in 40 CFR Part 136 are required unless other procedures are explicitly required in the permit. The Permittee is obligated to monitor and report sampling results to the DEM within the time specified within the permit.

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 DEM 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 DEM.

2. Submittal of Reports as NetDMR Attachments

Unless otherwise specified in this permit, the permittee must submit electronic copies of documents in NetDMR that are directly related to the DMR. These include the following:

- DMR Cover Letters
- Below Detection Limit summary tables
- Monthly Operating Reports

3. 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 DEM.

- A. Written notifications required under Part II
- B. Notice of unauthorized discharges, including Sanitary Sewer Overflow (SSO) reporting
- C. Priority Pollutant Scan results
- D. Infiltration/Inflow Reports
- E. Pretreatment Reports
- F. Resiliency Plan

This information shall be submitted to DEM at the following address:

Rhode Island Department of Environmental Management
RIPDES Program
235 Promenade Street
Providence, Rhode Island 02908

4. 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 the DEM. This includes verbal reports and notifications which require reporting within 24 hours. (See Part II.(I)(5) General Requirements for 24-hour reporting) Verbal reports and verbal notifications shall be made to DEM at (401) 222-4700 or (401) 222-3070 at night.

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
235 PROMENADE STREET
PROVIDENCE, RHODE ISLAND 02908-5767

FACT SHEET

RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM (RIPDES) PERMIT TO DISCHARGE TO WATERS OF THE STATE

RIPDES PERMIT NO. **RI0100030**

NAME AND ADDRESS OF APPLICANT:

The Town of East Greenwich
111 Peirce Street
P.O. Box 111
East Greenwich, Rhode Island 02818

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

East Greenwich Wastewater Treatment Facility
Crompton Avenue
East Greenwich, Rhode Island 02818

RECEIVING WATER: **Greenwich Cove** (water body ID #: RI0007025E-05A)

CLASSIFICATION: **SB1**

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

The above-named applicant has applied to the Rhode Island Department of Environmental Management (DEM) for reissuance of a RIPDES Permit to discharge into the designated receiving water. The facility is engaged in the treatment of domestic and commercial sewage. The discharge is from the East Greenwich Wastewater Treatment Facility's outfall 001A. As of December 2016, the end of East Greenwich's most recent Industrial Pretreatment Program reporting year, there were no Significant Industrial Users (SIUs) contributing wastewater to the East Greenwich WWTF.

II. Description of Discharge

A quantitative description of the discharge in terms of significant effluent parameters based on DMR data from October 2011 through September 2016 is shown on Attachment A-1.

III. Permit and Administrative Compliance Order Limitations and Conditions

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

IV. **Permit Basis and Explanation of Effluent Limitation Derivation**

The Town of East Greenwich owns and operates the East Greenwich Wastewater Treatment Facility (East Greenwich WWTF) located on Crompton Avenue East Greenwich, Rhode Island. The discharge to Greenwich Bay consists of treated domestic and commercial wastewater. Treatment consists of:

- Coarse Screening
- Primary Settling
- Rotating Biological Contactors
- Secondary Flocculation and Settling
- Nitrification
- Denitrification
- Ultraviolet Disinfection

In 2017 East Greenwich entered into two separate contracts to upgrade the WWTF. The first contract was to upgrade the UV disinfection system. The contract was awarded in April 2017 and construction will be completed by September 2017. The second contract was to replace the Rotating Biological Contactors and make other miscellaneous WWTF upgrades/repairs. This contract was awarded in May 2017 and construction will be completed by March 2018. East Greenwich must maintain compliance with all permit limits throughout construction of both contracts.

A diagram of the facility is included in Attachment A-2.

East Greenwich's most recent RIPDES permit, authorizing discharges from the above-mentioned facility, was issued on September 28, 2011. The permit became effective on November 1, 2011 and expired on November 1, 2016. East Greenwich submitted an application for permit reissuance to the DEM on March 31, 2016. On April 15, 2016 the DEM issued an application complete letter to East Greenwich. In accordance with Rule 13(a) of the Regulations for the Rhode Island Pollutant Discharge Elimination System, East Greenwich's 2011 permit remains in effect since the DEM has determined that a timely and complete permit application was submitted. Once this permit is reissued, it will supersede the 2011 permit.

Receiving Water Description

The water body segment that receives the discharge from the East Greenwich WWTF is described as Greenwich Cove. The waterbody identification # for this water body is RI0007025E-05A. This segment is located in East Greenwich and is classified as a class SB1 water body according to the Rhode Island Water Quality Regulations. SB1 waters are designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value. Primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges. However, all Class SB criteria must be met. Currently, this segment is listed as impaired for Total Nitrogen, Dissolved Oxygen, and Fecal Coliform in the DEM's 2014 303(d) List of Impaired Waters.

Permit development

Development of RIPDES permit limitations is a multi-step process consisting of the following steps: calculating allowable water quality-based discharge levels using instream criteria, background data and available dilution; determining if technology based limits apply; developing Best Professional Judgment (BPJ)-based limits; taking the most stringent of the water quality-based, technology-based, and BPJ-based limits as the new allowable discharge levels; comparing existing permit limits to the new allowable discharge levels and performing an antidegradation/antibacksliding analysis to determine the final permit limits; and evaluating the ability of the facility to meet the final permit limits.

Water quality criteria are comprised of numeric and narrative criteria. Numeric criteria are scientifically derived ambient concentrations developed by EPA or the State for various pollutants of concern to protect human health and aquatic life. Narrative criteria are statements that describe the desired water quality goal. A technology-based limit is a numeric limit, which is determined by examining the capability of a treatment process to reduce or eliminate pollutants. The requirements set forth in this permit are from the State's Water Quality Regulations and the State's Regulations for the Rhode Island Pollutant Discharge Elimination System (RIPDES Regulations), both filed pursuant to Chapter 46-12, as amended. RIDEM's primary authority over the permit comes from EPA's delegation of the program in September 1984 under the Federal Clean Water Act (CWA).

WWTF Conventional Pollutant Permit Limitations

Flow limits

The basis for the facility's average monthly flow limit of 1.70 MGD is the facility's Facilities Plan dated September 7, 2000.

BOD₅, TSS, Settleable Solids, and pH

The "Average Monthly" and "Average Weekly" biochemical oxygen demand (BOD₅), and total suspended solids (TSS) limits for November 1-April 30, and the pH limitations are based upon the secondary treatment requirements in Section 301(b)(1)(B) of the Clean Water Act (CWA), as defined in 40 CFR 133.102 (a)-(c). Settleable solids and "Maximum Daily" BOD₅ and TSS limits are based on Rhode Island requirements for Publicly Owned Treatment Works (POTWs) under Rule 17.04(b) of the RIPDES Regulations and as provided in 40 CFR 123.25. The "Average Monthly", "Average Weekly", and "Maximum Daily" BOD and TSS limits for the months of May 1 – October 31 have been reduced to account for the additional treatment that will occur from the operation of the nutrient removal equipment during these months. The "Percent Removal" requirements for TSS and BOD₅ are in accordance with 40 CFR 133.102(a) and (b). Settleable Solids monitoring has been included as a process-control parameter that can aid in the assessment of the operation of the plant but need not have an effluent limit.

Oil and Grease

Oil and Grease monitoring has been included to ensure that the collection system will not experience blockages due to excessive levels of grease and to ensure that the WWTF will not experience inhibition.

Enterococci and Fecal Coliform

The Rhode Island Water Quality Regulations include Enterococci criteria for primary contact/swimming of a geometric mean of 35 colonies/100 ml and a single sample maximum of 104 colonies/100 ml. The "single sample maximum" value is only used to evaluate beach swimming advisories. EPA's November 12, 2008 memorandum regarding "Initial Zones of Dilution for Bacteria in Rivers and Streams Designated for Primary Contact Recreation" clarifies that it is not appropriate to use dilution for bacteria criteria in receiving waters that are designated for primary contact recreation. Therefore, because the receiving water is designated for primary contact recreation, the DEM has assigned a monthly average Enterococci limit of 35 colonies/100 ml. The daily maximum enterococci limit has been set at the 90% upper confidence level value for "lightly used full body contact recreation" of 276 colonies/100 ml. The DEM has also assigned Fecal Coliform monitoring to ensure that the discharge from the WWTF will not have an impact on any areas designated for shellfish harvesting outside of the immediate vicinity of the outfall. To ensure that proper UV operation is being maintained, monitoring requirements for UV Intensity, Transmittance, and Dosage have been included in the permit.

Mixing Zones and Dilution Factors

In order to evaluate the need for water quality based limits, it is necessary to determine the mixing which occurs in the immediate vicinity of the wastewater discharge (initial dilution). In an effort to comply with water quality based limits, the Town of East Greenwich conducted an effluent dye study in October 1995 to determine the actual dilution factors. Similar studies have been conducted by other major RIPDES permittees, which discharge to marine waters. By using the results of this dye study and the United States Environmental Protection Agency's (EPA's) guidance document, entitled "Technical Support Document for Water Quality Based Toxics Control", the Rhode Island Department of Environmental Management (DEM) has determined that a monthly average (chronic) dilution factor of 40 and a daily maximum (acute) dilution factor of 20 are appropriate. The associated mixing zone radii were determined to be 80 meters (approximately 262 feet) and 11 meters (approximately 36 feet), respectively. A detailed document, outlining the development of the mixing zones, is available upon request. The East Greenwich WWTF mixing zone is presented in Attachment A-3.

The allowable discharge limits were calculated as follows:

- a) Background concentration unknown.

$$Limit_1 = (DF) * (Criteria) * (80\%)$$

Where: DF = acute or chronic dilution factor, as appropriate

- b) Using available background concentration data¹.

$$Limit_1 = (DF) * (Criteria) * 90\% - (Background) * (DF - 1)$$

Where: DF = acute or chronic dilution factor, as appropriate

Based on the above dilution factors and the saltwater aquatic life and non-class A human health criteria, from the Rhode Island Water Quality Regulations, allowable discharge concentrations were established using 80% allocation when no background data was available and 90% allocation when background data was available. Background data, for Cadmium, Chromium, Copper, Lead, Nickel, and Silver, was obtained from the four SINBADD cruises in Current Report #: NBP-89-22.

The formulas and data noted above were applied with the following exceptions:

One exception to this methodology was for those pollutants, based on the acute and chronic dilution factors, which had a higher allowable chronic limit than allowable acute limit. For this situation, both the "Monthly Average" and "Daily Maximum" limits were set at the allowable acute limit.

A second exception was for the calculation of the total residual chlorine limit. The limits for total residual chlorine (TRC) were established in accordance with the RIDEM Effluent Disinfection Policy. The "Monthly Average" and "Daily Maximum" were based on a 100% allocation, a zero background concentration, and dilution factors of 40 and 20 for chronic and acute, respectively. The 100% allocation factor for TRC was used due to the non-conservative nature of chlorine and the improbability of the receiving water having a detectable background TRC concentration. It should be noted that East Greenwich uses ultraviolet disinfection and so chlorine is believed absent from the discharge and is not limited in the permit. However, if there is a failure in the UV

¹Source of background data for cadmium, chromium, copper, nickel, lead, and silver is *Water Quality Survey of Narragansett Bay - A Summary of Results from the SINBADD 1985-1986*; Pilson, Michael E.Q. and Hunt, Carlton, D.; March 1989; Report #NBP-89-22.

disinfection system, chlorine disinfection will be used as a back-up in accordance with the Operation and Maintenance manual.

A third exception to this methodology was for any pollutants (Copper) that had a previous water quality based monthly average limit in the 2006 RIPDES permit. For Copper, the relaxation of the monthly average limits from the previous permit was restricted in accordance with the antibacksliding provisions of the Clean Water Act and the Policy on the Implementation of the Antidegradation Provisions of the Rhode Island Water Quality Regulations. This permit does not change the Total Copper limit that was previously developed. As noted in the permit, monitoring for Copper to evaluate permit compliance may be combined with Copper monitoring performed in conjunction with bioassay testing.

Reference Attachment A-4 for calculations of allowable water quality-based limits based on Saltwater Aquatic Life and Human Health Criteria.

Provided below is a brief introduction to Antibacksliding and Antidegradation; as well as a discussion on how the two policies were used to calculate water quality based limits.

Antibacksliding

Antibacksliding restricts the level of relaxation of water quality based limits from the previous permit. Section 303(d)(4) of the Clean Water Act addresses antibacksliding as the following:

Section 303(d)(4)

- A) Standards not attained - For receiving waters that have not attained the applicable water quality standards, limits based on a TMDL or WLA can only be revised if the water quality standards will be met. This may be done by (i) determining that the cumulative effect of all such revised limits would assure the attainment of such water quality standards; or (ii) removing the designated use which is not being attained in accordance with regulations under Section 303.
- B) Standards attained - For receiving waters achieving or exceeding applicable water quality standards, limits can be relaxed if the revision is consistent with the State's Antidegradation Policy.

Therefore, in order to determine whether backsliding is permissible, the first question that must be answered is whether or not the receiving water is attaining the water quality standard. The Office has determined the most appropriate evaluation of existing water quality is by calculating the pollutant levels, which would result after consideration of all currently valid RIPDES permit limits or historic discharge data (whichever is greater), background data (when available), and any new information (i.e.: dilution factors).

Antidegradation

The RIDEM's "Policy on the Implementation of the Antidegradation Provisions of the Rhode Island Water Quality Regulations" (the Policy) establishes four tiers of water quality protection:

Tier 1. In all surface waters, existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

Tier 2. In waters where the existing water quality exceeds levels necessary to support propagation of fish and wildlife, and recreation in and on the water, that quality shall be maintained and protected, except for insignificant changes in water quality as determined by the Director and in accordance with the Antidegradation Implementation Policy, as amended. In addition, the Director may allow significant degradation which is determined to be necessary to achieve important economic or social benefits to the State in accordance with the Antidegradation Implementation Policy, as amended.

Tier 2½. Where high quality waters constitute Special Resource Protection Water SRPW², there shall be no measurable degradation of the existing water quality necessary to protect the characteristic(s) which cause the waterbody to be designated a SRPW. Notwithstanding that all public drinking water supplies are SRPWs, public drinking water suppliers may undertake temporary and short-term activities within the boundary perimeter of a public drinking water supply impoundment for essential maintenance or to address emergency conditions in order to prevent adverse effect on public health or safety. These activities must comply with the requirements set forth in Tier 1 and Tier 2.

Tier 3. Where high quality waters constitute an Outstanding Natural Resource (ONRW)³, that water quality shall be maintained and protected. The State may allow some limited activities that result in temporary and short-term changes in the water quality of an ONRW. Such activities must not permanently degrade water quality or result in water quality lower than that necessary to protect the existing uses in the ONRW.

The formulas previously presented ensure that permit limitations are based upon water quality criteria and methodologies established to ensure that all designated uses will be met.

In terms of the applicability of Tier 2 of the Policy, a water body is assessed as being high quality on a parameter-by-parameter basis. In accordance with Part II of the Policy, "Antidegradation applies to all new or increased projects or activities which may lower water quality or affect existing water uses, including but not limited to all 401 Water Quality Certification reviews and any new, reissued, or modified RIPDES permits." Part VI.A of the Policy indicates that it is not applicable to activities which result in insignificant (i.e.: short-term minor) changes in water quality and that significant changes in water quality will only be allowed if it is necessary to accommodate important economic and social development in the area in which the receiving waters are located (important benefits demonstration). Part VI.B.4 of the Policy states that: "Theoretically, any new or increased discharge or activity could lower existing water quality and thus require the important benefits demonstration. However, RIDEM will: 1) evaluate applications on a case-by-case basis, using BPJ and all pertinent and available facts, including scientific and technical data and calculations as provided by the applicant; and 2) determine whether the incremental loss is significant enough to require the important benefits demonstration described below. [If not then as a general rule RIDEM will allocate 20%.] Some of the considerations which will be made to determine if an impact is significant in each site specific decision are: 1) percent change in water quality parameter value and their temporal distribution; 2) quality and value of the resource; 3) cumulative impact of discharges and activities on water quality to-date; 4) measurability of the change; 5) visibility of the change; 6) impact on fish and wildlife habitat; and 7) impact on potential and existing uses. As a general guide, any discharge or activity which consumes greater than 20% of the remaining assimilative capacity (See Section VI.B.2) will be considered a significant impact and will be required to demonstrate important economic or social benefits to justify the activity (See Section VI.C. below). However, on a case-by-case basis, any proposed percent consumption of the remaining assimilative capacity may be deemed significant and invoke full requirements to demonstrate important economic or social benefits."

In terms of a RIPDES permit, an increased discharge is defined as an increase in any limitation, which would result in an increased mass loading to a receiving water. The baseline for this comparison would be the monthly average mass loading established by the previous permit. It would be inappropriate to use the daily maximum mass loading since the Policy is not applicable to short-term changes in water quality.

²SRPWs are surface waters identified by the Director as having significant recreational or ecological uses.

³ONRWs are a special subset of high quality water bodies, identified by the State as having significant recreational or ecological water uses.

For the purposes of ensuring that the revised limit is consistent with the requirements of antidegradation, existing water quality must be defined. As explained earlier, RIDEM evaluates existing water quality by determining the pollutant levels which would result under the design conditions appropriate for the particular criteria (i.e., background water quality, when available and/or appropriate; non-point source inputs; and existing RIPDES permit limitations or recent historical discharge data, whichever is higher). In general, available data would be used to make this determination.

Using the above-mentioned criteria, the present instream water quality C_p is defined as:

$$C_p = \frac{(DF - 1) * C_b + (1 * C_d)}{DF}$$

where: C_b = background concentration⁴

C_d = discharge data⁵

DF = dilution factor

If the waterbody is a high quality water for the pollutant in question ($C_p < C_{criteria}$), then the discharge requires an evaluation under Tier 2 protection. If the waterbody is not determined to be high quality for that parameter, then antibacksliding will allow an increased permit limit only if it can be assured that water quality standards would be attained. Therefore, the permit limit would be calculated to comply with Tier 1 protection, using the procedures noted previously (i.e., Limit₁).

Assuming the receiving water has been designated as a high quality waterbody for the parameter under investigation, the next step is to determine whether the new or increased discharge would require an important benefits demonstration. As explained above, for existing discharges RIDEM shall follow the general rule of allocating 20% of the remaining assimilative capacity without the need to complete this demonstration (assuming the receiving water is not an SRPW or ONRW). On a case-by-case basis, the RIDEM may limit the allocation or determine that any incremental loss or impact to the receiving water is significant enough to require a detailed important benefits demonstration.

Water Quality Based Limits - Considering Antibacksliding and Antidegradation

Below are the four (4) steps RIDEM used to establish permit limitations for Copper to be consistent with Tier 2 protection of antidegradation.

- 1) Determine the remaining assimilative capacity of the receiving water C_{rac} . The remaining assimilative capacity (or buffer) is equivalent to the difference between the criteria and the calculated present instream water quality concentrations:

$$C_{rac} = C_{criteria} - C_p$$

where:

$C_{criteria}$ = applicable standard for the most sensitive use; and

C_p = the calculated present water quality concentration.

- 2) Establish the percentage of the remaining assimilative capacity that will be allocated to the permittee.

⁴ Data collected at a location that is unimpacted by significant point source discharges.

⁵ Discharge data refers to the maximum of the permit limit or the historic discharge level. Historic discharge levels are presented in Attachment A-5.

RIDEM allocated 0% of the remaining assimilative capacity for Copper because the historical discharge concentration was well below the previous permit limit.

- 3) Calculate an increased permit limit that would meet the Antidegradation Implementation Policy.

The next step is to calculate a permit limit based on the available concentration. Basically, the available concentration is a percentage of the remaining assimilative capacity of the receiving water, which can be allocated to the permittee, plus the present water quality. This concentration is then used to calculate a permit limit. The limit is calculated by subtracting background data (if available or appropriate) from the criteria and using the appropriate dilution factors and allocation factors in a mass balanced relationship.

The limit is determined by:

$$Limit_2 = (C_p + \% * C_{rac}) * DF - (DF - 1) * C_b$$

- 4) Finally, compare Limit₁ to Limit₂.

The final limit is the minimum of Limit₁ and Limit₂.

Attachments A-5 and A-6 contain calculations determining the historic discharge level and illustrating the antibacksliding/antidegradation process for Copper.

A summary of the pollutants detected in the WWTF's Priority Pollutant Scans and a summary of DMR data for the past five (5) years are provided in Attachments A-7 and A-8 respectively.

Attachment A-9 is a summary comparison of the allowable limits vs. the DMR and State User Fee Program data.

Reasonable Potential

In accordance with 40 CFR Part 122.4(d)(1)(iii), water quality based effluent limitations are required for those pollutants in the discharge that have the reasonable potential to cause or contribute to the exceedance of instream criteria. In order to evaluate the need for permit limitations, allowable monthly average (chronic) discharge concentrations were compared to the monthly average Discharge Monitoring Report (DMR) data and the mean of the concentrations in the WWTF's annual Priority Pollutant Scans. Additionally, the allowable daily maximum (acute) discharge concentrations were compared to the daily maximum DMR data and the maximum of the concentrations reported in the WWTF's annual Priority Pollutant Scans. Based on these comparisons, water quality limitations have been maintained for Total Copper because there were two instances of State User Fee Program data and DMR data approaching or exceeding 50% of the antidegradation limit for Copper of 48 ug/L. In addition, although these pollutants do not have reasonable potential, monitoring for Available Cyanide, Total Cadmium, Total Chromium, Total Lead, Total Zinc, Total Nickel, and Total Aluminum has been maintained in the permit as part of the quarterly toxicity testing requirements.

Bioassay Testing

RIDEM's toxicity permitting policy is based on past toxicity data and the level of available dilution. The permit requires an LC₅₀ ≥ 100% effluent limit for quarterly acute tests conducted on Mysids. At this time, chronic toxicity limits are not included based on the chronic dilution factor of 40:1, exceeding DEM's 20:1 dilution threshold used for assigning chronic toxicity limits. However, chronic toxicity monitoring is required and the WWTF must report the results of C-NOEC monitoring for Arbacia on a quarterly basis.

Nutrients

Nutrient monitoring and limitations have been maintained from the 2011 permit. The seasonal Nitrogen limit has been maintained at 5.0 mg/l for the months of May-October. These limits are based on an evaluation of the sources of Nitrogen to the Providence and Seekonk Rivers and Upper Narragansett Bay. These limits, in combination with reductions being assigned to other WWTFs, will achieve a 50% reduction from the 1995-1996 Rhode Island WWTF loading, consistent with the recommendations from The Governor's Narragansett Bay and Watershed Planning Commission. Assigning these total nitrogen limits will result in substantial progress towards the mitigation of hypoxic/anoxic events and meeting water quality standards.

Other Limits and Conditions

The effluent monitoring requirements have been specified in accordance with RIPDES regulations as well as 40 CFR 122.41 (J), 122.44 (i), and 122.48 to yield data representative of the discharge.

The permit contains requirements for the permittee to comply with the State's Sludge Regulations and the RIDEM Order of Approval that was issued to the East Greenwich WWTF for sludge disposal in accordance with requirements of Section 405(d) of the Clean Water Act (CWA). Permits must contain sludge conditions requiring compliance with limits, State laws, and applicable regulations as per Section 405(d) of the CWA and 40 CFR 503. The RIDEM Sludge Order of Approval sets forth the conditions to ensure this compliance.

The permit contains a reporting requirement for a local program to regulate industrial discharges to the sewer system (referred to as pretreatment program). This program is being required under authority of Section 402 (b)(8) of the CWA and 40 CFR 122.44 (j). RIDEM approved East Greenwich's IPP on October 5, 1984.

The permit requires that, within two years of the effective date of this permit, the Permittee shall submit a Resiliency Plan and schedule of short and long term actions that will be taken to maintain operation and protect key collection and treatment system assets that will be subject to DEM review and approval. The plan shall be consistent with the DEM's Guidance for the Consideration of Climate Change Impacts in the Planning and Design of Municipal Wastewater Collection and Treatment Infrastructure and include consideration of the findings of the 2017 DEM report Implications of Climate Change for Rhode Island Wastewater Collection and Treatment Infrastructure. The Resiliency Plan shall include, but not be limited to: (i) an assessment of current and projected impacts from natural hazards on critical components within the collection and treatment systems, as well as on the systems themselves; (ii) a plan to adapt and protect vulnerable components and systems; (iii) an analysis that provides justification for selected adaptation methods. The analysis must consider component and system design life and sea-level rise projections. For the purposes of this Resiliency Plan, critical components are considered those necessary to ensure the forward flow and treatment of wastewater in accordance with the limits set forth in this permit. The Resiliency Plan shall also consider impacts from neighboring facilities during high hazard events.

The remaining general and specific conditions of the permit are based on the RIPDES Regulations as well as 40 CFR Parts 122 through 125 and consist primarily of management requirements common to all permits.

Final Permit Limits

Table 1

Presented in the following Table is a summary of the permit limitations for outfall 001A set forth in the Final Permit.

Parameter	Monthly Average (Minimum)	Weekly Average	Daily Maximum (Maximum)
Flow	1.70 MGD		
BOD ₅ (Nov. 1-April 30)	310 lbs./day		517 lbs./day
BOD ₅ (Nov. 1-April 30)	30 mg/l	45 mg/l	50 mg/l
BOD ₅ (May 1-Oct. 31)	155 lbs./day		259 lbs./day
BOD ₅ (May 1-Oct. 31)	15 mg/l	20 mg/l	25 mg/l
BOD ₅ - % removal	85%		
TSS (Nov. 1-April 30)	310 lbs./day		517 lbs./day
TSS (Nov. 1-April 30)	30 mg/l	45 mg/l	50 mg/l
TSS (May 1-Oct. 31)	155 lbs./day		259 lbs./day
TSS (May 1-Oct. 31)	15 mg/l	20 mg/l	25 mg/l
TSS - % Removal	85%		
Settleable Solids		--- ml/l	--- ml/l
Enterococci	35 cfu/100 ml		276 cfu/100 ml
Fecal Coliform	--- MPN/100 ml		--- MPN/100 ml
UV Intensity	(--- mW/cm ²)	(--- mW/cm ²)	(--- mW/cm ²)
UV Transmittance	(--- %)	(--- %)	(---%)
UV Dosage	(--- mW-s/cm ²)	(--- mW-s/cm ²)	(--- mW-s/cm ²)
pH	(6.0 SU)		(9.0 SU)
Copper, Total	48.0 ug/l		89.0 ug/l
Cyanide, Available	--- ug/l		--- ug/l
Cadmium, Total	--- ug/l		--- ug/l
Chromium, Total	--- ug/l		--- ug/l

--- Signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

Table 1, Continued

Parameter	Monthly (Minimum)	Average	Weekly Average	Daily (Maximum)	Maximum
Lead, Total	--- ug/l			--- ug/l	
Zinc, Total	--- ug/l			--- ug/l	
Nickel, Total	--- ug/l			--- ug/l	
Aluminum, Total	--- ug/l			--- ug/l	
Oil and Grease				--- ug/l	
Total Nitrogen (Nov. 1- Apr. 30)	--- lbs./day				
Total Nitrogen (Nov. 1- Apr. 30)	--- mg/l			--- mg/l	
Total Nitrogen (May 1- Oct. 31)	71 lbs./day				
Total Nitrogen (May 1- Oct. 31)	5.0 mg/l			--- mg/l	
TKN	--- mg/l			--- mg/l	
Nitrite, Total (as N)	--- mg/l			--- mg/l	
Nitrate, Total (as N)	--- mg/l			--- mg/l	
Mysidopsis bahia LC50				≥100%	
Arbacia punctulata C- NOEC				--- %	

--- Signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

V. Comment Period, Hearing Requests, and Procedures for Final Decisions

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 their arguments in full by the close of the public comment period, to the Rhode Island Department of Environmental Management, Office of Water Resources, 235 Promenade Street, Providence, Rhode Island, 02908-5767. A public hearing will be held after a thirty (30) day public notice. In reaching a final decision on the draft permit the Director will respond to all significant comments and make these responses available to the public at DEM's Providence Office.

Following the close of the comment period, and after the public hearing, the Director 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. Within thirty (30) days following the notice of the final permit decision any interested person may submit a request for a formal hearing to reconsider or contest the final decision. Requests for formal hearings must satisfy the

requirements of Rule 49 of the Regulations for the Rhode Island Pollutant Discharge Elimination System.

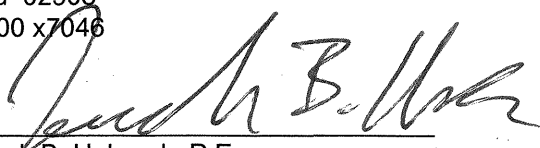
VI. **DEM Contact**

Additional information concerning the permit may be obtained between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday, excluding holidays from:

Samuel Kaplan, P.E.
Senior Engineer
RIPDES Program
Office of Water Resources
Department of Environmental Management
235 Promenade Street
Providence, Rhode Island 02908
Telephone: (401) 222-4700 x7046

Date

7/10/18


Joseph B. Haberek, P.E.
Supervising Sanitary Engineer
RIPDES Permitting Section
Office of Water Resources
Department of Environmental Management

ATTACHMENT A-1: HISTORICAL EFFLUENT DATA

DESCRIPTION OF DISCHARGE: Discharge from outfall 001A

AVERAGE EFFLUENT CHARACTERISTICS AT POINT OF DISCHARGE

PARAMETER	AVERAGE ¹	MAXIMUM ²
BOD (LBS/DAY)	53.97	93.60
BOD (MG/L)	7.41	12.84
PH (S.U.)	6.31	7.17
TSS (LBS/DAY)	30.44	65.33
TSS (MG/L)	4.03	8.61
SETTLEABLE SOLIDS (ML/L)		0.0668
OIL & GREASE		2.77
NITROGEN, TOTAL (LBS/DAY)	81.55	
NITROGEN, TOTAL (MG/L)	11.6	13.46
NITROGEN, NITRITE (TOTAL AS N, MG/L)	0.13	0.20
NITROGEN, NITRATE (TOTAL AS N, MG/L)	5.13	6.40
NITROGEN, TOTAL KJELDHAL (MG/L)	5.93	7.61
ALUMINUM, TOTAL (UG/L)	17.19	17.19
CADMIUM, TOTAL (UG/L)	0.7896	0.7896
CHROMIUM, TOTAL (UG/L)	3.158	3.158
COPPER, TOTAL (UG/L)	5.4531	7.3162
CYANIDE, TOTAL (UG/L)	3.1589	3.1589
LEAD, TOTAL (UG/L)	3.1579	3.1579
NICKEL, TOTAL (UG/L)	7.9476	7.9476
ZINC, TOTAL (UG/L)	12.3719	12.3719
FLOW (MGD)	0.8576	1.112

PARAMETER	AVERAGE ¹	MAXIMUM ²
ULTRAVIOLET LIGHT DOSAGE (mW-s/cm ²) ³	11.63	5972.94
ULTRAVIOLET LIGHT INTENSITY (mW/cm ²)	20.29	240.96
ULTRAVIOLET LIGHT TRANSMITTANCE (%)	42.44	85.42
FECAL COLIFORMS (MPN/100 ML)	3.28	34.45
ENTEROCOCCI	5.59	813604
BOD, INFLUENT (LBS/DAY)	1367.98	2489.49
BOD, INFLUENT (MG/L)	188.66	354
BOD % REMOVAL		95.77
TSS, INFLUENT (LBS/DAY)	1118.81	2476.94
TSS, INFLUENT (MG/L)	165.25	368.83
TSS % REMOVAL		97.19

¹Data represents statistical mean of the monthly average data from October 2011 – September 2016

²Data represents statistical mean of the daily maximum data from October 2011 – September 2016

Biotoxicity Data LC₅₀ Values (in percent effluent) - Pre-Cl₂ Mysid

3rd. qtr.	4th qtr.	1st. qtr.	2nd. qtr.	3rd qtr.	4th qtr.	1st. qtr.	2nd. qtr.	3rd
2014	2014	2015	2015	2015	2015	2016	2016	2016
>100%	>100%	>100%	>100%	>100%	>100%	>100%	>100%	>100%

Biotoxicity Data C-NOEC - Arbacia Punctulata

3rd qtr.	4th. qtr.	1st. qtr.	2nd. qtr.	3rd. qtr.	4th. qtr.	1st. qtr.	2nd. qtr.	3rd. qtr.
2014	2014	2015	2015	2015	2015	2016	2016	2016
=100%	=100%	=50%	=100%	=100%	=100%	=100%	>100%	>100%

ATTACHMENT A-2: FACILITY DIAGRAM

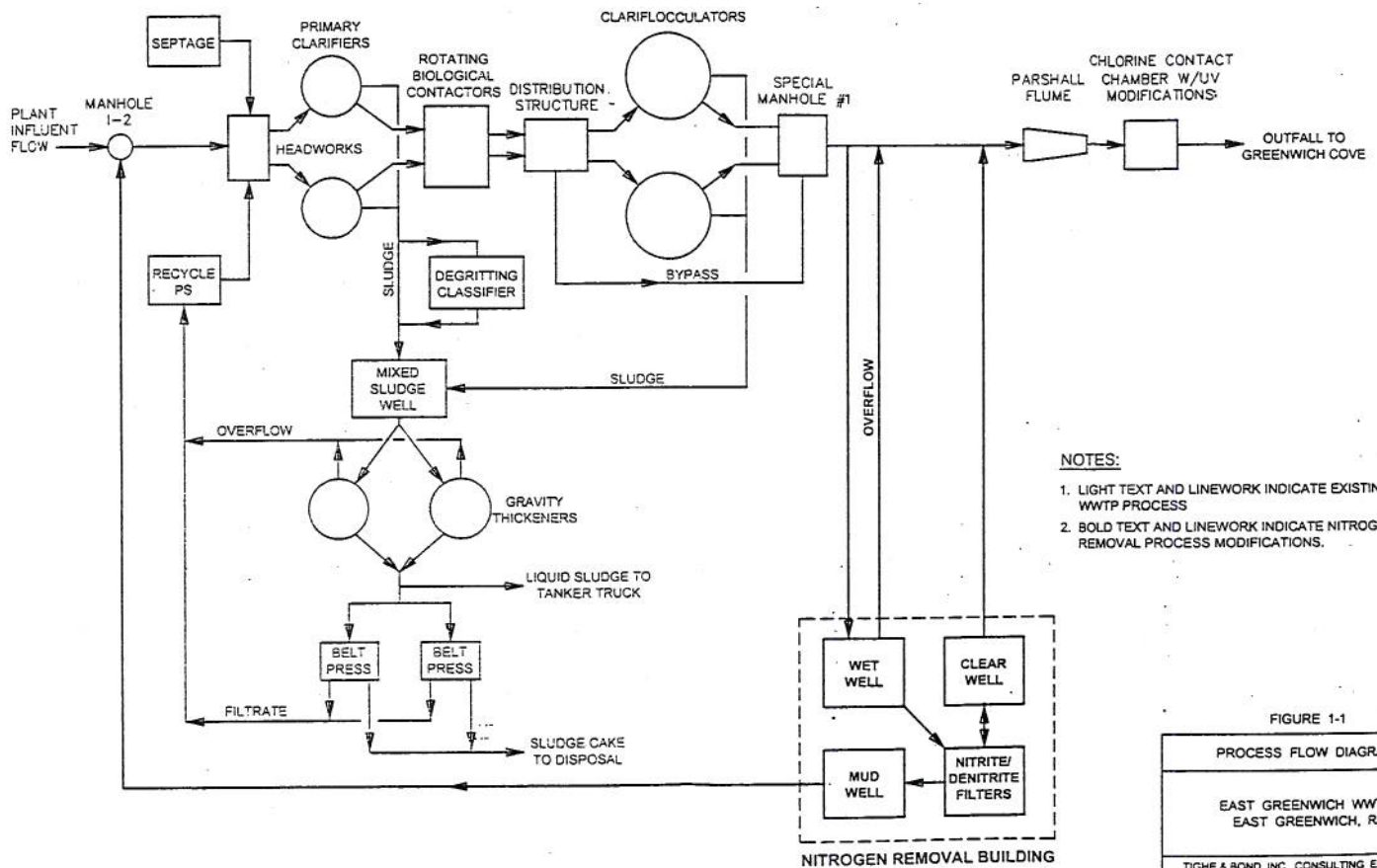


FIGURE 1-1

PROCESS FLOW DIAGRAM

EAST GREENWICH WWTP
EAST GREENWICH, RI

TIGHE & BOND INC. CONSULTING ENGINEERS
WESTFIELD, MASSACHUSETTS
SCALE: NO SCALE
DATE: JULY 2008

[449] \WWTP\FIGURE 1-1

ATTACHMENT A-3: MIXING ZONE

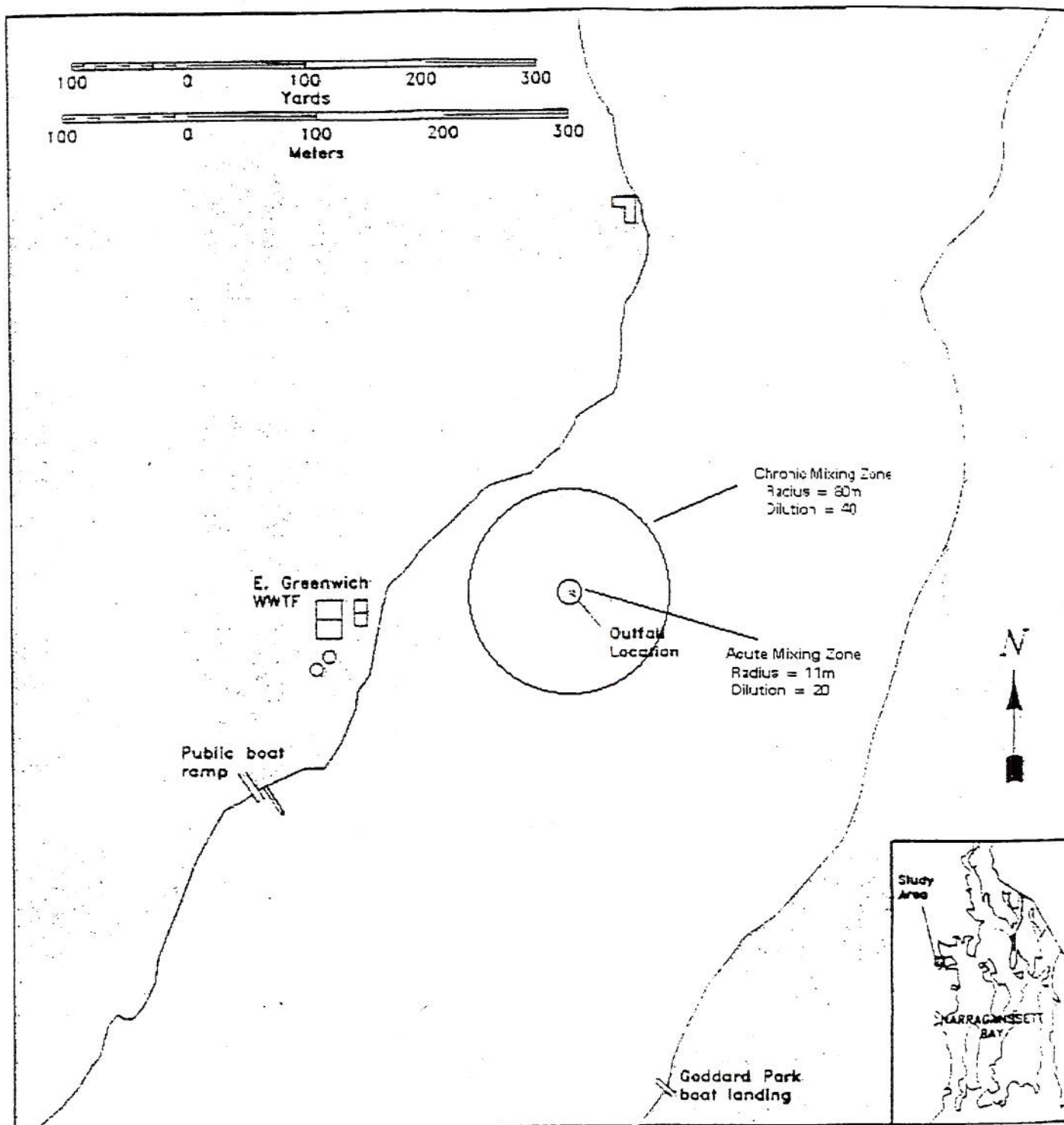


Figure 1: EG WWTF Mixing Zones

ATTACHMENT A-4: WATER QUALITY CALCULATIONS

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS **FACILITY SPECIFIC DATA INPUT SHEET**

NOTE: LIMITS BASED ON RI WATER QUALITY CRITERIA DATED JULY 2006

FACILITY NAME: **EAST GREENWICH WWTF**

RIPDES PERMIT #: **RI0100030**

	DISSOLVED BACKGROUND DATA (ug/L)	ACUTE METAL TRANSLATOR	CHRONIC METAL TRANSLATOR
ALUMINUM	NA	NA	NA
ARSENIC	NA	1	1
CADMIUM	0.0351	0.994	0.994
CHROMIUM III	NA	NA	NA
CHROMIUM VI	0.1873	0.993	0.993
COPPER	0.6629	0.83	0.83
LEAD	0.046	0.951	0.951
MERCURY	NA	0.85	NA
NICKEL	1.1598	0.99	0.99
SELENIUM	NA	0.998	0.998
SILVER	0.0048	0.85	0.85
ZINC	NA	0.946	0.946

USE NA WHEN NO DATA IS AVAILABLE

NOTE 1: BACKGROUND DATA BASED ON AVERAGE CONCENTRATIONS OBTAINED FROM THE FOUR SINBADD CRUISES IN CURRENT REPORT #: NBP-89-22 (LOCATIONS B7, B8, B9, B13, B14, B15, & B16).

NOTE 2: METAL TRANSLATORS FROM RI WATER QUALITY REGS.

DILUTION FACTORS	
ACUTE =	20 x
CHRONIC =	40 x
HUMAN HEALTH =	40 x

NOTE: EAST GREENWICH'S DILUTION FACTORS OBTAINED FROM A DYE STUDY.

TOTAL AMMONIA CRITERIA (ug/L)		
WINTER	ACUTE =	21000
	CHRONIC =	3100
SUMMER	ACUTE =	7300
	CHRONIC =	1100

NOTE 1: LIMITS ARE FROM TABLE 3 IN THE RI WATER QUALITY REGS. USING:
SALINITY = 30 g/Kg; pH = 8.0 s.u.
WINTER (NOV-APRIL) TEMP=5.0 C;
SUMMER (MAY-OCT) TEMP=20.0 C.

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: EAST GREENWICH WWTF RIPDES PERMIT #: RI0100030

NOTE: METALS CRITERIA ARE DISSOLVED, METALS LIMITS ARE TOTAL; AMMONIA CRITERIA AND LIMITS HAVE BEEN CONVERTED TO ug/l N.

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	SALTWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	SALTWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
PRIORITY POLLUTANTS:							
TOXIC METALS AND CYANIDE							
ANTIMONY	7440360			No Criteria		640	20480
ARSENIC (limits are total recoverable)	7440382	NA	69	1104	36	1.4	44.8
ASBESTOS	1332214			No Criteria			No Criteria
BERYLLIUM	7440417			No Criteria			No Criteria
CADMIUM (limits are total recoverable)	7440439	0.0351	40	723.6751509	8.8		317.3351107
CHROMIUM III (limits are total recoverable)	16065831	NA		No Criteria			No Criteria
CHROMIUM VI (limits are total recoverable)	18540299	0.1873	1100	19935.99325	50		1805.332628
COPPER (limits are total recoverable)	7440508	0.6629	4.8	88.92156627	3.1		103.3095181
CYANIDE	57125		1	16.00	1	140	32
LEAD (limits are total recoverable)	7439921	0.046	210	3973.844374	8.1		304.7381703
MERCURY (limits are total recoverable)	7439976	NA	1.8	33.88235294	0.94	0.15	4.8
NICKEL (limits are total recoverable)	7440020	1.1598	74	1323.195758	8.2	4600	252.4927273
SELENIUM (limits are total recoverable)	7782492	NA	290	4649.298597	71	4200	2276.553106
SILVER (limits are total recoverable)	7440224	0.0048	1.9	40.128			No Criteria
THALLIUM	7440280			No Criteria		0.47	15.04
ZINC (limits are total recoverable)	7440666	NA	90	1522.198732	81	26000	2739.957717
VOLATILE ORGANIC COMPOUNDS							
ACROLEIN	107028			No Criteria		290	9280
ACRYLONITRILE	107131			No Criteria		2.5	80
BENZENE	71432			No Criteria		510	16320
BROMOFORM	75252			No Criteria		1400	44800
CARBON TETRACHLORIDE	56235			No Criteria		16	512
CHLOROBENZENE	108907			No Criteria		1600	51200
CHLORODIBROMOMETHANE	124481			No Criteria		130	4160
CHLOROFORM	67663			No Criteria		4700	150400
DICHLOROBROMOMETHANE	75274			No Criteria		170	5440
1,2DICHLOROETHANE	107062			No Criteria		370	11840
1,1DICHLOROETHYLENE	75354			No Criteria		7100	227200
1,2DICHLOROPROPANE	78875			No Criteria		150	4800
1,3DICHLOROPROPYLENE	542756			No Criteria		21	672
ETHYLBENZENE	100414			No Criteria		2100	67200
BROMOMETHANE (methyl bromide)	74839			No Criteria		1500	48000
CHLOROMETHANE (methyl chloride)	74873			No Criteria			No Criteria
METHYLENE CHLORIDE	75092			No Criteria		5900	188800

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: EAST GREENWICH WWTF RIPDES PERMIT #: RI0100030

NOTE: METALS CRITERIA ARE DISSOLVED, METALS LIMITS ARE TOTAL; AMMONIA CRITERIA AND LIMITS HAVE BEEN CONVERTED TO ug/l N.

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	SALTWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	SALTWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
1,1,2,2TETRACHLOROETHANE	79345			No Criteria		40	1280
TETRACHLOROETHYLENE	127184			No Criteria		33	1056
TOLUENE	108883			No Criteria		15000	480000
1,2TRANSDICHLOROETHYLENE	156605			No Criteria		10000	320000
1,1,1TRICHLOROETHANE	71556			No Criteria			No Criteria
1,1,2TRICHLOROETHANE	79005			No Criteria		160	5120
TRICHLOROETHYLENE	79016			No Criteria		300	9600
VINYL CHLORIDE	75014			No Criteria		2.4	76.8
ACID ORGANIC COMPOUNDS							
2CHLOROPHENOL	95578			No Criteria		150	4800
2,4DICHLOROPHENOL	120832			No Criteria		290	9280
2,4DIMETHYLPHENOL	105679			No Criteria		850	27200
4,6DINITRO2METHYL PHENOL	534521			No Criteria		280	8960
2,4DINITROPHENOL	51285			No Criteria		5300	169600
4NITROPHENOL	88755			No Criteria			No Criteria
PENTACHLOROPHENOL	87865		13	208	7.9	30	252.8
PHENOL	108952			No Criteria		1700000	54400000
2,4,6TRICHLOROPHENOL	88062			No Criteria		24	768
BASE NEUTRAL COMPUNDS							
ACENAPHTHENE	83329			No Criteria		990	31680
ANTHRACENE	120127			No Criteria		40000	1280000
BENZIDINE	92875			No Criteria		0.002	0.064
POLYCYCLIC AROMATIC HYDROCARBONS				No Criteria		0.18	5.76
BIS(2CHLOROETHYL)ETHER	111444			No Criteria		5.3	169.6
BIS(2CHLOROISOPROPYL)ETHER	108601			No Criteria		65000	2080000
BIS(2ETHYLHEXYL)PHTHALATE	117817			No Criteria		22	704
BUTYL BENZYL PHTHALATE	85687			No Criteria		1900	60800
2CHLORONAPHTHALENE	91587			No Criteria		1600	51200
1,2DICHLOROBENZENE	95501			No Criteria		1300	41600
1,3DICHLOROBENZENE	541731			No Criteria		960	30720
1,4DICHLOROBENZENE	106467			No Criteria		190	6080
3,3DICHLOROBENZIDENE	91941			No Criteria		0.28	8.96
DIETHYL PHTHALATE	84662			No Criteria		44000	1408000
DIMETHYL PHTHALATE	131113			No Criteria		1100000	35200000
DInBUTYL PHTHALATE	84742			No Criteria		4500	144000
2,4DINITROTOLUENE	121142			No Criteria		34	1088

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: EAST GREENWICH WWTF RIPDES PERMIT #: RI0100030

NOTE: METALS CRITERIA ARE DISSOLVED, METALS LIMITS ARE TOTAL; AMMONIA CRITERIA AND LIMITS HAVE BEEN CONVERTED TO ug/l N.

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	SALTWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	SALTWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
1,2DIPHENYLHYDRAZINE	122667			No Criteria		2	64
FLUORANTHENE	206440			No Criteria		140	4480
FLUORENE	86737			No Criteria		5300	169600
HEXACHLOROBENZENE	118741			No Criteria		0.0029	0.0928
HEXACHLOROBUTADIENE	87683			No Criteria		180	5760
HEXACHLOROCYCLOPENTADIENE	77474			No Criteria		1100	35200
HEXACHLOROETHANE	67721			No Criteria		33	1056
ISOPHORONE	78591			No Criteria		9600	307200
NAPHTHALENE	91203			No Criteria			No Criteria
NITROBENZENE	98953			No Criteria		690	22080
NNITROSODIMETHYLAMINE	62759			No Criteria		30	960
NNITROSODINPROPYLAMINE	621647			No Criteria		5.1	163.2
NNITROSODIPHENYLAMINE	86306			No Criteria		60	1920
PYRENE	129000			No Criteria		4000	128000
1,2,4trichlorobenzene	120821			No Criteria		70	2240
PESTICIDES/PCBs							
ALDRIN	309002		1.3	20.8		0.0005	0.016
Alpha BHC	319846			No Criteria		0.049	1.568
Beta BHC	319857			No Criteria		0.17	5.44
Gamma BHC (Lindane)	58899		0.16	2.56		1.8	57.6
CHLORDANE	57749		0.09	1.44	0.004	0.0081	0.128
4,4DDT	50293		0.13	2.08	0.001	0.0022	0.032
4,4DDE	72559			No Criteria		0.0022	0.0704
4,4DDD	72548			No Criteria		0.0031	0.0992
DIELDRIN	60571		0.71	11.36	0.0019	0.00054	0.01728
ENDOSULFAN (alpha)	959988		0.034	0.544	0.0087	89	0.2784
ENDOSULFAN (beta)	33213659		0.034	0.544	0.0087	89	0.2784
ENDOSULFAN (sulfate)	1031078			No Criteria		89	2848
ENDRIN	72208		0.037	0.592	0.0023	0.06	0.0736
ENDRIN ALDEHYDE	7421934			No Criteria		0.3	9.6
HEPTACHLOR	76448		0.053	0.848	0.0036	0.00079	0.02528
HEPTACHLOR EPOXIDE	1024573		0.053	0.848	0.0036	0.00039	0.01248
POLYCHLORINATED BIPHENYLS3	1336363			No Criteria	0.03	0.00064	0.02048
2,3,7,8TCDD (Dioxin)	1746016			No Criteria		0.000000051	0.000001632
TOXAPHENE	8001352		0.21	3.36	0.0002	0.0028	0.0064
TRIBUTYLtin			0.42	6.72	0.0074		0.2368

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: EAST GREENWICH WWTF RIPDES PERMIT #: RI0100030

NOTE: METALS CRITERIA ARE DISSOLVED, METALS LIMITS ARE TOTAL; AMMONIA CRITERIA AND LIMITS HAVE BEEN CONVERTED TO ug/l N.

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	SALTWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	SALTWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
NON PRIORITY POLLUTANTS:							
OTHER SUBSTANCES							
ALUMINUM (limits are total recoverable)	7429905	NA	17262 6000.6	No Criteria	2548 904.2		No Criteria
AMMONIA as N (winter/summer)	7664417			276192 96009.6			81542.4 28934.4
4BROMOPHENYL PHENYL ETHER			13	No Criteria	7.5		No Criteria
CHLORIDE	16887006			No Criteria			No Criteria
CHLORINE	7782505			260			300
4CHLORO2METHYLPHENOL				No Criteria			No Criteria
1CHLORONAPHTHALENE				No Criteria			No Criteria
4CHLOROPHENOL	106489			No Criteria			No Criteria
2,4DICHLORO6METHYLPHENOL				No Criteria			No Criteria
1,1DICHLOROPROPANE				No Criteria			No Criteria
1,3DICHLOROPROPANE	142289			No Criteria			No Criteria
2,3DINITROTOLUENE				No Criteria			No Criteria
2,4DINITRO6METHYL PHENOL				No Criteria			No Criteria
IRON	7439896			No Criteria			No Criteria
pentachlorobenzene	608935			No Criteria			No Criteria
PENTACHLOROETHANE				No Criteria			No Criteria
1,2,3,5tetrachlorobenzene				No Criteria			No Criteria
1,1,1,2TETRACHLOROETHANE	630206			No Criteria			No Criteria
2,3,4,6TETRACHLOROPHENOL	58902			No Criteria			No Criteria
2,3,5,6TETRACHLOROPHENOL				No Criteria			No Criteria
2,4,5TRICHLOROPHENOL	95954			No Criteria			No Criteria
2,4,6TRINITROPHENOL	88062			No Criteria			No Criteria
XYLENE	1330207			No Criteria			No Criteria

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: EAST GREENWICH WWTF

RIPDES PERMIT #: RI0100030

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
PRIORITY POLLUTANTS:			
TOXIC METALS AND CYANIDE			
ANTIMONY	7440360	No Criteria	20480.00
ARSENIC, TOTAL	7440382	1104.00	44.80
ASBESTOS	1332214	No Criteria	No Criteria
BERYLLIUM	7440417	No Criteria	No Criteria
CADMIUM, TOTAL	7440439	723.68	317.34
CHROMIUM III, TOTAL	16065831	No Criteria	No Criteria
CHROMIUM VI, TOTAL	18540299	19935.99	1805.33
COPPER, TOTAL	7440508	88.92	88.92
CYANIDE	57125	16.00	16.00
LEAD, TOTAL	7439921	3973.84	304.74
MERCURY, TOTAL	7439976	33.88	4.80
NICKEL, TOTAL	7440020	1323.20	252.49
SELENIUM, TOTAL	7782492	4649.30	2276.55
SILVER, TOTAL	7440224	40.13	No Criteria
THALLIUM	7440280	No Criteria	15.04
ZINC, TOTAL	7440666	1522.20	1522.20
VOLATILE ORGANIC COMPOUNDS			
ACROLEIN	107028	No Criteria	9280.00
ACRYLONITRILE	107131	No Criteria	80.00
BENZENE	71432	No Criteria	16320.00
BROMOFORM	75252	No Criteria	44800.00
CARBON TETRACHLORIDE	56235	No Criteria	512.00
CHLOROBENZENE	108907	No Criteria	51200.00
CHLORODIBROMOMETHANE	124481	No Criteria	4160.00
CHLOROFORM	67663	No Criteria	150400.00
DICHLOROBROMOMETHANE	75274	No Criteria	5440.00
1,2DICHLOROETHANE	107062	No Criteria	11840.00
1,1DICHLOROETHYLENE	75354	No Criteria	227200.00
1,2DICHLOROPROPANE	78875	No Criteria	4800.00
1,3DICHLOROPROPYLENE	542756	No Criteria	672.00
ETHYLBENZENE	100414	No Criteria	67200.00
BROMOMETHANE (methyl bromide)	74839	No Criteria	48000.00
CHLOROMETHANE (methyl chloride)	74873	No Criteria	No Criteria
METHYLENE CHLORIDE	75092	No Criteria	188800.00
1,1,2,2TETRACHLOROETHANE	79345	No Criteria	1280.00

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
TETRACHLOROETHYLENE	127184	No Criteria	1056.00
TOLUENE	108883	No Criteria	480000.00
1,2TRANS-DICHLOROETHYLENE	156605	No Criteria	320000.00
1,1,1TRICHLOROETHANE	71556	No Criteria	No Criteria
1,1,2TRICHLOROETHANE	79005	No Criteria	5120.00
TRICHLOROETHYLENE	79016	No Criteria	9600.00
VINYL CHLORIDE	75014	No Criteria	76.80
ACID ORGANIC COMPOUNDS			
2CHLOROPHENOL	95578	No Criteria	4800.00
2,4DICHLOROPHENOL	120832	No Criteria	9280.00
2,4DIMETHYLPHENOL	105679	No Criteria	27200.00
4,6DINITRO-2-METHYL PHENOL	534521	No Criteria	8960.00
2,4DINITROPHENOL	51285	No Criteria	169600.00
4-NITROPHENOL	88755	No Criteria	No Criteria
PENTACHLOROPHENOL	87865	208.00	208.00
PHENOL	108952	No Criteria	54400000.00
2,4,6TRICHLOROPHENOL	88062	No Criteria	768.00
BASE NEUTRAL COMPOUNDS			
ACENAPHTHENE	83329	No Criteria	31680.00
ANTHRACENE	120127	No Criteria	1280000.00
BENZIDINE	92875	No Criteria	0.06
PAHs		No Criteria	5.76
BIS(2CHLOROETHYL)ETHER	111444	No Criteria	169.60
BIS(2CHLOROISOPROPYL)ETHER	108601	No Criteria	2080000.00
BIS(2ETHYLHEXYL)PHTHALATE	117817	No Criteria	704.00
BUTYL BENZYL PHTHALATE	85687	No Criteria	60800.00
2CHLORONAPHTHALENE	91587	No Criteria	51200.00
1,2DICHLOROBENZENE	95501	No Criteria	41600.00
1,3DICHLOROBENZENE	541731	No Criteria	30720.00
1,4DICHLOROBENZENE	106467	No Criteria	6080.00
3,3DICHLOROBENZIDENE	91941	No Criteria	8.96
DIETHYL PHTHALATE	84662	No Criteria	1408000.00
DIMETHYL PHTHALATE	131113	No Criteria	35200000.00
DI-n-BUTYL PHTHALATE	84742	No Criteria	144000.00
2,4DINITROTOLUENE	121142	No Criteria	1088.00
1,2DIPHENYLHYDRAZINE	122667	No Criteria	64.00
FLUORANTHENE	206440	No Criteria	4480.00

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: EAST GREENWICH WWTF

RIPDES PERMIT #: RI0100030

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
FLUORENE	86737	No Criteria	169600.00
HEXACHLOROBENZENE	118741	No Criteria	0.09
HEXACHLOROBUTADIENE	87683	No Criteria	5760.00
HEXACHLOROCYCLOPENTADIENE	77474	No Criteria	35200.00
HEXACHLOROETHANE	67721	No Criteria	1056.00
ISOPHORONE	78591	No Criteria	307200.00
NAPHTHALENE	91203	No Criteria	No Criteria
NITROBENZENE	98953	No Criteria	22080.00
N-NITROSODIMETHYLAMINE	62759	No Criteria	960.00
N-NITROSODI-N-PROPYLAMINE	621647	No Criteria	163.20
N-NITROSODIPHENYLAMINE	86306	No Criteria	1920.00
PYRENE	129000	No Criteria	128000.00
1,2,4trichlorobenzene	120821	No Criteria	2240.00
PESTICIDES/PCBs			
ALDRIN	309002	20.80	0.02
Alpha BHC	319846	No Criteria	1.57
Beta BHC	319857	No Criteria	5.44
Gamma BHC (Lindane)	58899	2.56	2.56
CHLORDANE	57749	1.44	0.13
4,4DDT	50293	2.08	0.03
4,4DDE	72559	No Criteria	0.07
4,4DDD	72548	No Criteria	0.10
DIELDRIN	60571	11.36	0.02
ENDOSULFAN (alpha)	959988	0.54	0.28
ENDOSULFAN (beta)	33213659	0.54	0.28
ENDOSULFAN (sulfate)	1031078	No Criteria	2848.00
ENDRIN	72208	0.59	0.07
ENDRIN ALDEHYDE	7421934	No Criteria	9.60
HEPTACHLOR	76448	0.85	0.03
HEPTACHLOR EPOXIDE	1024573	0.85	0.01
POLYCHLORINATED BIPHENYLS3	1336363	No Criteria	0.02
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.00
TOXAPHENE	8001352	3.36	0.01
TRIBUTYLtin		6.72	0.24

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
NON PRIORITY POLLUTANTS: OTHER SUBSTANCES			
ALUMINUM, TOTAL	7429905	No Criteria	No Criteria
AMMONIA (as N), WINTER (NOV-APR)	7664417	276192.00	81542.40
AMMONIA (as N), SUMMER (MAY-OC)	7664417	96009.60	28934.40
4BROMOPHENYL PHENYL ETHER		No Criteria	No Criteria
CHLORIDE	16887006	No Criteria	No Criteria
CHLORINE	7782505	260.00	260.00
4CHLORO2METHYLPHENOL		No Criteria	No Criteria
1CHLORONAPHTHALENE		No Criteria	No Criteria
4CHLOROPHENOL	106489	No Criteria	No Criteria
2,4DICHLORO6METHYLPHENOL		No Criteria	No Criteria
1,1DICHLOROPROPANE		No Criteria	No Criteria
1,3DICHLOROPROPANE	142289	No Criteria	No Criteria
2,3DINITROTOLUENE		No Criteria	No Criteria
2,4DINITRO6METHYL PHENOL		No Criteria	No Criteria
IRON	7439896	No Criteria	No Criteria
pentachlorobenzene	608935	No Criteria	No Criteria
PENTACHLOROETHANE		No Criteria	No Criteria
1,2,3,5tetrachlorobenzene		No Criteria	No Criteria
1,1,1,2TETRACHLOROETHANE	630206	No Criteria	No Criteria
2,3,4,6TETRACHLOROPHENOL	58902	No Criteria	No Criteria
2,3,5,6TETRACHLOROPHENOL		No Criteria	No Criteria
2,4,5TRICHLOROPHENOL	95954	No Criteria	No Criteria
2,4,6TRINITROPHENOL	88062	No Criteria	No Criteria
XYLENE	1330207	No Criteria	No Criteria

ATTACHMENT A-5: HISTORICAL DISCHARGE LEVELS

MONTHLY AVERAGE AND DAILY MAXIMUM INTERIM LIMIT CALCULATIONS
FOR MORE THAN TEN SAMPLES TSD pgE-18 and E-16

WITH SOME MEASUREMENTS < DETECTION LIMIT

$n := 1$ Number of times the permittee will sample per quarter

$k := 19$ Sample size of the data set

$D := 20$ Detection Limit $l := 0, 1 \dots 1$ Counter

$r := 13$ Number of nondetects $i := 1, 2 \dots k - r$ Counter

$$\delta := \frac{r}{k}$$

$$\text{Area}_{95} := \frac{.95 - \delta}{1 - \delta} \quad \text{Area}_{95} = 0.842 \quad \text{Area}_{99} := \frac{.99 - \delta}{1 - \delta} \quad \text{Area}_{99} = 0.968$$

$z_{95} := 1.16$ Find from Table A-4 and insert Areas

$z_{99} := 1.96$

$x_i :=$ Daily data is best, use monthly average if necessary

20
30
20
27.6
6
6

$$y_i := \ln(x_i)$$

$$\mu_y := \sum_i \frac{y_i}{k - r}$$

$$\sigma_y := \sqrt{\sum_i \frac{(y_i - \mu_y)^2}{k - r - 1}}$$

$$E(x) := \delta \cdot D + (1 - \delta) \cdot \exp(\mu_y + 0.5 \cdot \sigma_y^2)$$

$$V(x) := (1 - \delta) \cdot \exp(2 \cdot \mu_y + \sigma_y^2) \cdot \left[\exp(\sigma_y^2) - (1 - \delta) \right] \dots \\ + \delta \cdot (1 - \delta) \cdot D \cdot (D - 2 \cdot \exp(\mu_y + 0.5 \cdot \sigma_y^2))$$

$$A := \frac{V(x)}{[n \cdot (E(x) - \delta^n \cdot D)]^2} \quad B := \frac{(\delta^n \cdot D^2) \cdot (1 - \delta^n) - 1}{(E(x) - \delta^n \cdot D)^2} \quad C := \frac{2 \cdot \delta^n \cdot D}{(E(x) - \delta^n \cdot D)}$$

Compare1₁ :=

D
$E(x) + z_{95} \cdot V(x)^{.5}$

$$X_{95} := \max(\text{Compare1})$$

$X_{95} = 30.8$ monthly average interim limit
based on the delta-normal
distribution

Compare2₁ :=

D
$\exp(\mu_y + z_{99} \cdot \sigma_y)$

$$X_{99} := \max(\text{Compare2})$$

$X_{99} = 63.8$ daily maximum interim limit
based on the delta-lognormal
distribution

ATTACHMENT A-6: ANTIBACKSLIDING/ANTIDEGRADATION

Facility : East Greenwich WWTF
Parameter : COPPER

Input required data (use N/A when data is not available):

Chronic Metals Translator	:	0.83
Previous monthly average limit (Total)	:	48.0 ug/L
Historical discharge concentration (Total)	:	30 ug/L
Waterbody background concentration (Dissolved)	:	0.6629 ug/L
Facility chronic dilution factor	:	40 x
Chronic criteria (Dissolved)	:	3.1 ug/L
Remaining Assimilative Capacity to be Allocated	:	0 %

Note: 0% of the remaining assimilative capacity was allocated because East Greenwich has a historical discharge concentration well below the previous monthly average limit. The 30 ug/L value is the highest value amongst the last 19 values of effluent data.

Determine existing water quality:

$$C_p = \frac{(DF - 1) * C_b + 1 * (C_d * MT)}{DF} = 1.6423 \text{ ug/L}$$

DF = Chronic Dilution Factor

C_b = Background Data (Dissolved)

C_d = Maximum of Historical Data or Previous Monthly Limit

MT = Metals Translator (Use RI Conversion Factor if Site-Specific is Unavailable)

Since the resulting instream concentration is less than the chronic criteria, the water body is attaining and pursuant to 303(d)(4)(b) backsliding is only possible if the requirements of antidegradation can be met.

Calculation of the new chronic permit limit:

$$C_{rac} = C_{criteria} - C_p = 1.4577 \text{ ug/L}$$

$$\text{Proposed Limit} = (C_p + \% * C_{rac}) * DF - (DF - 1) * C_b = 39.84 \text{ ug/L Dissolved}$$

$$\text{Proposed Limit} = (\text{Proposed Dissolved Limit} / MT) = 48 \text{ ug/L Total}$$

$$\text{Traditional Limit} = 89.0 \text{ ug/L}$$

The antidegradation permit limit is less than the limit which would result from using traditional procedures. Therefore, use the antidegradation permit limit.

$$\text{Chronic limit} = 48 \text{ ug/L}$$

Calculation of the new acute permit limit:

$$\text{Acute Limit} = 89.0 \text{ ug/L}$$

Final Limits:

MONTHLY AVERAGE PERMIT LIMIT	:	48 ug/L
DAILY MAXIMUM PERMIT LIMIT	:	89.0 ug/L

ATTACHMENT A-7: POLLUTANTS DETECTED IN PRIORITY POLLUTANT SCANS

source	date	parameter	value	units	ave	max
PPS	9/19/2014	Bis(2-ethylhexyl)phthalate	1.3	ug/L	1.3	1.3
PPS	8/16/2016	Copper	4	ug/L		
PPS	9/24/2012	Copper	4.6	ug/L		
PPS	8/22/2013	Copper	5.9	ug/L		
PPS	9/3/2015	Copper	6.4	ug/L		
PPS	9/22/2014	Copper	13	ug/L	6.8	13
PPS	9/22/2014	Lead	1.0	ug/L	1.0	1.0
PPS	9/26/2012	Nickel	1.2	ug/L		
PPS	9/3/2015	Nickel	2.0	ug/L		
PPS	9/22/2014	Nickel	2.1	ug/L		
PPS	8/22/2013	Nickel	2.2	ug/L		
PPS	8/16/2016	Nickel	2.8	ug/L	2.1	2.8
PPS	9/24/2012	Zinc	19	ug/L		
PPS	8/22/2013	Zinc	25	ug/L		
PPS	9/23/2014	Zinc	34	ug/L		
PPS	9/9/2015	Zinc	36	ug/L	29	36

ATTACHMENT A-8: DMR DATA

EAST GREENWICH WWTF

DMR Data Summary 2/2/17

***** NOT ICIS CERTIFIED*****

001A

BOD, 5-day, 20 deg. C Location= 1

	MO AVG lb/d	DAILY MX lb/d
Mean	53.9683	93.6017
Minimum	23.5	33.8
Maximum	243.2	369.2
Data Count	60	60

	MO AVG mg/L	WKLY AVG mg/L	DAILY MX mg/L
Mean	7.41	9.94	12.8383
Minimum	3.7	4.	5.4
Maximum	27.9	36.	41.
Data Count	60	60	60

Coliform, fecal general Location= 1

	MO GEO MPN/100mL	WKLY GEO MPN/100mL	DAILY MX MPN/100mL
Mean	3.2783	14.4	34.45
Minimum	.	14.4	2.
Maximum	41.2	14.4	300.
Data Count	60	1	60

Copper, total [as Cu] Location= 1

	MO AVG ug/L	DAILY MX ug/L
Mean	7.6	13.
Minimum	7.6	13.
Maximum	7.6	13.
Data Count	1	1

Enterococci Location= 1

	MO AVG CFU/100mL	DAILY MX CFU/100mL
Mean	5.5864	813603.9627
Minimum	1.	1.
Maximum	183.2	24000000.
Data Count	59	59

Flow, in conduit or thru treatment plant

	MO AVG MGD	DAILY MX MGD
Mean	.8576	1.1119
Minimum	.0870284	.606089
Maximum	1.376545	1.99935
Data Count	60	60

Nitrogen, Kjeldahl, total [as N] Locatio

MO AVG mg/L	DAILY MX mg/L
-------------	---------------

Mean	5.93	7.6083
Minimum	1.	1.7
Maximum	31.9	36.
Data Count	60	60

Nitrogen, nitrate total [as N] Location=

	MO AVG mg/L	DAILY MX mg/L
Mean	5.1313	6.3992
Minimum	.1	.1
Maximum	19.8	21.
Data Count	60	60

Nitrogen, nitrite total [as N] Location=

	MO AVG mg/L	DAILY MX mg/L
Mean	.1255	.2033
Minimum	.02	.02
Maximum	.59	1.2
Data Count	60	60

Nitrogen, total [as N] Location= 1

	MO AVG lb/d
Mean	81.55
Minimum	15.1
Maximum	213.5
Data Count	60

	MO AVG mg/L	DAILY MX mg/L
Mean	11.6	13.4617
Minimum	2.	2.2
Maximum	32.2	36.1
Data Count	60	60

Oil & Grease Location= 1

	DAILY MX mg/L
Mean	2.7667
Minimum	.
Maximum	15.
Data Count	60

pH Location= 1

	MINIMUM SU	MAXIMUM SU
Mean	6.3113	7.1667
Minimum	5.4	6.5
Maximum	6.9	8.
Data Count	60	60

Solids, settleable Location= 1

	WKLY AVG mL/L	DAILY MX mL/L
Mean	.0668	.0668
Minimum	.	.
Maximum	.1	.1
Data Count	60	60

Solids, total suspended Location= 1

	MO AVG lb/d	DAILY MX lb/d	
Mean	30.44	65.325	
Minimum	.	.	
Maximum	128.8	367.5	
Data Count	60	60	
	MO AVG mg/L	WKLY AVG mg/L	DAILY MX mg/L
Mean	4.0267	5.7067	8.61
Minimum	.	.	.
Maximum	14.9	20.	40.
Data Count	60	60	60

Ultraviolet light dosage Location= 1

	MINIMUM mW-sec/cm2	AVERAGE mW-sec/cm2	MAXIMUM mW-sec/cm2
Mean	11.6333	309.6167	5972.94
Minimum	.	63.4	624.6
Maximum	28.7	736.6	6553.1
Data Count	60	60	60

Ultraviolet light intensity Location= 1

	MINIMUM mW/cm2	AVERAGE mW/cm2	MAXIMUM mW/cm2
Mean	20.2867	98.9746	240.96
Minimum	.	21.9	34.1
Maximum	39.5	243.1	330.
Data Count	60	59	60

Ultraviolet light transmittance Location=

	MINIMUM %	AVERAGE %	MAXIMUM %
Mean	42.4433	67.6538	85.4167
Minimum	35.	54.03	51.
Maximum	60.	78.06	100.
Data Count	60	60	60

BOD, 5-day, 20 deg. C Location= G

	MO AVG lb/d	DAILY MX lb/d	
Mean	1367.98	2489.485	
Minimum	802.8	1171.8	
Maximum	4141.3	7233.4	
Data Count	60	60	
	MO AVG mg/L	WKLY AVG mg/L	DAILY MX mg/L
Mean	188.6583	245.14	354.
Minimum	91.8	100.	120.
Maximum	465.	713.3	1000.
Data Count	60	60	60

Solids, total suspended Location= G

	MO AVG lb/d	DAILY MX lb/d
Mean	1118.81	2476.935
Minimum	271.3	892.1
Maximum	3627.2	8746.6

Data Count	60	60	
	MO AVG mg/L	WKLY AVG mg/L	DAILY MX mg/L
Mean	165.255	234.75	368.8333
Minimum	66.7	91.	130.
Maximum	800.	1416.7	1900.
Data Count	60	60	60

BOD, 5-day, percent removal Location

	MINIMUM %
Mean	95.7715
Minimum	75.
Maximum	98.2
Data Count	60

Solids, suspended percent removal L

	MINIMUM %
Mean	97.1907
Minimum	86.1
Maximum	99.9
Data Count	60

001Q

Aluminum, total [as Al] Location= 1

	MO AVG ug/L	DAILY MX ug/L
Mean	17.1862	17.1862
Minimum	.	.
Maximum	100.	100.
Data Count	19	19

Cadmium, total [as Cd] Location= 1

	MO AVG ug/L	DAILY MX ug/L
Mean	.7896	.7896
Minimum	.	.
Maximum	5.	5.
Data Count	19	19

Chromium, total [as Cr] Location= 1

	MO AVG ug/L	DAILY MX ug/L
Mean	3.158	3.158
Minimum	.	.
Maximum	20.	20.
Data Count	19	19

Copper, total [as Cu] Location= 1

	MO AVG ug/L	DAILY MX ug/L
Mean	5.4531	7.3162
Minimum	.	.
Maximum	30.	63.
Data Count	19	19

Cyanide, total [as CN] Location= 1

	MO AVG ug/L	DAILY MX ug/L
Mean	3.1589	3.1589
Minimum	.	.
Maximum	20.	20.
Data Count	19	19

Lead, total [as Pb] Location= 1

	MO AVG ug/L	DAILY MX ug/L
Mean	3.1579	3.1579
Minimum	.	.
Maximum	20.	20.
Data Count	19	19

Nickel, total [as Ni] Location= 1

	MO AVG ug/L	DAILY MX ug/L
Mean	7.9476	7.9476
Minimum	.	.
Maximum	50.	50.
Data Count	19	19

Zinc, total [as Zn] Location= 1

	MO AVG ug/L	DAILY MX ug/L
Mean	12.3719	12.3719
Minimum	.	.
Maximum	66.	66.
Data Count	19	19

001T

LC50 Static 48Hr Acute Mysid. Bahia

	MINIMUM %
Mean	92.9737
Minimum	.
Maximum	100.
Data Count	19

Noel Static 1Hr Fert. Chronic Arbacia

	MINIMUM %
Mean	89.2361
Minimum	6.25
Maximum	100.
Data Count	18

ATTACHMENT A-9: LIMITS COMPARISON

Facility Name: EAST GREENWICH WWTF
RIPDES Permit #: RI0100030
Outfall #: 001A/001Q

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L) Based on WQ Criteria		Antideg. Limits (ug/L) Monthly Ave	PPS Data (ug/L) 2012-2016		Ave. DMR Data (ug/L) 10/11-9/16		Potential Permit Limits (ug/L)		Daily Max	Monthly Ave	
		Daily Max	Monthly Ave		Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave			
PRIORITY POLLUTANTS													
TOXIC METALS AND CYANIDE													
ANTIMONY	7440360	No Criteria	20480.00	---	---	---	---	---	---	20480			
ARSENIC (limits are total recoverab	7440382	1104.00	44.80	---	---	---	---	---	1104	44.8			
ASBESTOS	1332214	No Criteria	No Criteria	---	---	---	---	---	---	---			
BERYLLIUM	7440417	No Criteria	No Criteria	---	---	---	---	---	---	---			
CADMIUM (limits are total recoverab	7440439	723.68	317.34	---	---	---	0.79	0.79	723.6751509	317.3351107	N	N	
CHROMIUM III (limits are total reco	16065831	No Criteria	No Criteria	---	---	---	---	---	---	---			
CHROMIUM VI (limits are total reco	18540299	19935.99	1805.33	---	---	---	3.16	3.16	19935.99325	1805.332628	N	N	
COPPER (limits are total recoverab	7440508	88.92	88.92	48	13	6.8	7.31	5.45	88.92156627	48	N	Y	
CYANIDE	57125	16.00	16.00	---	---	---	3.16	3.16	16	16	N	N	
LEAD (limits are total recoverable)	7439921	3973.84	304.74	---	1	1	3.16	3.16	3973.844374	304.7381703	N	N	
MERCURY (limits are total recovera	7439976	33.88	4.80	---	---	---	---	---	33.88235294	4.8			
NICKEL (limits are total recoverable	7440020	1323.20	252.49	---	2.8	2.1	7.95	7.95	1323.195758	252.4927273	N	N	
SELENIUM (limits are total recovera	7782492	4649.30	2276.55	---	---	---	---	---	4649.298597	2276.553106			
SILVER (limits are total recoverable	7440224	40.13	No Criteria	---	---	---	---	---	40.128	40.128			
THALLIUM	7440280	No Criteria	15.04	---	---	---	---	---	---	15.04			
ZINC (limits are total recoverable)	7440666	1522.20	1522.20	---	36	29	12.37	12.37	1522.198732	1522.198732	N	N	
VOLATILE ORGANIC COMPOUNDS													
ACROLEIN	107028	No Criteria	9280.00	---	---	---	---	---	---	9280			
ACRYLONITRILE	107131	No Criteria	80.00	---	---	---	---	---	---	80			
BENZENE	71432	No Criteria	16320.00	---	---	---	---	---	---	16320			
BROMOFORM	75252	No Criteria	44800.00	---	---	---	---	---	---	44800			
CARBON TETRACHLORIDE	56235	No Criteria	512.00	---	---	---	---	---	---	512			
CHLOROBENZENE	108907	No Criteria	51200.00	---	---	---	---	---	---	51200			
CHLORODIBROMOMETHANE	124481	No Criteria	4160.00	---	---	---	---	---	---	4160			
CHLOROFORM	67663	No Criteria	150400.00	---	---	---	---	---	---	150400			
DICHLOROBROMOMETHANE	75274	No Criteria	5440.00	---	---	---	---	---	---	5440			
1,2DICHLOROETHANE	107062	No Criteria	11840.00	---	---	---	---	---	---	11840			
1,1DICHLOROETHYLENE	75354	No Criteria	227200.00	---	---	---	---	---	---	227200			
1,2DICHLOROPROPANE	78875	No Criteria	4800.00	---	---	---	---	---	---	4800			
1,3DICHLOROPROPYLENE	542756	No Criteria	672.00	---	---	---	---	---	---	672			
ETHYLBENZENE	100414	No Criteria	67200.00	---	---	---	---	---	---	67200			
BROMOMETHANE (methyl bromide	74839	No Criteria	48000.00	---	---	---	---	---	---	48000			

Pg. 2 of 4

HEXACHLOROCYCLOPENTADIEN	77474	No Criteria	35200.00	---	---	---	---	---	---	35200		
HEXACHLOROETHANE	67721	No Criteria	1056.00	---	---	---	---	---	---	1056		
ISOPHORONE	78591	No Criteria	307200.00	---	---	---	---	---	---	307200		
NAPHTHALENE	91203	No Criteria	No Criteria	---	---	---	---	---	---	---		
NITROBENZENE	98953	No Criteria	22080.00	---	---	---	---	---	---	22080		
NNITROSODIMETHYLAMINE	62759	No Criteria	960.00	---	---	---	---	---	---	960		
NNITROSODINPROPYLAMINE	621647	No Criteria	163.20	---	---	---	---	---	---	163.2		
NNITROSODIPHENYLAMINE	86306	No Criteria	1920.00	---	---	---	---	---	---	1920		
PYRENE	129000	No Criteria	128000.00	---	---	---	---	---	---	128000		
1,2,4trichlorobenzene	120821	No Criteria	2240.00	---	---	---	---	---	---	2240		
PESTICIDES/PCBs												
ALDRIN	309002	20.80	0.02	---	---	---	---	---	20.8	0.016		
Alpha BHC	319846	No Criteria	1.57	---	---	---	---	---	---	1.568		
Beta BHC	319857	No Criteria	5.44	---	---	---	---	---	---	5.44		
Gamma BHC (Lindane)	58899	2.56	2.56	---	---	---	---	---	2.56	2.56		
CHLORDANE	57749	1.44	0.13	---	---	---	---	---	1.44	0.128		
4,4DDT	50293	2.08	0.03	---	---	---	---	---	2.08	0.032		
4,4DDE	72559	No Criteria	0.07	---	---	---	---	---	---	0.0704		
4,4DDD	72548	No Criteria	0.10	---	---	---	---	---	---	0.0992		
DIELDRIN	60571	11.36	0.02	---	---	---	---	---	11.36	0.01728		
ENDOSULFAN (alpha)	959988	0.54	0.28	---	---	---	---	---	0.544	0.2784		
ENDOSULFAN (beta)	33213659	0.54	0.28	---	---	---	---	---	0.544	0.2784		
ENDOSULFAN (sulfate)	1031078	No Criteria	2848.00	---	---	---	---	---	---	2848		
ENDRIN	72208	0.59	0.07	---	---	---	---	---	0.592	0.0736		
ENDRIN ALDEHYDE	7421934	No Criteria	9.60	---	---	---	---	---	---	9.6		
HEPTACHLOR	76448	0.85	0.03	---	---	---	---	---	0.848	0.02528		
HEPTACHLOR EPOXIDE	1024573	0.85	0.01	---	---	---	---	---	0.848	0.01248		
POLYCHLORINATED BIPHENYLS	1336363	No Criteria	0.02	---	---	---	---	---	---	0.02048		
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.00	---	---	---	---	---	---	0.000001632		
TOXAPHENE	8001352	3.36	0.01	---	---	---	---	---	3.36	0.0064		
TRIBUTYLTIN		6.72	0.24	---	---	---	---	---	6.72	0.2368		
NON PRIORITY POLLUTANTS:												
OTHER SUBSTANCES												
ALUMINUM (limits are total recover	7429905	No Criteria	No Criteria	---	---	---	17.18	17.18	---	---	NA	NA
AMMONIA (winter)	7664417	276192.00	81542.40	---	---	---	---	---	276192	81542.4		
AMMONIA (summer)		96009.60	28934.40	---	---	---	---	---	96009.6	28934.4		
4BROMOPHENYL PHENYL ETHER	16887006	No Criteria	No Criteria	---	---	---	---	---	---	---		
CHLORIDE	7782505	No Criteria	No Criteria	---	---	---	---	---	---	---		
CHLORINE		260.00	260.00	---	---	---	---	---	260	260		
4CHLORO2METHYLPHENOL		No Criteria	No Criteria	---	---	---	---	---	---	---		
1CHLORONAPHTHALENE	106489	No Criteria	No Criteria	---	---	---	---	---	---	---		
4CHLOROPHENOL		No Criteria	No Criteria	---	---	---	---	---	---	---		
2,4DICHLORO6METHYLPHENOL		No Criteria	No Criteria	---	---	---	---	---	---	---		

1,1DICHLOROPROPANE	142289	No Criteria	No Criteria
1,3DICHLOROPROPANE		No Criteria	No Criteria
2,3DINITROTOLUENE		No Criteria	No Criteria
2,4DINITRO6METHYL PHENOL	7439896	No Criteria	No Criteria
IRON	608935	No Criteria	No Criteria
pentachlorobenzene		No Criteria	No Criteria
PENTACHLOROETHANE		No Criteria	No Criteria
1,2,3,5tetrachlorobenzene	630206	No Criteria	No Criteria
1,1,1,2TETRACHLOROETHANE	58902	No Criteria	No Criteria
2,3,4,6TETRACHLOROPHENOL		No Criteria	No Criteria
2,3,5,6TETRACHLOROPHENOL	95954	No Criteria	No Criteria
2,4,5TRICHLOROPHENOL	88062	No Criteria	No Criteria
2,4,6TRINITROPHENOL	1330207	No Criteria	No Criteria
XYLENE		No Criteria	No Criteria

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DEFINITIONS

GENERAL REQUIREMENTS

(a) Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Chapter 46-12 of the Rhode Island General Laws and 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.

- (1) The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants 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 requirement.
- (2) The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the CWA is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307 or 308 of the Act is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment of not more than 1 year, or both.
- (3) Chapter 46-12 of the Rhode Island General Laws provides that any person who violates a permit condition is subject to a civil penalty of not more than \$5,000 per day of such violation. Any person who willfully or negligently violates a permit condition is subject to a criminal penalty of not more than \$10,000 per day of such violation and imprisonment for not more than 30 days, or both. Any person who knowingly makes any false statement in connection with the permit is subject to a criminal penalty of not more than \$5,000 for each instance of violation or by imprisonment for not more than 30 days, or both.

(b) Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, 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 Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

(c) 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.

(d) Duty to Mitigate

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

(e) 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. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures, and, where applicable, compliance with DEM "Rules and Regulations Pertaining to the Operation and Maintenance of Wastewater Treatment Facilities" and "Rules and Regulations Pertaining to the Disposal and Utilization of Wastewater Treatment Facility Sludge." 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.

(f) Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause, including but not limited to: (1) Violation of any terms or conditions of this permit; (2) Obtaining this permit by misrepresentation or failure to disclose all relevant facts; or (3) A change in any conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(g) Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

(h) Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director 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 Director, upon request, copies of records required to be kept by this permit.

(i) Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- (1) 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;
- (2) Have access to and copy, at reasonable times any records that must be kept under the conditions of this permit;
- (3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and

- (4) Sample or monitor any substances or parameters at any location, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA or Rhode Island law.

(j) Monitoring and Records

- (1) Samples and measurements taken for the purpose of monitoring shall be representative of the volume and nature of the discharge over the sampling and reporting period.
- (2) The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings from 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 5 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.
- (3) Records of monitoring information shall include:
 - (i) The date, exact place, and time of sampling or measurements;
 - (ii) The individual(s) who performed the sampling or measurements;
 - (iii) The date(s) analyses were performed;
 - (iv) The individual(s) who performed the analyses;
 - (v) The analytical techniques or methods used; and
 - (vi) The results of such analyses.
- (4) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136 and applicable Rhode Island regulations, unless other test procedures have been specified in this permit.
- (5) 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 per violation or by imprisonment for not more than 6 months per violation or by both. Chapter 46-12 of the Rhode Island General Laws also provides that such acts are subject to a fine of not more than \$5,000 per violation, or by imprisonment for not more than 30 days per violation, or by both.
- (6) Monitoring results must be reported on a Discharge Monitoring Report (DMR).
- (7) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136, applicable State regulations, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(k) Signatory Requirement

All applications, reports, or information submitted to the Director shall be signed and certified in accordance with Rule 12 of the Rhode Island Pollutant Discharge Elimination System (RIPDES) Regulations. Rhode Island General Laws, Chapter 46-12 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 \$5,000 per violation, or by imprisonment for not more than 30 days per violation, or by both.

(l) Reporting Requirements

- (1) Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.
- (2) Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with the permit requirements.
- (3) Transfers. This permit is not transferable to any person except after written notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under State and Federal law.
- (4) Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
- (5) Twenty-four hour reporting. The permittee shall immediately report any noncompliance which may endanger health or the environment by calling DEM at (401) 222-4700 or (401) 222-3070 at night.

A written submission shall also be provided within five (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.

The following information must be reported immediately:

- (i) Any unanticipated bypass which causes a violation of any effluent limitation in the permit; or
- (ii) Any upset which causes a violation of any effluent limitation in the permit; or
- (iii) Any violation of a maximum daily discharge limitation for any of the pollutants specifically listed by the Director in the permit.

The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

- (6) Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (1), (2), and (5), of this section, at the time monitoring reports are submitted. The reports shall contain the information required in paragraph (1)(5) of the section.
- (7) 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 Director, they shall promptly submit such facts or information.

(m) Bypass

"Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

- (1) 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 provisions of paragraphs (2) and (3) of this section.
- (2) Notice.
 - (i) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass.
 - (ii) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Rule 14.18 of the RIPDES Regulations.
- (3) Prohibition of bypass.
 - (i) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:
 - (A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage, where "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 reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production;
 - (B) 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 backup 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 preventive maintenance; and
 - (C) The permittee submitted notices as required under paragraph (2) of this section.

- (ii) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph (3)(i) of this section.

(n) Upset

"Upset" means an exceptional incident in which there is 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.

- (1) 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 (2) of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- (2) 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:
 - (a) An upset occurred and that the permittee can identify the cause(s) of the upset;
 - (b) The permitted facility was at the time being properly operated;
 - (c) The permittee submitted notice of the upset as required in Rule 14.18 of the RIPDES Regulations; and
 - (d) The permittee complied with any remedial measures required under Rule 14.05 of the RIPDES Regulations.
- (3) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

(o) Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. Discharges which cause a violation of water quality standards are prohibited. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different or increased discharges of pollutants must be reported by submission of a new NPDES application at least 180 days prior to commencement of such discharges, or if such changes will not violate the effluent limitations specified in this permit, by notice, in writing, to the Director of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

Until such modification is effective, any new or increased discharge in excess of permit limits or not specifically authorized by the permit constitutes a violation.

(p) Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner consistent with applicable Federal and State laws and regulations including, but not limited to the CWA and the Federal Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq., Rhode Island General Laws, Chapters 46-12, 23-19.1 and regulations promulgated thereunder.

(q) Power Failures

In order to maintain compliance with the effluent limitation and prohibitions of this permit, the permittee shall either:

In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;

or if such alternative power source is not in existence, and no date for its implementation appears in Part I,

Halt reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

(r) Availability of Reports

Except for data determined to be confidential under paragraph (w) below, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the DEM, 291 Promenade Street, Providence, Rhode Island. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA and under Section 46-12-14 of the Rhode Island General Laws.

(s) State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law.

(t) 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, and local laws and regulations.

(u) Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

(v) Reopener Clause

The Director reserves the right to make appropriate revisions to this permit in order to incorporate any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA or State law. In accordance with Rules 15 and 23 of the RIPDES Regulations, if any effluent standard or prohibition, or water quality standard is promulgated under the CWA or under State law which is more stringent than any limitation on the pollutant in the permit, or controls a pollutant not limited in the permit, then the Director may promptly reopen the permit and modify or revoke and reissue the permit to conform to the applicable standard.

(w) Confidentiality of Information

(1) Any information submitted to DEM 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, DEM may make the information available to the public without further notice.

(2) Claims of confidentiality for the following information will be denied:

- (i) The name and address of any permit applicant or permittee;
- (ii) Permit applications, permits and any attachments thereto; and
- (iii) NPDES effluent data.

(x) Best Management Practices

The permittee shall adopt Best Management Practices (BMP) to control or abate the discharge of toxic pollutants and hazardous substances associated with or ancillary to the industrial manufacturing or treatment process and the Director may request the submission of a BMP plan where the Director determines that a permittee's practices may contribute significant amounts of such pollutants to waters of the State.

(y) Right of Appeal

Within thirty (30) days of receipt of notice of a final permit decision, the permittee or any interested person may submit a request to the Director for an adjudicatory hearing to reconsider or contest that decision. The request for a hearing must conform to the requirements of Rule 49 of the RIPDES Regulations.

DEFINITIONS

1. For purposes of this permit, those definitions contained in the RIPDES Regulations and the Rhode Island Pretreatment Regulations shall apply.
2. The following abbreviations, when used, are defined below.

cu. M/day or M ³ /day	cubic meters per day
mg/l	milligrams per liter
ug/l	micrograms per liter
lbs/day	pounds per day
kg/day	kilograms per day
Temp. °C	temperature in degrees Centigrade
Temp. °F	temperature in degrees Fahrenheit
Turb.	turbidity measured by the Nephelometric Method (NTU)
TNFR or TSS	total nonfilterable residue or total suspended solids
DO	dissolved oxygen
BOD	five-day biochemical oxygen demand unless otherwise specified
TKN	total Kjeldahl nitrogen as nitrogen
Total N	total nitrogen
NH ₃ -N	ammonia nitrogen as nitrogen
Total P	total phosphorus
COD	chemical oxygen demand
TOC	total organic carbon
Surfactant	surface-active agent
pH	a measure of the hydrogen ion concentration
PCB	polychlorinated biphenyl
CFS	cubic feet per second
MGD	million gallons per day
Oil & Grease	Freon extractable material
Total Coliform	total coliform bacteria
Fecal Coliform	total fecal coliform bacteria
ml/l	milliliter(s) per liter
NO ₃ -N	nitrate nitrogen as nitrogen
NO ₂ -N	nitrite nitrogen as nitrogen
NO ₃ -NO ₂	combined nitrate and nitrite nitrogen as nitrogen
Cl ₂	total residual chlorine

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DEFINITIONS

GENERAL REQUIREMENTS

(a) Duty to Comply

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- (2) The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the CWA is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307 or 308 of the Act is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment of not more than 1 year, or both.
- (3) Chapter 46-12 of the Rhode Island General Laws provides that any person who violates a permit condition is subject to a civil penalty of not more than \$5,000 per day of such violation. Any person who willfully or negligently violates a permit condition is subject to a criminal penalty of not more than \$10,000 per day of such violation and imprisonment for not more than 30 days, or both. Any person who knowingly makes any false statement in connection with the permit is subject to a criminal penalty of not more than \$5,000 for each instance of violation or by imprisonment for not more than 30 days, or both.

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If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, 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 Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

(c) 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.

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

(e) 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. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures, and, where applicable, compliance with DEM "Rules and Regulations Pertaining to the Operation and Maintenance of Wastewater Treatment Facilities" and "Rules and Regulations Pertaining to the Disposal and Utilization of Wastewater Treatment Facility Sludge." 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.

(f) Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause, including but not limited to: (1) Violation of any terms or conditions of this permit; (2) Obtaining this permit by misrepresentation or failure to disclose all relevant facts; or (3) A change in any conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(g) Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

(h) Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director 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 Director, upon request, copies of records required to be kept by this permit.

(i) Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- (1) 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;
- (2) Have access to and copy, at reasonable times any records that must be kept under the conditions of this permit;
- (3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and

- (4) Sample or monitor any substances or parameters at any location, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA or Rhode Island law.

(j) Monitoring and Records

- (1) Samples and measurements taken for the purpose of monitoring shall be representative of the volume and nature of the discharge over the sampling and reporting period.
- (2) The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings from 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 5 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.
- (3) Records of monitoring information shall include:
 - (i) The date, exact place, and time of sampling or measurements;
 - (ii) The individual(s) who performed the sampling or measurements;
 - (iii) The date(s) analyses were performed;
 - (iv) The individual(s) who performed the analyses;
 - (v) The analytical techniques or methods used; and
 - (vi) The results of such analyses.
- (4) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136 and applicable Rhode Island regulations, unless other test procedures have been specified in this permit.
- (5) 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 per violation or by imprisonment for not more than 6 months per violation or by both. Chapter 46-12 of the Rhode Island General Laws also provides that such acts are subject to a fine of not more than \$5,000 per violation, or by imprisonment for not more than 30 days per violation, or by both.
- (6) Monitoring results must be reported on a Discharge Monitoring Report (DMR).
- (7) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136, applicable State regulations, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(k) Signatory Requirement

All applications, reports, or information submitted to the Director shall be signed and certified in accordance with Rule 12 of the Rhode Island Pollutant Discharge Elimination System (RIPDES) Regulations. Rhode Island General Laws, Chapter 46-12 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 \$5,000 per violation, or by imprisonment for not more than 30 days per violation, or by both.

(l) Reporting Requirements

- (1) Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.
- (2) Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with the permit requirements.
- (3) Transfers. This permit is not transferable to any person except after written notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under State and Federal law.
- (4) Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
- (5) Twenty-four hour reporting. The permittee shall immediately report any noncompliance which may endanger health or the environment by calling DEM at (401) 222-4700 or (401) 222-3070 at night.

A written submission shall also be provided within five (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.

The following information must be reported immediately:

- (i) Any unanticipated bypass which causes a violation of any effluent limitation in the permit; or
- (ii) Any upset which causes a violation of any effluent limitation in the permit; or
- (iii) Any violation of a maximum daily discharge limitation for any of the pollutants specifically listed by the Director in the permit.

The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

- (6) Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (1), (2), and (5), of this section, at the time monitoring reports are submitted. The reports shall contain the information required in paragraph (1)(5) of the section.
- (7) 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 Director, they shall promptly submit such facts or information.

(m) Bypass

"Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

- (1) 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 provisions of paragraphs (2) and (3) of this section.
- (2) Notice.
 - (i) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass.
 - (ii) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Rule 14.18 of the RIPDES Regulations.
- (3) Prohibition of bypass.
 - (i) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:
 - (A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage, where "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 reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production;
 - (B) 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 backup 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 preventive maintenance; and
 - (C) The permittee submitted notices as required under paragraph (2) of this section.

- (ii) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph (3)(i) of this section.

(n) Upset

"Upset" means an exceptional incident in which there is 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.

- (1) 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 (2) of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- (2) 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:
 - (a) An upset occurred and that the permittee can identify the cause(s) of the upset;
 - (b) The permitted facility was at the time being properly operated;
 - (c) The permittee submitted notice of the upset as required in Rule 14.18 of the RIPDES Regulations; and
 - (d) The permittee complied with any remedial measures required under Rule 14.05 of the RIPDES Regulations.
- (3) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

(o) Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. Discharges which cause a violation of water quality standards are prohibited. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different or increased discharges of pollutants must be reported by submission of a new NPDES application at least 180 days prior to commencement of such discharges, or if such changes will not violate the effluent limitations specified in this permit, by notice, in writing, to the Director of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

Until such modification is effective, any new or increased discharge in excess of permit limits or not specifically authorized by the permit constitutes a violation.

(p) Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner consistent with applicable Federal and State laws and regulations including, but not limited to the CWA and the Federal Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq., Rhode Island General Laws, Chapters 46-12, 23-19.1 and regulations promulgated thereunder.

(q) Power Failures

In order to maintain compliance with the effluent limitation and prohibitions of this permit, the permittee shall either:

In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;

or if such alternative power source is not in existence, and no date for its implementation appears in Part I,

Halt reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

(r) Availability of Reports

Except for data determined to be confidential under paragraph (w) below, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the DEM, 291 Promenade Street, Providence, Rhode Island. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA and under Section 46-12-14 of the Rhode Island General Laws.

(s) State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law.

(t) 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, and local laws and regulations.

(u) Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

(v) Reopener Clause

The Director reserves the right to make appropriate revisions to this permit in order to incorporate any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA or State law. In accordance with Rules 15 and 23 of the RIPDES Regulations, if any effluent standard or prohibition, or water quality standard is promulgated under the CWA or under State law which is more stringent than any limitation on the pollutant in the permit, or controls a pollutant not limited in the permit, then the Director may promptly reopen the permit and modify or revoke and reissue the permit to conform to the applicable standard.

(w) Confidentiality of Information

(1) Any information submitted to DEM 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, DEM may make the information available to the public without further notice.

(2) Claims of confidentiality for the following information will be denied:

- (i) The name and address of any permit applicant or permittee;
- (ii) Permit applications, permits and any attachments thereto; and
- (iii) NPDES effluent data.

(x) Best Management Practices

The permittee shall adopt Best Management Practices (BMP) to control or abate the discharge of toxic pollutants and hazardous substances associated with or ancillary to the industrial manufacturing or treatment process and the Director may request the submission of a BMP plan where the Director determines that a permittee's practices may contribute significant amounts of such pollutants to waters of the State.

(y) Right of Appeal

Within thirty (30) days of receipt of notice of a final permit decision, the permittee or any interested person may submit a request to the Director for an adjudicatory hearing to reconsider or contest that decision. The request for a hearing must conform to the requirements of Rule 49 of the RIPDES Regulations.

DEFINITIONS

1. For purposes of this permit, those definitions contained in the RIPDES Regulations and the Rhode Island Pretreatment Regulations shall apply.
2. The following abbreviations, when used, are defined below.

cu. M/day or M ³ /day	cubic meters per day
mg/l	milligrams per liter
ug/l	micrograms per liter
lbs/day	pounds per day
kg/day	kilograms per day
Temp. °C	temperature in degrees Centigrade
Temp. °F	temperature in degrees Fahrenheit
Turb.	turbidity measured by the Nephelometric Method (NTU)
TNFR or TSS	total nonfilterable residue or total suspended solids
DO	dissolved oxygen
BOD	five-day biochemical oxygen demand unless otherwise specified
TKN	total Kjeldahl nitrogen as nitrogen
Total N	total nitrogen
NH ₃ -N	ammonia nitrogen as nitrogen
Total P	total phosphorus
COD	chemical oxygen demand
TOC	total organic carbon
Surfactant	surface-active agent
pH	a measure of the hydrogen ion concentration
PCB	polychlorinated biphenyl
CFS	cubic feet per second
MGD	million gallons per day
Oil & Grease	Freon extractable material
Total Coliform	total coliform bacteria
Fecal Coliform	total fecal coliform bacteria
ml/l	milliliter(s) per liter
NO ₃ -N	nitrate nitrogen as nitrogen
NO ₂ -N	nitrite nitrogen as nitrogen
NO ₃ -NO ₂	combined nitrate and nitrite nitrogen as nitrogen
Cl ₂	total residual chlorine