



RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

235 Promenade Street, Providence, RI 02908-5767

TDD 401-222-4462

May 20, 2016

CERTIFIED MAIL

Mr. Peter McNerney, Chair
New Shoreham Sewer Commission
Box 774
Block Island, RI 02807

**RE: New Shoreham Water Pollution Control Facility (WPCF) and Block Island Water
Company Final Permit
RIPDES Application No. RI0100196**

Dear Mr. McNerney:

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 permit.

Also enclosed is information relative to hearing requests and stays of RIPDES Permits.

We appreciate your cooperation throughout the development of this permit. Should you have any questions concerning this permit, feel free to contact Aaron Mello of the State Permits Staff at (401) 222-4700, extension 7405.

Sincerely,

Eric A. Beck, P.E.
Supervising Sanitary Engineer

EAB:am

Enclosures

cc: David Turin, EPA Region 1 (Electronic Copy)
Annie McFarland, DEM/OWR (Electronic Copy)
Joseph Haberek, P.E., DEM/OWR (Electronic Copy)
Nancy O. Dodge, Town of New Shoreham (Electronic Copy)
Chris Blane, New Shoreham WPCF (Electronic Copy)
John Breunig, Block Island Water Company (Electronic Copy)
James Geremia, James J. Geremia & Associates, Inc. (Electronic Copy)

Office of Water Resources/Telephone: 401.222.4700/Fax: 401.222.6177

RI0100196-NewShoreham-FinalCover

RESPONSE TO COMMENTS

NO SIGNIFICANT COMMENTS WERE RECEIVED ON THE DRAFT PERMIT FOR THIS FACILITY; THEREFORE, NO RESPONSE WAS PREPARED.

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:

Bonnie Stewart, Clerk
Office of Administrative Adjudication
One Capitol Hill, Second Floor
Providence, RI 02903

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,

**NEW SHOREHAM SEWER COMMISSION & NEW SHOREHAM WATER COMMISSION
P.O. BOX 774
BLOCK ISLAND, RI 02807**

is authorized to discharge from facilities located at

**NEW SHOREHAM WATER POLLUTION CONTROL FACILITY, SPRING STREET
& BLOCK ISLAND WATER COMPANY, SANDS POND ROAD
NEW SHOREHAM, RI 02807**

to receiving waters named

Rhode Island Sound

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

This permit shall become effective on July 1, 2016.

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

This permit supersedes the permit issued on August 19th, 2008.

This permit consists of 22 pages in Part I including effluent limitations, monitoring requirements, etc. and 10 pages in Part II including General Conditions.

Signed this *20th* day of *May*, 2016.



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 100A (New Shoreham WPCF Effluent Discharge). 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			<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)		
Flow	0.45 MGD	--- MGD				Continuous	Recorder
BOD ₅	--- lb/day	--- lb/day	20 mg/l	30 mg/l	33 mg/l	3/Week	24-Hr. Comp.
BOD ₅ - % Removal			85%			1/Month	Calculated
TSS	--- lb/day	--- lb/day	20 mg/l	30 mg/l	33 mg/l	3/Week	24-Hr. Comp.
TSS - % Removal			85%			1/Month	Calculated
Settleable Solids				--- ml/l	--- ml/l	1/Day	Grab
Oil and Grease					--- mg/l	1/Month	3 Grabs ¹
Copper, Total			73.5 ug/l		81.0 ug/l	1/Month	24-Hr. Comp.

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

Sampling for TSS shall be performed Tuesday, Thursday and either Saturday or Sunday. All BOD₅ and TSS samples shall be taken on the influent and effluent with appropriate allowances for hydraulic detention (flow-through) time.

Sampling for Flow and Settleable Solids shall be performed Sunday-Saturday.

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

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Outfall 100A (New Shoreham WPCF Effluent Discharge).

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 100A (New Shoreham WPCF Effluent Discharge). Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	<u>Discharge Limitations</u>					<u>Monitoring Requirement</u>	
	Quantity - lbs./day		Concentration - specify units			Measurement Frequency	Sample Type
	<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>)		
Enterococci			35 cfu ¹ 100 ml		276 cfu ¹ 100 ml	3/Week	Grab
Fecal Coliform			--- MPN ¹ 100 ml		--- MPN ¹ 100 ml	1/Week	Grab
Total Residual Chlorine (TRC)			185 ug/l ²		228 ug/l ²	3/Day	Grab
pH			(6.5 SU)		(8.5 SU)	2/Day	Grab

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 "average monthly" values.

² The use of a continuous TRC recorder after chlorination and prior to dechlorination is required to provide a record that proper disinfection was achieved at all times. Compliance with these limitations shall be determined by taking a minimum of three (3) grab samples, equally spaced over a day with a minimum of three (3) hours between grabs, Monday – Friday (except holidays), and on Saturdays, Sundays, and Holidays by taking at least (2) grab samples each day with a minimum of two (2) hours between grabs. The maximum daily and average monthly values are to be computed from the averaged grab sample results for each day. The following methods may be used to analyze the grab samples: (1) DPD Spectrophotometric, EPA No. 330.5 or Standard Methods (18th Edition) No. 4500-CI G; (2) DPD Titrimetric, EPA No. 330.4 or Standard Methods (18th Edition) No. 4500-CI F; (3) Amperometric Titration, EPA No. 330.1 or Standard Methods (18th Edition) No. 4500-CI D or ASTM No. D1253-86(92); (4) Iodometric Direct Titration, EPA No. 330.3 or Standard Methods (18th Edition) No. 4500-CI B; (5) Iodometric Back Titration (either end-point), EPA No. 330.2 or Standard Methods (18th Edition) No. 4500-CI C.

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

Sampling for pH and Chlorine Residual shall be performed Sunday-Saturday.

--- 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 at the following location: Outfall 100A (New Shoreham WPCF Effluent Discharge).

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 100A (New Shoreham WPCF Effluent Discharge). Such discharges shall be monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>					<u>Monitoring Requirement</u>	
	Quantity - lbs. per day		Concentration - specify units			<u>Measurement Frequency</u>	<u>Sample Type</u>
	<u>Average Monthly</u>	<u>Maximum Daily</u>	<u>Average Monthly</u>	<u>Average Weekly</u>	<u>Maximum Daily</u>		
Ammonia, Total (as N) (May-Oct)			8.3 mg/l		84.0 mg/l	1/Week	24-Hr. Comp.
TKN (May-Oct)					--- mg/l	1/Month	24-Hr. Comp.
Nitrate, Total (as N) (May-Oct)					--- mg/l	1/Month	24-Hr. Comp.
Nitrite, Total (as N) (May-Oct)					--- mg/l	1/Month	24-Hr. Comp.
Nitrogen, Total (May-Oct) (TKN + Nitrate + Nitrite, as N)					--- mg/l	1/Month	Calculated
<u>Mysidopsis bahia</u> LC50 ¹					100% or Greater ²	1/Quarter	24-Hr. Comp.
<u>Arbacia punctulata</u> C-NOEC ³					---	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.

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.

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday through Friday at the following locations: Outfall 100A (New Shoreham WPCF Effluent Discharge).

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 100A (New Shoreham WPCF Effluent Discharge). Such discharges shall be monitored by the permittee as specified below:

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

¹ Monitoring data may be obtained in conjunction with bioassay testing required in Part I.B of the permit.

² Composite shall be obtained by taking three grab samples per day, spaced over one (1) day with a minimum of three hours between grabs, and preserved immediately upon collection. All three (3) samples shall be composited, then analyzed for available Cyanide.

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday through Friday at the following locations: Outfall 100A (New Shoreham WPCF Effluent Discharge).

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 200A (Concentrate Waste Stream from the Block Island Water Company's Reverse Osmosis (RO) Water Treatment System). Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	<u>Discharge Limitations</u>					<u>Monitoring Requirement</u>	
	Quantity - lbs./day		Concentration - specify units			<u>Measurement Frequency</u>	<u>Sample Type</u>
	<u>Average Monthly</u>	<u>Maximum Daily</u>	<u>Average Monthly</u>	<u>Average Weekly</u>	<u>Maximum Daily</u>		
Flow	0.05 MGD	--- MGD				Continuous	Recorder
BOD ₅	--- lb/day	--- lb/day	--- mg/l		--- mg/l	3/Week	Composite ¹
TSS	--- lb/day	--- lb/day	30 mg/l		50 mg/l	3/Week	Composite ¹
Turbidity			--- NTU		--- NTU	3/Week	Composite ¹
pH			(6.5 S.U.)		(8.5 S.U.)	2/Day	Grab
Copper, Total			73.5 ug/l		81.0 ug/l	1/Month	Composite ¹

¹ Composite sampling must consist of a minimum of four (4) grabs, spaced equally over an operating shift, when there is a discharge from all processes associated with the RO membrane systems. Samples for BOD₅ and TSS shall be on the same days that Outfall 100A (the New Shoreham WPCF Effluent Discharge) is sampled.

Sampling for pH shall be performed Sunday-Saturday.

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

--- 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 at the following locations: Outfall 200A (Concentrate Waste Stream from the Block Island Water Company's Reverse Osmosis (RO) Water Treatment System).

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

6. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 200A (Concentrate Waste Stream from the Block Island Water Company's Reverse Osmosis (RO) Water Treatment System). Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	<u>Discharge Limitations</u>				<u>Monitoring Requirement</u>		
	Quantity - lbs./day		Concentration - specify units		Measurement <u>Frequency</u>	Sample <u>Type</u>	
	<u>Average Monthly</u>	<u>Maximum Daily</u>	<u>Average Monthly</u>	<u>Average Weekly</u>			<u>Maximum Daily</u>
Ammonia, Total (as N) (May-Oct)			8.3 mg/l		84.0 mg/l	1/Week	Composite ¹
TKN (May-Oct)					--- mg/l	1/Month	Composite ¹
Nitrate, Total (as N) (May-Oct)					--- mg/l	1/Month	Composite ¹
Nitrite, Total (as N) (May-Oct)					--- mg/l	1/Month	Composite ¹
Nitrogen, Total (May-Oct) (TKN + Nitrate + Nitrite, as N)					--- mg/l	1/Month	Calculated
Total Residual Chlorine (TRC)			185 ug/l		228 ug/l	3/Day	Grab ²

¹ Composite sampling must consist of a minimum of four (4) grabs, spaced equally over an operating shift, when there is a discharge from all processes associated with the RO membrane systems.

² Compliance with these limitations shall be determined by taking a minimum of three (3) grab samples, equally spaced over an operating shift, Monday – Friday (except holidays). The maximum daily and average monthly values are to be computed from the averaged grab sample results for each day. The following methods may be used to analyze the grab samples: (1) DPD Spectrophotometric, EPA No. 330.5 or Standard Methods (18th Edition) No. 4500-CI G; (2) DPD Titrimetric, EPA No. 330.4 or Standard Methods (18th Edition) No. 4500-CI F; (3) Amperometric Titration, EPA No. 330.1 or Standard Methods (18th Edition) No. 4500-CI D or ASTM No. D1253-86(92); (4) Iodometric Direct Titration, EPA No. 330.3 or Standard Methods (18th Edition) No. 4500-CI B; (5) Iodometric Back Titration (either end-point), EPA No. 330.2 or Standard Methods (18th Edition) No. 4500-CI C.

--- 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 at the following locations: Outfall 200A (Concentrate Waste Stream from the Block Island Water Company's Reverse Osmosis (RO) Water Treatment System).

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

7. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001A (Combined Discharge of the New Shoreham WPCF Effluent and the Concentrate Waste Stream from the Block Island Water Company's RO Water Treatment System). 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			<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)		
Flow	0.50 MGD	--- MGD				1/Day	Calculated ¹
BOD ₅	75 lb/day	125 lb/day				3/Week	Calculated ¹
TSS	75 lb/day	125 lb/day				3/Week	Calculated ¹

¹ Values shall be calculated by summing the individual measurements from outfalls 100A and 200A for each sampling day. The Maximum Daily value shall be the highest calculated value during a given month and the Average Monthly value shall be the average of all values calculated during a given month.

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

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

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: Outfall 001A (Combined Discharge of the New Shoreham WPCF Effluent and the Concentrate Waste Stream from the Block Island Water Company's RO Water Treatment System).

8. PERMIT CONDITIONS:

- a. The pH of the effluent must be in the range of 6.5 - 8.5 standard units.
- 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 turbidity of the receiving water shall not exceed 10 NTU over background.
- e. Outfall 100A 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.
- f. When the effluent discharges from Outfall 100A for a period of 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.
- g. The permittee shall analyze its effluent from Outfall 100A and Outfall 200A annually for the EPA Priority Pollutants as listed in 40 CFR 122, Appendix D, Tables II and III. The results of these analyses shall be submitted to the Department of Environmental Management. 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. This sampling requirement may be coordinated with the priority pollutant scan requirement from Part I.B.4 of the permit.
- h. This permit serves as the State's Water Quality Certificate for the discharges described herein.

9. BLOCK ISLAND WATER COMPANY CONCENTRATE DISCHARGE REQUIREMENTS:

- a. Solids, sludges, or biosolids removed in the course of treatment or control of wastewaters, shall be properly disposed of in compliance with applicable state laws, regulations, and permit requirements, and in a manner such as to prevent any pollutant from such materials from entering the waters of the state.
- b. The permittee shall not discharge wastewater that results from the semiannual cleaning of the Reverse Osmosis (RO) membranes to Rhode Island Sound via the combined final discharge point. The wastewater generated from the cleaning cycle and during the first two hours of operation after the cleaning cycle shall be diverted to the head works of the wastewater treatment facility via the existing collection system.
- c. The permittee shall comply with all of the terms and conditions of the approved comprehensive Residuals Management Plan. The components of the Residuals Management Plan must include the following:
 - i. Characterization of the form, quantity, and quality of the residuals;
 - ii. Determination of the appropriate regulatory requirements;
 - iii. Identification of feasible disposal options;
 - iv. Selection of appropriate residuals processing/treatment technologies and development of a residuals management strategy that meets the regulatory goals established for the water treatment facility;

- v. Development of best management practices which at a minimum include the following: a) an evaluation of the water treatment residuals storage capacity within each residuals treatment unit and identification of criteria which will serve as a trigger to determine when treatment units (i.e. lagoons, equalization basins, etc.) need to be pulled offline in order to avoid short circuiting and potential permit violations; b) development of procedures and periodic evaluation techniques necessary to gauge the remaining storage capacity of residuals treatment units; c) an evaluation of the need for coordination between WTP operators and personnel responsible for the operation of WTP residuals treatment units; d) development of maintenance procedures to deactivate and prepare treatment units for sludge removal. These maintenance procedures must identify the appropriate steps necessary to temporarily lower the water level in the treatment unit, remove settled sludges, and restore the flow through the treatment unit in such a way that degradation of the receiving waters and permit violations will be prevented;
- vi. A requirement that all critical activities associated with the operations and maintenance of the water treatment plant residuals treatment units be documented and copies of such documentation be kept on site at all times throughout the effective life of the permit;
- vii. A requirement to review the Residuals Management Plan (at a minimum) on a yearly basis and that it must be updated as necessary. A copy of the Residuals Management Plan and records of the annual reviews must be available on site at all times throughout the effective life of this permit.

The DEM may notify the permittee at any time that the Residuals Management Plan is deficient or does not meet one or more of the minimum requirements of the permit. After such notification from the DEM, the permittee shall make changes to the Residuals Management Plan and shall submit to the DEM a written certification that the requested changes have been made. Unless otherwise provided by the DEM, the permittee shall have thirty (30) days after such notification to make the necessary changes. The permittee shall immediately amend the Residuals Management Plan if it proves to be ineffective in achieving the general objectives of controlling pollutants in discharges associated with the water treatment facility. Changes must be noted and then submitted to the DEM within thirty (30) days of amending the Residuals Management Plan. Amendments to the Residuals Management Plan may be reviewed by the DEM in the same manner as specified above.

- d. This permit authorizes the use of Pretreat Plus Y2K and/or Vitec 3000 water treatment chemicals as antiscalants. The permittee must use Pretreat Plus Y2K and/or Vitec 3000 at a concentration that is less than 3.0 mg/l in order to eliminate the potential for discharging this additive at a potentially toxic concentration pursuant to the MSDS. The permittee must notify the DEM and request approval prior to using any other antiscalant products, or significantly adjusting the concentration in the feed of the Block Island Water Company's RO Treatment System.

B. BIOMONITORING REQUIREMENTS AND INTERPRETATION OF RESULTS

1. General

Beginning on the effective date of the permit, the permittee shall perform eight (4) chronic and (4) acute toxicity tests per year on samples collected from discharge outfall 100A. 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 the 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 B.10. Test results will be interpreted by the State. 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 sampling events, (one each calendar quarter) the permittee will conduct forty-eight-hour acute definitive toxicity tests on the two species listed below, for a total of four (4) chronic toxicity tests on the first species and four (4) acute toxicity tests on the second species are required per 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)	
<u>Arbacia punctulata</u>	Sea Urchin 1 hour fertilization test (chronic)	Quarterly
<u>Mysids</u> (<u>Mysidopsis bahia</u>)	Definitive 48-Hour Acute Static (LC ₅₀)	Quarterly

3. Testing Methods

Toxicity tests shall be conducted in accordance with protocols listed in 40 CFR Part 136, incorporating any deviations from protocol listed herein, or additional methods if approved by the Director of RIDEM.

4. Sample Collection

For each sampling event a twenty-four- (24) hour flow proportioned composite final effluent sample shall be collected during a dry weather (no rain forty-eight (48) hours prior to or during sampling unless approved by RIDEM). This sample shall be kept cool (at 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 and Chronic 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 $LC_{50} \geq 100\%$ effluent permit limit and chronic monitoring requirements.

6. Dilution Water

Dilution water used for marine acute toxicity analyses should be of sufficient quality to meet minimum acceptability of test results (See B.7. and B.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 at 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 Mysids¹
(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°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 Test 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. Test Conditions for Arbacia punctulata
Fertilization Test¹

a.	Test Type	Static
b.	Salinity	30 o/oo \pm 2 o/oo
c.	Temperature	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 (20ml capacity), not pre-cleaned
g.	Test Solution Volume	5 ml
h.	Number of sea urchins	Pooled sperm from four males and pooled eggs from four females are used per test.
i.	Number of egg and sperm cells per chamber	About 2000 eggs and 5,000,000 sperm cells per vial
j.	No. of Replicate Chambers Per Treatment	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	Minimum of five effluent concentrations and a control
p.	Acceptability of test	Recommended sperm:egg ratio results should result in fertilization of 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>Effluent</u>	<u>Saline Diluent</u>	<u>Detection Limit (ug/l)</u>
Total Aluminum	X	X	20.0
Total Cadmium	X	X	1.0
Total Copper	X	X	1.0
Hexavalent Chromium	X	X	20.0
Total Lead	X	X	1.0
Total Nickel	X	X	1.0
Total Zinc	X	X	5.0

The above metal analyses may be used to fulfill, in part or in whole, monthly 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 (include detection limits).
- Raw data and bench sheets.
- Any other observations or test conditions affecting test outcome.

Toxicity test data shall include the following:

Chronic

- The endpoints of toxicity tests using the 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 author(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

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, and 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.

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 shall 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, Office of Water Resources.

12. Reporting of Bioassay Testing

Bioassay Testing shall be reported as follows:

<u>Quarter Testing to be Performed</u>	<u>Report Due No Later Than</u>	<u>Results Submitted on Discharge Monitoring Report (DMR) for</u>
January 1 - March 31	April 15	March
April 1 - June 30	July 15	June
July 1 - September 30	October 15	September
October 1 - December 31	January 15	December

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

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

C. OPERATION 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. Infiltration/Inflow

The permittee shall minimize infiltration/inflow to the sewer system. A summary report of all actions taken to minimize infiltration/inflow during the previous two (2) years shall be submitted to RIDEM, Office of Water Resources, by the 15th day of January of every other year. The first report is due January 15, 2017.

D. SLUDGE

The permittee shall conform and adhere to all conditions, practices and regulations as contained in the State of Rhode Island Rules and Regulations for the Treatment, Disposal, Utilization and Transportation of Sewage Sludge. The permittee shall comply with RIDEM Order of Approval No. 1062 for the disposal of sludge.

E. 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. 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 documented and maintained onsite.

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 maintained onsite. 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.

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 reported as zero in accordance with the DEM's DMR Instructions, provided that all appropriate EPA approved methods were followed.

Therefore, all sample results shall be reported as: an actual value, "could not be analyzed", or zero. 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.

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			
11V	chloroform	1.0	Base/Neutral-EPA Method 625		MDL ug/l (ppb)
12V	dichlorobromomethane	1.0	1B	acenaphthene*	1.0
14V	1,1-dichloroethane	1.0	2B	acenaphthylene*	1.0
15V	1,2-dichloroethane	1.0	3B	anthracene*	1.0
16V	1,1-dichloroethylene	1.0	4B	benzidine	4.0
17V	1,2-dichloropropane	1.0	5B	benzo(a)anthracene*	2.0
18V	1,3-dichloropropylene	1.0	6B	benzo(a)pyrene*	2.0
19V	ethylbenzene	1.0	7B	3,4-benzofluoranthene*	1.0
20V	methyl bromide	1.0	8B	benzo(ghi)perylene*	2.0
21V	methyl chloride	1.0	9B	benzo(k)fluoranthene*	2.0
22V	methylene chloride	1.0	10B	bis(2-chloroethoxy)methane	2.0
23V	1,1,2,2-tetrachloroethane	1.0	11B	bis(2-chloroethyl)ether	1.0
24V	tetrachloroethylene	1.0	12B	bis(2-chloroisopropyl)ether	1.0
25V	toluene	1.0	13B	bis(2-ethylhexyl)phthalate	1.0
26V	1,2-trans-dichloroethylene	1.0	14B	4-bromophenyl phenyl ether	1.0
27V	1,1,1-trichloroethane	1.0	15B	butylbenzyl phthalate	1.0
28V	1,1,2-trichloroethane	1.0	16B	2-chloronaphthalene	1.0
29V	trichloroethylene	1.0	17B	4-chlorophenyl phenyl ether	1.0
31V	vinyl chloride	1.0	18B	chrysene*	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)
Antimony, Total	3.0
Arsenic, Total	1.0
Beryllium, Total	0.2
Cadmium, Total	1.0
Chromium, Total	1.0
Chromium, Hexavalent	20.0
Copper, Total	1.0
Lead, Total	1.0
Mercury, Total	0.001
Nickel, Total	1.0
Selenium, Total	2.0
Silver, Total	0.5
Thallium, Total	1.0
Zinc, Total	5.0
Asbestos	**
Cyanide, Total	10.0
Phenols, Total	50.0
TCDD	**
MTBE (Methyl Tert Butyl Ether)	1.0
Aluminum, Total	20.0

** 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).

F. 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

All other reports (i.e. I/I reports, Bioassays, P/T reports, etc.) should be submitted to DEM hard copy via regular US mail (see Part I.F.4 below).

3. Submittal of Requests and Reports to DEM

The following requests, reports, and information described in this permit shall be submitted to the DEM.

- A. Transfer of Permit notice
- B. Request for changes in sampling location
- C. Request for reduction in testing frequency
- D. Request for reduction in WET testing requirement
- E. Report on unacceptable dilution water / request for alternative dilution water for WET testing
- F. Request for change in antiscalant products or significantly adjusting the concentration in the feed of the Block Island Water Company's RO Treatment System.

These reports, information, and requests shall be submitted to DEM by hard copy mail to the following address:

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

4. 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 for Outfalls 100A and 200A
- D. Biological Monitoring Reports
- E. Infiltration/Inflow Reports

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

5. 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.

RI0100196

NAME AND ADDRESS OF APPLICANT:

**NEW SHOREHAM SEWER COMMISSION & NEW SHOREHAM WATER COMMISSION
P.O. BOX 774
BLOCK ISLAND, RI 02807**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**NEW SHOREHAM WATER POLLUTION CONTROL FACILITY, SPRING STREET
& BLOCK ISLAND WATER COMPANY, SANDS POND ROAD
NEW SHOREHAM, RI 02807**

RECEIVING WATER:

**Rhode Island Sound
Water body ID#: RI0010046E-02B (Block Island Waters)**

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 New Shoreham Water Pollution Control Facility (WPCF) is engaged in the treatment of domestic sewage. The Block Island Water Company is engaged in the operation of a Reverse Osmosis (RO) process located on Sands Pond Road to treat well water for domestic consumption. The discharges are from the New Shoreham WPCF effluent (Outfall 100A), the Block Island Water Company RO Water Treatment System concentrate waste stream (Outfall 200A), and the combined waste streams of the above two discharges (Outfall 001A) that discharges into Rhode Island Sound. Schematics of the facilities are shown in Figures 1 through Figure 3.

II. Description of Discharge

A quantitative description of the discharge in terms of significant effluent parameters based on Discharge Monitoring Report (DMR) data from October 2010 through September 2015 is shown in Attachment A-1.

III. Permit Limitations and Conditions

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

IV. Permit Basis and Explanation of Effluent Limitation Derivation

Introduction

The New Shoreham Sewer Commission owns and operates a wastewater treatment facility located on Spring Street in New Shoreham, Rhode Island. The discharge to Rhode Island Sound consists of secondary treated sanitary sewage contributed by the municipality of New Shoreham. The New Shoreham facility is an extended aeration facility, and treatment consists of the following: coarse screening/bar racks, grit removal, fine screening/mechanical filter screen, aeration, secondary settling, chlorination and dechlorination.

The Town of New Shoreham/Block Island Water Company owns and operates a Reverse Osmosis (RO) process located on Sands Pond Road to treat well water for domestic consumption. This discharge ranges from 5,000 gpd to 37,000 gpd (depending on the season). During winter months (November 1st – April 30th) Block Island Water Company diverts the concentrate waste stream to the New Shoreham WPCF's collection system. During the high flow summer months (May 1st – October 31st) the Block Island Water Company discharges the concentrate waste stream to outfall 001A. The concentrate waste stream blends with the WPCF effluent before ultimately discharging into the Atlantic Ocean (Rhode Island Sound).

It was decided that the location where the two waste streams blend would be the appropriate compliance monitoring point for the combined discharge from the New Shoreham WPCF Effluent and Concentrate Waste Stream from the Block Island Water Company's RO Water Treatment System. However, since there are not any safely accessible locations to sample the combined streams, the DEM has developed concentration-based permit limits using the dilution achieved by the combined flow and assigned these limits to each of the individual waste streams. This method will ensure that the combined flow does not exceed the concentration-based limits. In addition, for mass-based limits, the DEM is requiring that the Town monitor each of the internal streams for mass loads on the same days and then sum these loads to obtain the total mass load of the combined flows for the given day. This calculated mass load will be reported as the load for outfall 001A (the Combined Discharge of the New Shoreham WPCF Effluent and the Concentrate Waste Stream from the Block Island Water Company's RO Water Treatment System). The current sampling location for the effluent of the WPCF can be maintained and the monitoring/sampling results will be reported as Outfall 100A (New Shoreham WPCF Effluent). The concentrate waste stream from the Block Island Water Company can be discharged by one of two means: either RO back pressure can be used to discharge the waste stream, or the effluent tanks at the Water Company can be used to store the concentrate waste stream and then the effluent pumps would discharge the tanks contents. Both means result in a discharge of the concentrate waste stream to the PVC force main. This location of sampling will be representative of Outfall 200A (Concentrate Waste Stream from the Block Island Water Company's RO Water Treatment System).

Provided in Figures 1, 2, and 3 are an overall process schematic that displays the average and maximum daily flows for the above waste streams, a process flow diagram for the WPCF, and a

process and instrumentation diagram of the Block Island Water Company's RO Water Treatment System, respectively.

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 RIGL 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).

Receiving Water Description

The water body segment that receives the discharge from the New Shoreham WPCF is described as Block Island waters in the vicinity of Pebbly Beach, within a 500 foot radius of the New Shoreham marine sewer outfall. The identification number for this water body segment is RI0010046E-02B. This segment is located in Block Island waters subbasin 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 not listed as impaired 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 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.

WPCF Conventional Pollutant Permit Limitations (Outfall 100A)

Flow

On January 30, 2008 the New Shoreham Sewer Commission submitted a Wastewater Management Facilities Plan Update to the DEM that increased the monthly average flow from 0.3 MGD to 0.45 MGD. This Facilities Plan Update was approved on August 19, 2008 and the previous permit included this higher monthly average flow limit. The monthly average limit in this permit remains 0.45 MGD to be consistent with the Facilities Plan Update and the previous permit.

BOD₅ and TSS

The "Average Monthly" and "Average Weekly" biochemical oxygen demand (BOD₅), total suspended solids (TSS), and pH limitations for Outfall 100A 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). "Maximum Daily" BOD₅ and TSS limits for Outfall 100A 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.

As a result of the previous design flow increase at the WPCF from 0.3 MGD to 0.45 MGD, the DEM has modified the allowable discharge limits for BOD₅ and TSS at Outfall 100A so the mass load remains constant. The constant mass loading is applied at Outfall 001A (Combined Discharge of New Shoreham WPCF Effluent and Concentrate Waste Stream from the Block Island Water Company's RO Water Treatment System) as this is the final discharge point into the receiving water. A ratio of old design flow to the new design flow was used to adjust the Outfall 100A (New Shoreham WPCF Effluent) concentration limits of BOD₅ and TSS, while monitor only of the mass loading was required. Monitoring was also required for the BOD₅ and TSS loads for Outfall 200A.

pH

The effluent limitations for pH have been established in accordance with the Rhode Island Water Quality Regulations Table 2.8.D.(3) Class Specific Criteria –Class SB1 - Sea Waters. Table 2.8.D.(3) Class Specific Criteria – Class SB1 - Sea Waters specifies that the pH must be in the range of 6.5-8.5 s.u. but not more than 0.2 units outside of the normally occurring range. These limitations have been applied to Outfalls 100A (New Shoreham WPCF Effluent).

Oil and Grease

Oil and Grease monitoring requirements were assigned in the previous permit and have been maintained in this permit in order to serve as a process control parameter. Monitoring data will serve as an indicator of excessive levels of Oil and Grease in the collection system that is typically attributed to restaurants and other sources of Oil and Grease loading which discharge to the sewer collection system. New Shoreham and DEM will be able to use this data to track and potentially initiate corrective action if necessary to prevent backups and blockages within the sewer collection system.

Settleable Solids

DEM and EPA agree that the TSS is an appropriate measure of the solids content being discharged to the receiving waters and that Settleable solids are a "process-control parameter" that can aid in assessment of the operation of the plant but need not be an effluent limit. Therefore, the permit requirements for Settleable Solids are monitor only.

BOD₅ and TSS % Removal

The "Percent Removal" requirements for BOD₅ and TSS are in accordance with 40 CFR 133.102(a) and (b) respectively.

Bacteria

Table 2.8.D(3) of the Rhode Island Water Quality Regulations includes 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. However, the "single sample maximum" value is only used by the Rhode Island Department of Health to evaluate swimming advisories at public beaches and is

not applied to the receiving water in the area of the New Shoreham WPCF's outfall. EPA's November 12, 2008 memorandum regarding "Initial Zones of Dilution for Bacteria in Rivers and Streams Designated for Primary Contact Recreation" specifies 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. This limit is consistent with the water quality criteria from Table 2.8.D(3) of the Rhode Island Water Quality Regulations. 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 WPCF will not have an impact on any areas designated for shellfish harvesting outside of the immediate vicinity of the outfall.

WPCP Toxic Pollutants Limits

Water Quality-Based Limit Calculations

The allowable effluent limitations were established on the basis of acute and chronic aquatic life criteria and human health criteria using the following: available instream dilution; an allocation factor; and background concentrations when available and/or appropriate. The aquatic life and human health criteria are specified in the Rhode Island Water Quality Regulations. Aquatic life criteria have been established to ensure the protection and propagation of aquatic life while human health criteria represent the pollutant levels that would not result in a significant risk to public health from ingestion of aquatic organisms. The more stringent of the two criteria was then used in establishing allowable effluent limitations. Details concerning the calculation of potential permit limitations, selection of factors, which influence their calculation, and the selection of final permit limitations are included below or in the attached documents.

Mixing Zone and Dilution Factors

In order to evaluate the need for water quality based limits, it is necessary to determine the mixing that occurs in the immediate vicinity of the discharge (initial dilution). Rule 17 of the RIPDES Regulations requires the use of the design flow when establishing limits for POTWs. The New Shoreham WPCF effluent is conveyed through a 10" pipe and discharged through a diffuser that is approximately 220 feet offshore. The diffuser consists of four ports, 2.5" in diameter, spaced 1.5' apart. CORMIX2 is designed to simulate the dilution characteristics of submerged multiport diffuser discharges. The limits for this permit reissuance were determined from the EPA computer model CORMIX2 assuming the design flow of 0.5 MGD, a mean low water depth of the outfall of approximately 4.2 feet, a conservative estimate of ambient current velocity (0.1 meters per second), and the most conservative density profile to determine the dilutions within the designated mixing zones. For modeling the most conservative values of Wind Speed (2 m/s) and Manning's 'n' (0.025) were used. The DEM has decided that it would utilize the CORMIX model with the existing outfall configuration, taking into consideration the increased design flow of the WPCF and the addition of the Block Island Water Company RO Treatment System concentrate waste stream. Based on the results of the CORMIX2 Session Reports (March 2008) a chronic dilution factor of 24.6 and an acute dilution factor of 17.5 were established, with respective mixing zone radii of 28.1 meters (approximately 92.3 feet) and 2.81 meters (approximately 9.23 feet).

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.

Using the above-mentioned dilution factors the allowable discharge limits were calculated as follows:

- a) Background concentration unknown or available data is impacted by sources that have not yet achieved water quality based limits.

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

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

- b) Using available background concentration data.

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

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

Since background data was not available for Rhode Island Sound in the area of this discharge, limits were determined using the equation form part (a) above.

Reference Attachment A-2 for calculations of allowable limits based on Aquatic Life and Human Health Criteria.

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

- A) Pollutants that based on the acute and chronic dilution factors, have 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.
- B) Total Residual Chlorine (TRC). The limits for TRC were established in accordance with the DEM Effluent Disinfection Policy. The "Monthly Average" and "Daily Maximum" were based on a 100% allocation, a zero background concentration, and the appropriate dilution factors. 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.
- C) Pollutants with water quality based monthly average limits in the previous RIPDES permit. The relaxation of 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.

Since the analysis outlined above may allow a relaxation of the Total Ammonia monthly average limit from 8.3 mg/l to 17.8 mg/l, 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 that 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 document entitled "Policy on the Implementation of the Antidegradation Provisions of the Rhode Island Water Quality Regulations August 6, 1997" (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 the levels necessary to support the propagation of fish and wildlife and recreation in and on the water, that quality shall be maintained and protected except for insignificant changes (i.e.: short-term minor changes) in water quality as determined by the Director and in accordance with the Antidegradation Policy. In addition, the Director may allow significant degradation, which is determined to be necessary to achieve important economic or social benefits to the State (important benefits demonstration) in accordance with the Antidegradation Policy.
- Tier 2½.** Where high quality waters constitute Special Resource Protection Waters SRPWs¹, there shall be no measurable degradation of the existing water quality necessary to protect the characteristics which cause the waterbody to be designated a SRPW. The new or increased discharge or activity will not be allowed unless the applicant can provide adequate evidence that specific pollution controls and/or other mitigation measures will completely eliminate any measurable impacts to the water quality necessary to protect the characteristics that 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 ONRWs², that water quality shall be maintained and protected. The State may allow some

¹ SRPWs are surface waters identified by the Director as having significant recreational or ecological uses.

² ONRWs are a special subset of high quality water bodies, identified by the State as having significant recreational or ecological water uses.

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 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 no more than 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.

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 concentration³
 C_d = discharge data⁴
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 antibracksliding 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 is permissible and if so whether an important benefits demonstration is required. As explained above, for existing discharges RIDEM shall follow the general rule of allocating no more than 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 Antibracksliding and Antidegradation

DEM has previously performed an antidegradation analysis for Ammonia. This analysis is included in the July 2008 Development Document for the New Shoreham Water Pollution Control Facility (WPCF) and Block Island Water Company (BIWC).

Below are the four (4) steps RIDEM used to establish permit limitations for Total Ammonia 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.

RIDEM allocated 0% of the remaining assimilative capacity for Total Ammonia. The decision to allocate 0% of the remaining assimilative capacity was based on the fact that the historical discharge concentration was below the previous permit limit. Therefore, there was no apparent reason to allocate any additional assimilative capacity of the receiving water.

³ Data collected at a location that is unimpacted by significant point source discharges.

⁴ Discharge data refers to the maximum of the permit limit or the historic discharge level. The historic discharge level is determined by calculating the upper 95th percent confidence interval for the monthly average reported data for the past five (5) years. For specific cases, changes in treatment efficiency or pretreatment limitations may support the use of an alternative period of time.

- 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. In the calculation of the Total Ammonia limit, a chronic dilution factor of 24.6 was used. This was the dilution factor produced taking into account the increased design flow of the WPCF (0.45 MGD) and the addition of 0.05 MGD of flow from the Block Island Water Company's RO Water Treatment System concentrate waste stream.

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.

In accordance with 40 CFR 122.4(d)(1)(iii), it is only necessary to establish permit limits for those pollutants in the discharge which have the reasonable potential to cause or contribute to the exceedance of instream criteria. In order to evaluate the need for permit limits, the most stringent calculated acute and chronic limits are compared to the Discharge Monitoring Report (DMR) data and the effluent concentrations reported on the permit application. A summary of the DMR data for the period October 2010 – September 2015 are provided in Attachment A-3. Attachment A-4 is a summary comparison of the allowable limits vs. the DMR and State User Fee Program data.

Based on the analysis presented above, water quality based permit limits are required for Total Residual Chlorine, Total Copper and Ammonia. As explained previously, due to the lack of a safe sampling location for the combined discharge (Outfall 001A), the concentration-based water quality limits for Total Residual Chlorine, Total Copper and Total Ammonia (as N) have been assigned to each of the internal outfalls (Outfalls 100A and 200A). This will ensure that the combined discharge meets these concentrations.

Although these pollutants did not have "reasonable potential", quarterly monitoring for Total Cyanide, Total Aluminum, Total Cadmium, Total Chromium, Total Lead, Total Nickel, and Total Zinc have been included in the permit as part of the standard list of pollutants monitored as part of the quarterly toxicity testing.

WPCF Nonconventional Pollutant Limits

BPJ-Based Permit Limits for Nutrients

The effluent monitoring requirements have been specified in accordance with RIPDES Regulations as well as 40 CFR Parts 122.41(j), 122.44 (i), and 122.48 to yield data representative of the discharge. At this time, nutrient criteria have not been established for the receiving water. Seasonal (May through October) testing requirements for TKN, Nitrate, and Nitrite are necessary to determine nutrient loadings to the receiving water, and are consistent with the Department's

policy requiring all facilities to perform baseline nutrient monitoring. This nutrient monitoring has been applied at Outfalls 100A and 200A.

Bioassay Testing

RIDEM's toxicity permitting policy is based on past toxicity data and the level of available dilution. Evaluation of the data collected for biotoxicity revealed that the final effluent samples consistently demonstrated non-toxic values for the Mysid (shrimp) tests and the Arbacia (sea urchin) tests. RIDEM's toxicity permitting policy requires that acute toxicity be evaluated for effluents with dilutions between 20:1 – 100:1. Based upon past toxicity results and available dilution, the draft permit continues to require an $LC_{50} \geq 100\%$ effluent limit for quarterly acute tests conducted on Mysids at Outfall 100A. At this point in time a chronic toxicity effluent limit has not been established, although chronic toxicity testing for Arbacia (Sea Urchin) is required for monitoring and performance purposes at Outfall 100A. This is due in part to the consistently non-toxic levels of acute Mysid tests and the need to monitor low levels of chronic pollution toxicity, as has been observed with the C-NOEC values for Arbacia within the last two years.

The biomonitoring requirements are set forth in 40 CFR 131.11 and the State's Water Quality Regulations to assure control of toxicity in the effluent. If toxicity is demonstrated, then toxicity identification and reduction will be required.

Block Island Water Company Concentrate Discharge Limitations

The Block Island Water Company owns and operates a Reverse Osmosis (RO) process located on Sands Pond Road to treat well water for domestic consumption. RO produces nearly pure water by maintaining a pressure gradient across the membrane greater than the osmotic pressure of the feed water. 75% of feed water passes through the membrane, and is collected in the permeate tank as product. The remaining water (25%) is discharged along with the rejected salts and other pollutants in a concentrate waste stream.

The Water Company has three (3) RO Water Treatment Systems that have been designed to produce potable water. The raw water is generated from Well Nos. 1, 2, 3, 5, and 6 with a Total Dissolved Solids (TDS) of approximately 300 mg/L as the ion. Each RO system consists of three (3) stages. The first two stages contain two pressure vessels each and the third stage contains one pressure vessel. The first two systems are designed to produce 93,600 gpd permeate and the third is designed to produce 32,000 gpd permeate.

The RO Systems contain the following components: an 8" diameter 316 SS tubular particle screen filter, six (6) 40" five micron cartridge micron filters, chemical feed systems that deliver antiscalant/sequesterant to the inlet side of the membranes and for post-pH adjustment and chlorine dosing (disinfection) for the potable water side of the membranes, a RO high pressure booster pump, the RO membrane modules, and a fresh water flush/acid water flush/membrane cleaning system.

Flush Procedure

In order to provide a regular means of iron control to prevent membrane fouling, the RO system contains a permeate water flush system. Upon each system shutdown sequence, each RO system is flushed with approximately 165 gallons of permeate. The flush sequence is automatically operated and assists in keeping the systems free of iron and other minerals. No chemicals/water treatment additives are used during these sequences. The total volume of water used during the flush sequences is proposed to be discharged via Outfall 200A (the concentrate

waste stream outfall from the Block Island Water Company's RO Water Treatment System) through a force main to the manhole on the existing WPCF ten inch outfall sewer.

Membrane Recovery - Chemical Cleaning

The RO membranes at the Block Island Water Company will be cleaned using a high pH solution of permeate water and ROCleanP111, and a low pH solution of permeate water and ROCleanP703 (both manufactured by Avista Technologies, Inc.). Cleaning is accomplished by heating approximately 160 gallons of water containing either ROCleanP111 or ROCleanP703, and then each unit is washed with this solution. At the end of the cleaning cycle, the respective solution is discharged to waste (i.e. discharged to the sewer system). During the first two hours of operation following the cleaning cycle the permeate water produced is also diverted to waste. During the cleaning cycle(s) and two hour post-production period the wastewater generated will be diverted to the head works of the WPCF. This will be accomplished by closing the valve to the PVC force main (Outfall 200A) and diverting flow into the existing sanitary collection system. Therefore, the permit does not authorize the discharge of chemical cleaning wastewater.

Flow

The discharge from the concentrate waste stream ranges from 5,000 gpd to 37,000 gpd (depending on the season). However, during the 2008 calculation of water quality based limits and CORMIX modeling the DEM used a maximum flow of 50,000 gpd for the concentrate waste stream to evaluate the limits at the final point of discharge for the combined discharge point (Outfall 001) to Rhode Island Sound. In addition, the dosing rates and concentrations of the antiscalant/sequestering agents discussed below were evaluated in the concentrate waste stream at the maximum flow of 50,000 gpd to assess if there were any potential toxicity effects in the discharge from using those chemicals. Therefore, the permitted design flow for Outfall 200A was considered to be 50,000 gpd (0.05 MGD).

Total Suspended Solids and BOD

The proposed limits for TSS at Outfall 200A have been designated as 30 mg/l monthly average and 50 mg/l daily maximum based on Best Professional Judgment (BPJ) for the treatment capabilities of wastewater treatment systems currently used for the treatment of potable water treatment waste streams throughout the country. The DEM has determined that the use of the Best Available Treatment technologies are not cost prohibitive and that by using the Best Available Treatment technologies the 30 mg/l and 50 mg/l TSS limitations can be achieved. These limits are consistent with the Environmental Protection Agency Final NPDES General Permits for Water Treatment Facility Discharges in the States of Massachusetts (MAG640000) And New Hampshire (NHG640000). Concentration based limits have been applied for Outfall 200A (Concentrate Waste Stream from the Block Island Water Company's RO Water Treatment System). Mass based limits for Outfall 200A have not been assigned, but reporting of loadings is required. Monitoring of BOD concentration and load have also been included for Outfall 200A. This monitoring will be used to determine compliance with the load limits at Outfall 001A.

Turbidity

Turbidity monitoring requirements have been included in this permit in order to establish a database of NTU data that can be used to determine compliance with water quality criteria. These monitoring requirements have been applied to Outfall 200A (Concentrate Waste Stream from the Block Island Water Company's RO Water Treatment System). The permit also includes a narrative condition that the receiving water's turbidity not be increased more than 10 NTU over background.

pH

The effluent limitations for pH have been established in accordance with the Rhode Island Water Quality Regulations Table 2.8.D.(3) Class Specific Criteria –Class SB1 - Sea Waters. Table 2.8.D.(3) Class Specific Criteria – Class SB1 - Sea Waters specifies that the pH must be in the range of 6.5-8.5 s.u. but not more than 0.2 units outside of the normally occurring range. These limitations have been applied to Outfall 200A (Concentrate Waste Stream from the Block Island Water Company's RO Water Treatment System).

Water Quality Based Limits

As previously indicated, water quality-based limits for Total Copper, Total Ammonia, and Total Residual Chlorine have been assigned to Outfalls 100A and 200A. Limits have been assigned to these outfalls since there is not a suitable sample location for Outfall 001A.

Residuals Management Requirements

Water treatment plant residuals form when solids in the raw water react with chemicals such as coagulants added in the treatment process and from the addition of other process control chemicals. Some potable water treatment processes generate residuals that are relatively easy to process and dispose of. For example, leaves, limbs, logs, plastic bottles, and other large floating debris separated from water during the initial screening process can be disposed of at conventional solid waste landfills. However, most other treatment processes produce more complex residual waste streams that may require advanced processing and disposal methods to protect human health and the environment.

Water Treatment Chemicals

pH limits have been assigned in the permit to regulate the concentrations of antiscalant/sequestrant present in Outfall 200A. This permit also authorizes the use of Pretreat Plus Y2K and/or Vitec 3000 water treatment chemicals as antiscalants. The permittee must use Pretreat Plus Y2K and/or Vitec 3000 at a concentration that is less than 3.0 mg/l in order to eliminate the potential for discharging this additive at a potentially toxic concentration pursuant to the MSDS. The permittee must notify the DEM and request approval prior to using any other antiscalant products, or significantly adjusting the concentration in the feed of the Block Island Water Company's RO Treatment System. The concentration of the above antiscalants listed in the permit application as being applied in the feed chemical systems is in the range of 2.5 to 3.0 mg/l. Toxicity information provided by the manufacturer of Pretreat Plus-Y2K indicates the chemical ingredients contained within the formulation are generally non-toxic. The 96-hour LC₅₀ for the *Sheepshead Minnow* species was listed as being >12,700 mg/l. In addition, an aquatic toxicity report provided by the manufacturer of Vitec 3000 displays a 48-hour LC₅₀ for the *Pimephales promelas* species as being 7,939 mg/l. Considering both dilution within the treatment process, from the commingling of the concentrate waste stream and the WPCF effluent, and from the final outfall diffuser into Rhode Island Sound and the potential for a reduction in the concentration of the additive in the treatment process prior to discharge, the DEM is confident that the concentrations of Pretreat Plus Y2K and/or Vitec 3000 discharged from the Block Island Water Company will not have an adverse impact on the receiving water.

Other Limits and Conditions

The effluent monitoring requirements have been specified in accordance with RIPDES regulations as well as 40 CFR 122.41(j)(1), 122.44(i), and 122.48 to yield data representative of the discharge.

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 requirements for the permittee to comply with the State's Sludge Regulations and the permittee's RIDEM Order of Approval for sludge disposal in accordance with the requirements of Section 405(d) of the CWA.

It has been determined that the New Shoreham discharge outfall is seaward of the territorial sea baseline, and therefore is subject to Section 403(c) of the CWA. Section 403(c) of the CWA provides that no NPDES permit for discharges to the "territorial sea, the waters of the contiguous zone, or the oceans" shall be issued except in compliance with the ocean discharge guidelines. The Ocean Discharge criteria regulations (45 FR 65942, October 3, 1980, codified at 40 CFR Part 125, Subpart M) establish ocean discharge guidelines to determine whether or not the discharge will cause "unreasonable degradation" of the marine environment. An Ocean Discharge Criteria Evaluation (ODCE) was conducted in 1992 for the New Shoreham discharge. In summary, the ODCE states that the New Shoreham discharge will not result in unreasonable degradation to the marine environment. The ODCE for New Shoreham is available upon request.

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.

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. In accordance with Chapter 46-17.4 of Rhode Island General Laws, a public hearing will be held prior to the close of the public comment period. 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.

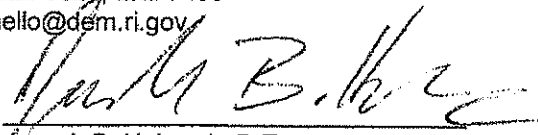
Following the close of the comment period, and after a public hearing, the Director will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments, provided oral testimony, or requested notice. Within thirty (30) days following 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:

Aaron Mello, Sanitary Engineer
Department of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, Rhode Island 02908
Telephone: (401) 222-6820; Ext. 7405
E-mail: aaron.mello@dem.ri.gov

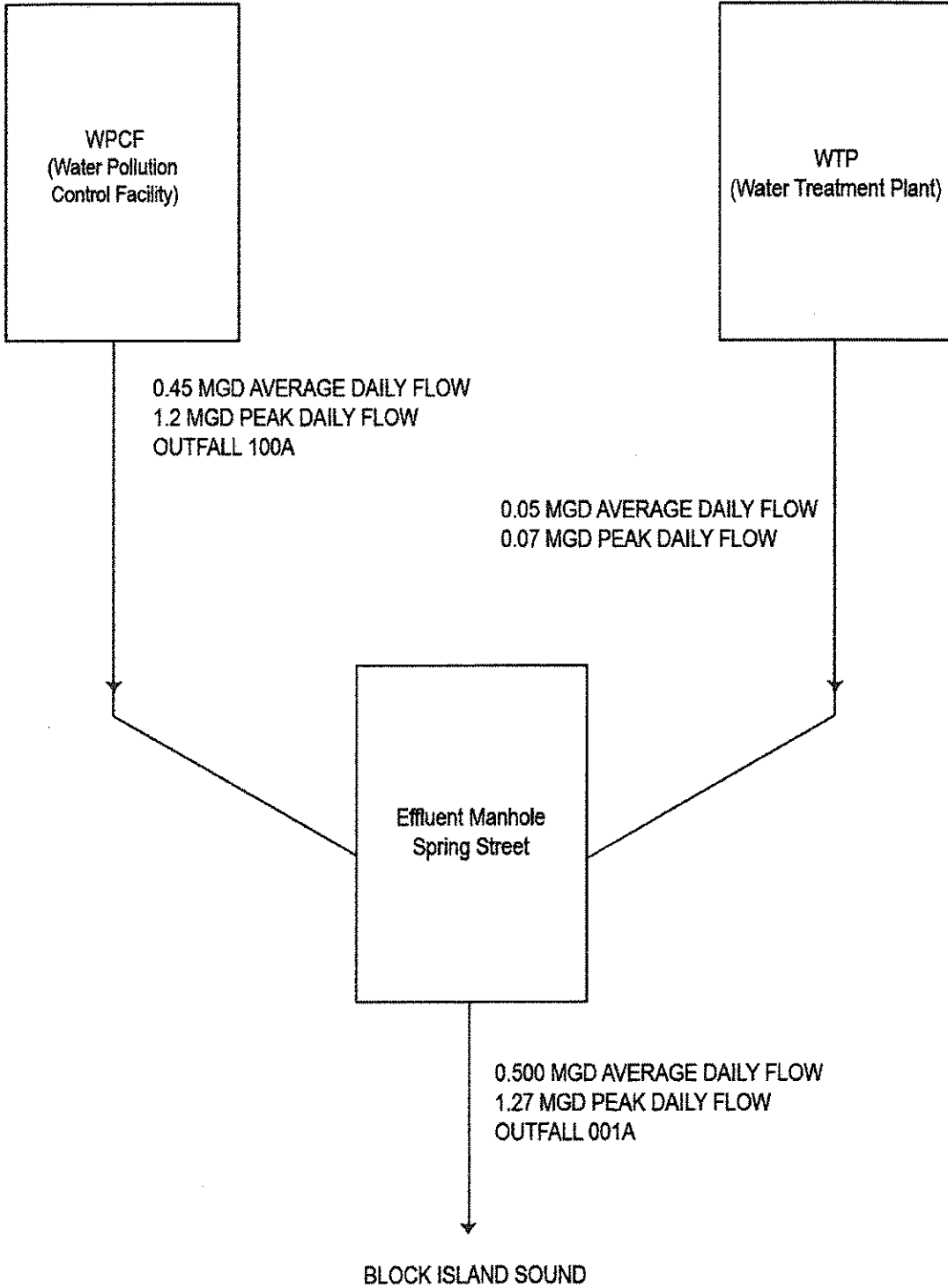
3/30/16
Date



Joseph B. Haberek, P.E.
Principal Sanitary Engineer
RIPDES Program
Office of Water Resources
Department of Environmental Management

FIGURE #1

**Overall Process Flow Schematic for the New Shoreham WPCF Effluent and the
Block Island Water Company Concentrate Discharge**



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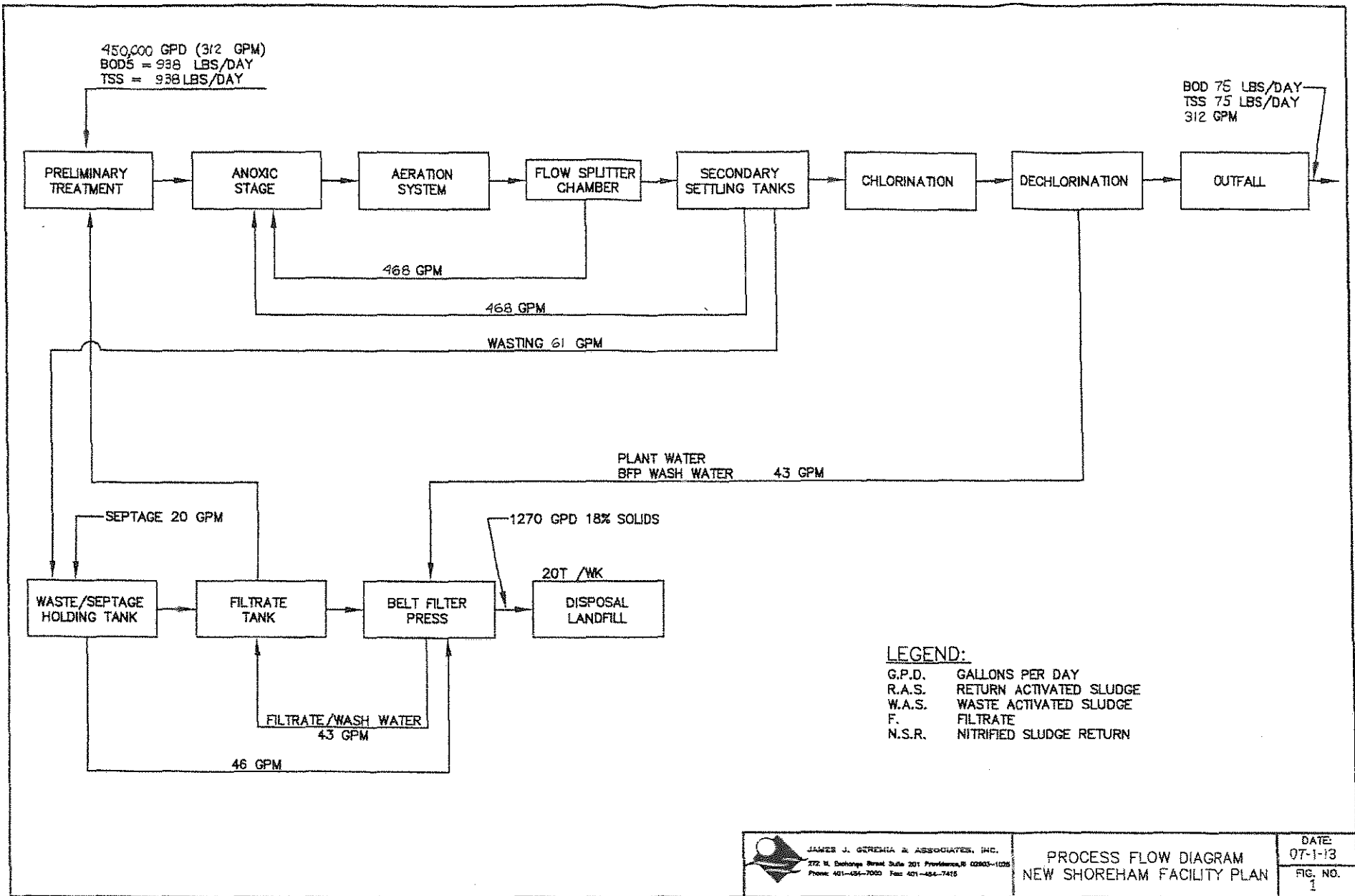
Wastewater Effluent Flow Schematic

Scale: N.T.S.


Date: 2008

FIGURE #2

Process Flow Diagram for the New Shoreham WPCF



LEGEND:
 G.P.D. GALLONS PER DAY
 R.A.S. RETURN ACTIVATED SLUDGE
 W.A.S. WASTE ACTIVATED SLUDGE
 F. FILTRATE
 N.S.R. NITRIFIED SLUDGE RETURN

 JAMES J. GEREMIA & ASSOCIATES, INC.
 272 N. Exchange Street Suite 201 Providence, RI 02903-1026
 Phone: 401-454-7000 Fax: 401-454-7415

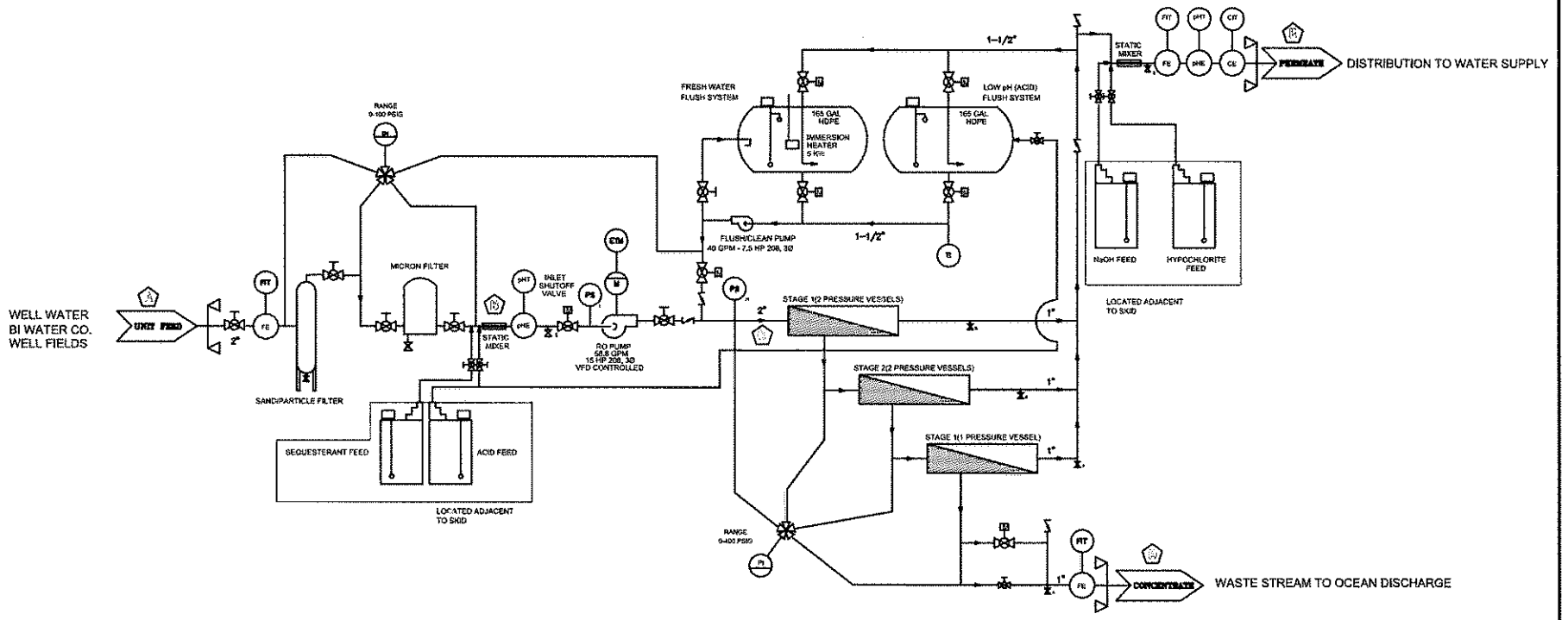
PROCESS FLOW DIAGRAM
 NEW SHOREHAM FACILITY PLAN

DATE:
 07-1-13
 FIG. NO.
 1

FIGURE #3

**Block Island Water Company Process & Instrumentation Diagram for the
Reverse Osmosis Water Treatment System**

III B



PROCESS CONDITIONS

DESCRIPTION	(A)	(B)	(C)	(D)	(E)
FLOW (GPM)	65	65	65	22.8	42.2
PRESSURE (PSIG)	40	34	194	174	10
PIPE SIZE & TYPE	2" PVC	1" PVC	2" 2108S	1" 2108PVC	1/2" PVC

FIGURE 1

DESIGNED BY: JJS
DRAWN BY: CJB
CHECKED BY: JJS
SCALE: AS NOTED
NO SCALE
CONTRACT:
NO. BY: DATE: REMARKS:



JAMES J. GEREMIA & ASSOCIATES, INC.
 CONSULTING ENVIRONMENTAL ENGINEERS & SCIENTISTS
 272 W. Exchange Street, Suite 201 Providence, RI 02903-1628
 Phone 401-841-7920 Fax 401-841-7415

TOWN OF NEW SHOREHAM
 RHODE ISLAND

BLOCK ISLAND WATER COMPANY
 PROCESS & INSTRUMENTATION DIAGRAM

FIGURE
 1

ATTACHMENT A-1

DESCRIPTION OF DISCHARGE: New Shoreham Water Pollution Control Facility (WPCF) – Outfall 100A

AVERAGE EFFLUENT CHARACTERISTICS AT POINT OF DISCHARGE:

<u>PARAMETER</u>	<u>AVERAGE</u> ¹	<u>MAXIMUM</u> ²
FLOW (MGD)	0.10 MGD	0.16 MGD
BOD ₅ (PPM)	2.4 mg/l	4.5 mg/l
BOD ₅ (LB/D)	2.5 lb/d	5.1 lb/d
BOD ₅ (% Removal)	97.9 %	
TSS (PPM)	2.5 mg/l	4.9 mg/l
TSS (LB/D)	2.6 lb/d	6.4 lb/d
TSS (% Removal)	98.8 %	
Fecal Coliform	2.4 MPN/100 ml	400026 MPN/100 ml
pH	7.2 S.U. (Minimum)	7.5 S.U. (Maximum)
Total Residual Chlorine	8.9 ug/l	28.0 ug/l
Total Copper	5.6 ug/l	8.2 ug/l
Oil & Grease		BDL mg/l
Settleable Solids	0.1 ml/l	0.14 ml/l
Total Ammonia (as N)	0.48 mg/l	1.0 mg/l
TKN		2.8 mg/l
Total Nitrate (as N)		9.8 mg/l
Total Nitrite (as N)		0.09 mg/l
Total Nitrogen (as N)		12.9 mg/l

Notes:

1. Data represents the mean of the monthly average data from October 2010 – September 2015.
 2. Data represents the mean of the daily maximum data from October 2010 – September 2015.
- BDL = Below Detection Limit

ATTACHMENT A-1

DESCRIPTION OF DISCHARGE: Block Island Water Company Concentrate Discharge – Outfall 200A

AVERAGE EFFLUENT CHARACTERISTICS AT POINT OF DISCHARGE:

<u>PARAMETER</u>	<u>AVERAGE</u> ¹	<u>MAXIMUM</u> ²
FLOW (MGD)	0.03 MGD	0.05 MGD
BOD ₅ (PPM)	4.5 mg/l	6.0 mg/l
BOD ₅ (LB/D)	1.1 lb/d	1.7 lb/d
TSS	17.6 mg/l	26.4 mg/l
TSS (LB/D)	4.2 lb/d	6.6 lb/d
pH	6.6 S.U. (Minimum)	6.9 S.U. (Maximum)
Turbidity	54.7 NTU	79.7 NTU
Total Residual Chlorine	BDL ug/l	BDL ug/l
Total Copper	0.55 ug/l	0.55 ug/l
Total Ammonia (as N)	0.5 mg/l	0.8 mg/l
TKN		1.2 mg/l
Total Nitrate (as N)		BDL mg/l
Total Nitrite (as N)		0.01 mg/l
Total Nitrogen (as N)		1.2 mg/l

Notes:

1. Data represents the mean of the monthly average data from October 2010 – September 2015.
 2. Data represents the mean of the daily maximum data from October 2010 – September 2015.
- BDL = Below Detection Limit

ATTACHMENT A-1

DESCRIPTION OF DISCHARGE: Combined Discharge of the New Shoreham WPCF Effluent and the Concentrate Waste Stream from the Block Island Water Company's RO Water Treatment System – Outfall 001A

AVERAGE EFFLUENT CHARACTERISTICS AT POINT OF DISCHARGE:

<u>PARAMETER</u>	<u>AVERAGE</u> ¹	<u>MAXIMUM</u> ²
FLOW (MGD)	0.12 MGD	0.26 MGD
BOD ₅ (LB/D)	2.8 lb/d	5.9 lb/d
TSS (LB/D)	4.5 lb/d	9.5 lb/d

Notes:

1. Data represents the mean of the monthly average data from October 2010 – September 2015.
 2. Data represents the mean of the daily maximum data from October 2010 – September 2015.
- BDL = Below Detection Limit

ATTACHMENT A-2

**Calculation of Allowable Acute and Chronic Discharge Limitations
Based on Saltwater Aquatic Life Criteria and Human Health Criteria**

**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: New Shoreham WPCF

RIPDES PERMIT #: RI0100196

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

USE NA WHEN NO DATA IS AVAILABLE

NOTE 1: NO DISSOLVED BACKGROUND DATA WAS AVAILABLE

NOTE 2: METAL TRANSLATORS FROM RI WATER
QUALITY REGS.

DILUTION FACTORS	
ACUTE =	17.5 x
CHRONIC =	24.6 x
HUMAN HEALTH =	24.6 x

NOTE: TEST WWTF'S DILUTION
FACTORS OBTAINED FROM A
CORMIX2 DILUTION EVALUATION

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: New Shoreham WPCFRIPDES PERMIT #: RI0100196

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	12595.2
ARSENIC (limits are total recoverable)	7440382	NA	69	966	36	1.4	27.552
ASBESTOS	1332214			No Criteria			No Criteria
BERYLLIUM	7440417			No Criteria			No Criteria
CADMIUM (limits are total recoverable)	7440439	NA	40	563.3802817	8.8		174.2293763
CHROMIUM III (limits are total recoverable)	16065831	NA		No Criteria			No Criteria
CHROMIUM VI (limits are total recoverable)	18540299	NA	1100	15508.55992	50		990.9365559
COPPER (limits are total recoverable)	7440508	NA	4.8	80.96385542	3.1		73.50361446
CYANIDE	57125		1	14.00	1	140	19.68
LEAD (limits are total recoverable)	7439921	NA	210	3091.48265	8.1		167.6214511
MERCURY (limits are total recoverable)	7439976	NA	1.8	29.64705882	0.94	0.15	2.952
NICKEL (limits are total recoverable)	7440020	NA	74	1046.464646	8.2	4600	163.0060606
SELENIUM (limits are total recoverable)	7782492	NA	290	4068.136273	71	4200	1400.08016
SILVER (limits are total recoverable)	7440224	NA	1.9	31.29411765			No Criteria
THALLIUM	7440280			No Criteria		0.47	9.2496
ZINC (limits are total recoverable)	7440666	NA	90	1331.92389	81	26000	1685.073996
VOLATILE ORGANIC COMPOUNDS							
ACROLEIN	107028			No Criteria		290	5707.2
ACRYLONITRILE	107131			No Criteria		2.5	49.2
BENZENE	71432			No Criteria		510	10036.8
BROMOFORM	75252			No Criteria		1400	27552
CARBON TETRACHLORIDE	56235			No Criteria		16	314.88
CHLOROBENZENE	108907			No Criteria		1600	31488
CHLORODIBROMOMETHANE	124481			No Criteria		130	2558.4
CHLOROFORM	67663			No Criteria		4700	92496
DICHLOROBROMOMETHANE	75274			No Criteria		170	3345.6
1,2DICHLOROETHANE	107062			No Criteria		370	7281.6
1,1DICHLOROETHYLENE	75354			No Criteria		7100	139728
1,2DICHLOROPROPANE	78875			No Criteria		150	2952
1,3DICHLOROPROPYLENE	542756			No Criteria		21	413.28
ETHYLBENZENE	100414			No Criteria		2100	41328
BROMOMETHANE (methyl bromide)	74839			No Criteria		1500	29520
CHLOROMETHANE (methyl chloride)	74873			No Criteria			No Criteria
METHYLENE CHLORIDE	75092			No Criteria		5900	116112

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: New Shoreham WPCF RIPDES PERMIT #: RI0100196

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	787.2
TETRACHLOROETHYLENE	127184			No Criteria		33	649.44
TOLUENE	108883			No Criteria		15000	295200
1,2TRANS-DICHLOROETHYLENE	156605			No Criteria		10000	196800
1,1,1TRICHLOROETHANE	71556			No Criteria			No Criteria
1,1,2TRICHLOROETHANE	79005			No Criteria		160	3148.8
TRICHLOROETHYLENE	79016			No Criteria		300	5904
VINYL CHLORIDE	75014			No Criteria		2.4	47.232
ACID ORGANIC COMPOUNDS							
2CHLOROPHENOL	95578			No Criteria		150	2952
2,4DICHLOROPHENOL	120832			No Criteria		290	5707.2
2,4DIMETHYLPHENOL	105679			No Criteria		850	16728
4,6DINITRO-2METHYL PHENOL	534521			No Criteria		280	5510.4
2,4DINITROPHENOL	51285			No Criteria		5300	104304
4NITROPHENOL	88755			No Criteria			No Criteria
PENTACHLOROPHENOL	87865		13	182	7.9	30	155.472
PHENOL	108952			No Criteria		1700000	33456000
2,4,6TRICHLOROPHENOL	88062			No Criteria		24	472.32
BASE NEUTRAL COMPOUNDS							
ACENAPHTHENE	83329			No Criteria		990	19483.2
ANTHRACENE	120127			No Criteria		40000	787200
BENZIDINE	92875			No Criteria		0.002	0.03936
POLYCYCLIC AROMATIC HYDROCARBONS				No Criteria		0.18	3.5424
BIS(2CHLOROETHYL)ETHER	111444			No Criteria		5.3	104.304
BIS(2CHLOROISOPROPYL)ETHER	108601			No Criteria		65000	1279200
BIS(2ETHYLHEXYL)PHTHALATE	117817			No Criteria		22	432.96
BUTYL BENZYL PHTHALATE	85687			No Criteria		1900	37392
2CHLORONAPHTHALENE	91587			No Criteria		1600	31488
1,2DICHLOROBENZENE	95501			No Criteria		1300	25584
1,3DICHLOROBENZENE	541731			No Criteria		960	18892.8
1,4DICHLOROBENZENE	106467			No Criteria		190	3739.2
3,3DICHLOROBENZIDENE	91941			No Criteria		0.28	5.5104
DIETHYL PHTHALATE	84662			No Criteria		44000	865920
DIMETHYL PHTHALATE	131113			No Criteria		1100000	21648000
DInBUTYL PHTHALATE	84742			No Criteria		4500	88560
2,4DINITROTOLUENE	121142			No Criteria		34	669.12

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: New Shoreham WPCF RIPDES PERMIT #: RI0100196

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	39.36
FLUORANTHENE	206440			No Criteria		140	2755.2
FLUORENE	86737			No Criteria		5300	104304
HEXACHLORO BENZENE	118741			No Criteria		0.0029	0.057072
HEXACHLOROBUTADIENE	87683			No Criteria		180	3542.4
HEXACHLOROCYCLOPENTADIENE	77474			No Criteria		1100	21648
HEXACHLOROETHANE	67721			No Criteria		33	649.44
ISOPHORONE	78591			No Criteria		9600	188928
NAPHTHALENE	91203			No Criteria			No Criteria
NITROBENZENE	98953			No Criteria		690	13579.2
NNITROSODIMETHYLAMINE	62759			No Criteria		30	590.4
NNITROSODINPROPYLAMINE	621647			No Criteria		5.1	100.368
NNITROSODIPHENYLAMINE	86306			No Criteria		60	1180.8
PYRENE	129000			No Criteria		4000	78720
1,2,4trichlorobenzene	120821			No Criteria		70	1377.6
PESTICIDES/PCBs							
ALDRIN	309002		1.3	18.2		0.0005	0.00984
Alpha BHC	319846			No Criteria		0.049	0.96432
Beta BHC	319857			No Criteria		0.17	3.3456
Gamma BHC (Lindane)	58899		0.16	2.24		1.8	35.424
CHLORDANE	57749		0.09	1.26	0.004	0.0081	0.07872
4,4DDT	50293		0.13	1.82	0.001	0.0022	0.01968
4,4DDE	72559			No Criteria		0.0022	0.043296
4,4DDD	72548			No Criteria		0.0031	0.061008
DIELDRIN	60571		0.71	9.94	0.0019	0.00054	0.0106272
ENDOSULFAN (alpha)	959988		0.034	0.476	0.0087	89	0.171216
ENDOSULFAN (beta)	33213659		0.034	0.476	0.0087	89	0.171216
ENDOSULFAN (sulfate)	1031078			No Criteria		89	1751.52
ENDRIN	72208		0.037	0.518	0.0023	0.06	0.045264
ENDRIN ALDEHYDE	7421934			No Criteria		0.3	5.904
HEPTACHLOR	76448		0.053	0.742	0.0036	0.00079	0.0155472
HEPTACHLOR EPOXIDE	1024573		0.053	0.742	0.0036	0.00039	0.0076752
POLYCHLORINATED BIPHENYLS3	1336363			No Criteria	0.03	0.00064	0.0125952
2,3,7,8TCDD (Dioxin)	1746016			No Criteria		0.000000051	1.00368E-06
TOXAPHENE	8001352		0.21	2.94	0.0002	0.0028	0.003936
TRIBUTYL TIN			0.42	5.88	0.0074		0.145632

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: New Shoreham WPCF RIPDES PERMIT #: RI0100196

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		No Criteria			No Criteria
AMMONIA as N (winter/summer)	7664417		17262 6000.6	241668 84008.4	2548 904.2		50148.6 17794.7
4BROMOPHENYL PHENYL ETHER CHLORIDE	16887006			No Criteria			No Criteria
CHLORINE	7782505		13	227.5	7.5		184.5
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: New Shoreham WPCFRIPDES PERMIT #: RI0100196

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
PRIORITY POLLUTANTS			
TOXIC METALS AND CYANIDE			
ANTIMONY	7440360	No Criteria	12595.20
ARSENIC, TOTAL	7440382	966.00	27.55
ASBESTOS	1332214	No Criteria	No Criteria
BERYLLIUM	7440417	No Criteria	No Criteria
CADMIUM, TOTAL	7440439	563.38	174.23
CHROMIUM III, TOTAL	16065831	No Criteria	No Criteria
CHROMIUM VI, TOTAL	18540299	15508.56	990.94
COPPER, TOTAL	7440508	80.96	73.50
CYANIDE	57125	14.00	14.00
LEAD, TOTAL	7439921	3091.48	167.62
MERCURY, TOTAL	7439976	29.65	2.95
NICKEL, TOTAL	7440020	1046.46	163.01
SELENIUM, TOTAL	7782492	4068.14	1400.08
SILVER, TOTAL	7440224	31.29	No Criteria
THALLIUM	7440280	No Criteria	9.25
ZINC, TOTAL	7440666	1331.92	1331.92
VOLATILE ORGANIC COMPOUNDS			
ACROLEIN	107028	No Criteria	5707.20
ACRYLONITRILE	107131	No Criteria	49.20
BENZENE	71432	No Criteria	10036.80
BROMOFORM	75252	No Criteria	27552.00
CARBON TETRACHLORIDE	56235	No Criteria	314.88
CHLOROBENZENE	108907	No Criteria	31488.00
CHLORODIBROMOMETHANE	124481	No Criteria	2558.40
CHLOROFORM	67663	No Criteria	92496.00
DICHLOROBROMOMETHANE	75274	No Criteria	3345.60
1,2DICHLOROETHANE	107062	No Criteria	7281.60
1,1DICHLOROETHYLENE	75354	No Criteria	139728.00
1,2DICHLOROPROPANE	78875	No Criteria	2952.00
1,3DICHLOROPROPYLENE	542756	No Criteria	413.28
ETHYLBENZENE	100414	No Criteria	41328.00
BROMOMETHANE (methyl bromide)	74839	No Criteria	29520.00
CHLOROMETHANE (methyl chloride)	74873	No Criteria	No Criteria
METHYLENE CHLORIDE	75092	No Criteria	116112.00
1,1,2,2TETRACHLOROETHANE	79345	No Criteria	787.20

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
TETRACHLOROETHYLENE	127184	No Criteria	649.44
TOLUENE	108883	No Criteria	295200.00
1,2TRANS-DICHLOROETHYLENE	156605	No Criteria	196800.00
1,1,1TRICHLOROETHANE	71556	No Criteria	No Criteria
1,1,2TRICHLOROETHANE	79005	No Criteria	3148.80
TRICHLOROETHYLENE	79016	No Criteria	5904.00
VINYL CHLORIDE	75014	No Criteria	47.23
ACID ORGANIC COMPOUNDS			
2CHLOROPHENOL	95578	No Criteria	2952.00
2,4DICHLOROPHENOL	120832	No Criteria	5707.20
2,4DIMETHYLPHENOL	105679	No Criteria	16728.00
4,6DINITRO-2METHYL PHENOL	534521	No Criteria	5510.40
2,4DINITROPHENOL	51285	No Criteria	104304.00
4NITROPHENOL	88755	No Criteria	No Criteria
PENTACHLOROPHENOL	87865	182.00	155.47
PHENOL	108952	No Criteria	33456000.00
2,4,6TRICHLOROPHENOL	88062	No Criteria	472.32
BASE NEUTRAL COMPOUNDS			
ACENAPHTHENE	83329	No Criteria	19483.20
ANTHRACENE	120127	No Criteria	787200.00
BENZIDINE	92875	No Criteria	0.04
PAHs		No Criteria	3.54
BIS(2CHLOROETHYL)ETHER	111444	No Criteria	104.30
BIS(2CHLOROISOPROPYL)ETHER	108601	No Criteria	1279200.00
BIS(2ETHYLHEXYL)PHTHALATE	117817	No Criteria	432.96
BUTYL BENZYL PHTHALATE	85687	No Criteria	37392.00
2CHLORONAPHTHALENE	91587	No Criteria	31488.00
1,2DICHLOROBENZENE	95501	No Criteria	25584.00
1,3DICHLOROBENZENE	541731	No Criteria	18892.80
1,4DICHLOROBENZENE	106467	No Criteria	3739.20
3,3DICHLOROBENZIDENE	91941	No Criteria	5.51
DIETHYL PHTHALATE	84662	No Criteria	865920.00
DIMETHYL PHTHALATE	131113	No Criteria	21648000.00
DI-n-BUTYL PHTHALATE	84742	No Criteria	88560.00
2,4DINITROTOLUENE	121142	No Criteria	669.12
1,2DIPHENYLHYDRAZINE	122667	No Criteria	39.36
FLUORANTHENE	206440	No Criteria	2755.20

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS
FACILITY NAME: New Shoreham WPCF **RIPDES PERMIT #: RI0100196**

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
FLUORENE	86737	No Criteria	104304.00
HEXACHLOROBENZENE	118741	No Criteria	0.06
HEXACHLOROBUTADIENE	87683	No Criteria	3542.40
HEXACHLOROCYCLOPENTADIENE	77474	No Criteria	21648.00
HEXACHLOROETHANE	67721	No Criteria	649.44
ISOPHORONE	78591	No Criteria	188928.00
NAPHTHALENE	91203	No Criteria	No Criteria
NITROBENZENE	98953	No Criteria	13579.20
N-NITROSODIMETHYLAMINE	62759	No Criteria	590.40
N-NITROSODI-N-PROPYLAMINE	621647	No Criteria	100.37
N-NITROSODIPHENYLAMINE	86306	No Criteria	1180.80
PYRENE	129000	No Criteria	78720.00
1,2,4trichlorobenzene	120821	No Criteria	1377.60
PESTICIDES/PCBs			
ALDRIN	309002	18.20	0.01
Alpha BHC	319846	No Criteria	0.96
Beta BHC	319857	No Criteria	3.35
Gamma BHC (Lindane)	58899	2.24	2.24
CHLORDANE	57749	1.26	0.08
4,4DDT	50293	1.82	0.02
4,4DDE	72559	No Criteria	0.04
4,4DDD	72548	No Criteria	0.06
DIELDRIN	60571	9.94	0.01
ENDOSULFAN (alpha)	959988	0.48	0.17
ENDOSULFAN (beta)	33213659	0.48	0.17
ENDOSULFAN (sulfate)	1031078	No Criteria	1751.52
ENDRIN	72208	0.52	0.05
ENDRIN ALDEHYDE	7421934	No Criteria	5.90
HEPTACHLOR	76448	0.74	0.02
HEPTACHLOR EPOXIDE	1024573	0.74	0.01
POLYCHLORINATED BIPHENYLS3	1336363	No Criteria	0.01
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.00
TOXAPHENE	8001352	2.94	0.00
TRIBUTYLTIN		5.88	0.15

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	241668.00	50148.58
AMMONIA (as N), SUMMER (MAY-OC)	7664417	84008.40	17794.66
4BROMOPHENYL PHENYL ETHER		No Criteria	No Criteria
CHLORIDE	16887006	No Criteria	No Criteria
CHLORINE	7782505	227.50	184.50
4CHLORO2METHYLPHENOL		No Criteria	No Criteria
1CHLORONAPHTHALENE		No Criteria	No Criteria
4CHLOROPHENOL	106489	No Criteria	No Criteria
2,4DICHORO6METHYLPHENOL		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-3

**Summary of Discharge Monitoring Report Data
October 2010 through September 2015**

NEW SHOREHAM WPCF
DMR Data Summary 1/8/16

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

001A

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

	MO AVG lb/d	DAILY MX lb/d
Mean	2.8417	5.91
Minimum	.4	.8
Maximum	13.9	26.5
Data Count	60	60

Flow, in conduit or thru treatment pl

	MO AVG MGD	DAILY MX MGD
Mean	.1178	.2559
Minimum	.012	.045
Maximum	.283	.831
Data Count	60	60

Solids, total suspended Location=

	MO AVG lb/d	DAILY MX lb/d
Mean	4.5432	9.465
Minimum	.05	.4
Maximum	21.3	46.6
Data Count	60	60

100A

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

	MO AVG lb/d	DAILY MX lb/d
Mean	2.465	5.06
Minimum	.4	.8
Maximum	11.8	24.6
Data Count	60	60

	MO AVG mg/L	WKLY AVG mg/L	DAILY MX mg/L
Mean	2.4133	3.1852	4.5167
Minimum	.8	.93	1.4
Maximum	6	9.87	14.6
Data Count	60	60	60

Chlorine, total residual Location= 1

	MO AVG ug/L	DAILY MX ug/L
Mean	8.8512	28.0153
Minimum	.02	.07
Maximum	30	90
Data Count	60	60

Coliform, fecal general Location= 1

NEW SHOREHAM WPCF

DMR Data Summary 1/8/16

	MO GEO MPN/100mL	WKLY GEO MPN/100mL	DAILY MX MPN/100mL
Mean	2.4361	21.1312	400025.8167
Minimum	1	1	1
Maximum	10	1034	24000000
Data Count	60	60	60

Copper, total [as Cu] Location= 1

	MO AVG ug/L	DAILY MX ug/L
Mean	5.55	8.245
Minimum		
Maximum	39	80
Data Count	60	60

Flow, in conduit or thru treatment pl

	MO AVG MGD	DAILY MX MGD
Mean	.1045	.1558
Minimum	.037	.045
Maximum	.24	.331
Data Count	60	60

Nitrogen, ammonia total [as N] Loc

	MO AVG mg/L	DAILY MX mg/L
Mean	.4823	1.0465
Minimum	.02	.027
Maximum	2.7	5.7
Data Count	30	30

Nitrogen, Kjeldahl, total [as N] Loca

	DAILY MX mg/L
Mean	2.773
Minimum	
Maximum	9.2
Data Count	30

Nitrogen, nitrate total [as N] Locatio

	DAILY MX mg/L
Mean	9.834
Minimum	2.88
Maximum	16.5
Data Count	30

Nitrogen, nitrite total [as N] Locatio

	DAILY MX mg/L
Mean	.094
Minimum	
Maximum	1.34
Data Count	30

Nitrogen, total [as N] Location= 1

	DAILY MX mg/L
--	---------------

NEW SHOREHAM WPCF

DMR Data Summary 1/8/16

DAILY MX mg/L
Mean 12.8607
Minimum 1.86
Maximum 23.6
Data Count 30

Oil & Grease Location= 1

DAILY MX mg/L
Mean
Minimum
Maximum
Data Count 60

pH Location= 1

	MINIMUM SU	MAXIMUM SU
Mean	7.247	7.5495
Minimum	6.95	7.21
Maximum	7.56	7.9
Data Count	60	60

Solids, settleable Location= 1

	WKLY AVG mL/L	DAILY MX mL/L
Mean	.1033	.14
Minimum	.1	.1
Maximum	.2	.3
Data Count	60	60

Solids, total suspended Location=

	MO AVG lb/d	DAILY MX lb/d
Mean	2.568	6.435
Minimum	.4	.4
Maximum	13.6	39.5
Data Count	60	60

	MO AVG mg/L	WKLY AVG mg/L	DAILY MX mg/L
Mean	2.4608	3.3482	4.88
Minimum	.8	.9	1
Maximum	6.9	10.4	18.5
Data Count	60	60	60

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

	MO AVG lb/d	DAILY MX lb/d
Mean	232.855	363.275
Minimum	34	42.4
Maximum	879	1248.1
Data Count	60	60

	MO AVG mg/L	WKLY AVG mg/L	DAILY MX mg/L
Mean	211.3783	244.146	291.26
Minimum	70.7	94.93	111.8
Maximum	444.5	533.5	683.3
Data Count	60	60	60

NEW SHOREHAM WPCF

DMR Data Summary 1/8/16

Copper, total [as Cu] Location= G

	MO AVG ug/L	DAILY MX ug/L
Mean	99.4025	115.8633
Minimum	5.1	5.1
Maximum	531	531
Data Count	60	60

Solids, total suspended Location=

	MO AVG lb/d	DAILY MX lb/d
Mean	531.8908	919.275
Minimum	64.3	88.6
Maximum	3831.1	3245.9
Data Count	60	60

	MO AVG mg/L	WKLY AVG mg/L	DAILY MX mg/L
Mean	473.7667	587.5538	872.5
Minimum	139.5	176	263
Maximum	1755.2	1150.8	2056
Data Count	60	60	60

BOD, 5-day, percent removal Locat

	MINIMUM %
Mean	97.905
Minimum	88.5
Maximum	99.6
Data Count	60

Solids, suspended percent removal

	MINIMUM %
Mean	98.785
Minimum	93.2
Maximum	99.8
Data Count	60

100T

LC50 Static 48Hr Acute Mysid. Bahi

	MINIMUM %
Mean	96.77
Minimum	35.4
Maximum	100
Data Count	20

Noel Static 1Hr Fert. Chronic Arbaci

	MINIMUM %
Mean	94.705
Minimum	50
Maximum	100
Data Count	20

NEW SHOREHAM WPCF

DMR Data Summary 1/8/16

200A

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

	MO AVG lb/d	DAILY MX lb/d
Mean	1.0631	1.6681
Minimum		
Maximum	2.17	2.78
Data Count	32	32

	MO AVG mg/L	DAILY MX mg/L
Mean	4.48	5.9744
Minimum		
Maximum	6.11	10.4
Data Count	32	32

Chlorine, total residual Location= 1

	MO AVG ug/L	DAILY MX ug/L
Mean		
Minimum		
Maximum		
Data Count	32	32

Copper, total [as Cu] Location= 1

	MO AVG ug/L	DAILY MX ug/L
Mean	.5484	.5484
Minimum		
Maximum	17	17
Data Count	31	31

Flow, in conduit or thru treatment pl

	MO AVG MGD	DAILY MX MGD
Mean	.0263	.0519
Minimum		
Maximum	.046	.063
Data Count	32	32

Nitrogen, ammonia total [as N] Loc

	MO AVG mg/L	DAILY MX mg/L
Mean	.504	.7633
Minimum	.27	.36
Maximum	1.62	5
Data Count	30	30

Nitrogen, Kjeldahl, total [as N] Loca

	DAILY MX mg/L
Mean	1.206
Minimum	
Maximum	1.96
Data Count	30

NEW SHOREHAM WPCF

DMR Data Summary 1/8/16

Nitrogen, nitrate total [as N] Location

DAILY MX mg/L
Mean
Minimum
Maximum
Data Count 30

Nitrogen, nitrite total [as N] Location

DAILY MX mg/L
Mean .0119
Minimum
Maximum .2
Data Count 30

Nitrogen, total [as N] Location= 1

DAILY MX mg/L
Mean 1.218
Minimum
Maximum 1.96
Data Count 30

pH Location= 1

	MINIMUM SU	MAXIMUM SU
Mean	6.5766	6.8872
Minimum		
Maximum	6.95	7.3
Data Count	32	32

Solids, total suspended Location=

	MO AVG lb/d	DAILY MX lb/d
Mean	4.1691	6.6281
Minimum		
Maximum	9.21	13
Data Count	32	32

	MO AVG mg/L	DAILY MX mg/L
Mean	17.5875	26.3719
Minimum		
Maximum	26.2	44
Data Count	32	32

Turbidity Location= 1

	MO AVG NTU	DAILY MX NTU
Mean	54.6719	79.65
Minimum		
Maximum	72.7	128
Data Count	32	32

ATTACHMENT A-4

**Comparison of Allowable Limits with Discharge Monitoring Report Data
and Permit Application Data**

Facility Name: *New Shoreham WPCF*
RIPDES Permit #: *RI0100196*
Outfall #: *100A*

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L)		Antideg. Limits (ug/L) Monthly Ave	Permit Application Data (ug/L)		Ave. DMR Data (ug/L) 10/2010 - 9/2015		Potential Permit Limits (ug/L)	
		Based on WQ Criteria			Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave
		Daily Max	Monthly Ave							
PRIORITY POLLUTANTS										
TOXIC METALS AND CYANIDE										
ANTIMONY	7440360	No Criteria	12595.20	---	---	---	---	---	---	12595.2
ARSENIC (limits are total recoverable)	7440382	966.00	27.55	---	---	---	---	---	966	27.55
ASBESTOS	1332214	No Criteria	0.00	---	---	---	---	---	---	0
BERYLLIUM	7440417	No Criteria	0.00	---	---	---	---	---	---	0
CADMIUM (limits are total recoverable)	7440439	563.38	174.23	---	---	---	---	---	563.38	174.23
CHROMIUM III (limits are total recoverable)	16065831	No Criteria	0.00	---	---	---	---	---	---	0
CHROMIUM VI (limits are total recoverable)	18540299	15508.56	990.94	---	---	---	---	---	15508.56	990.94
COPPER (limits are total recoverable)	7440508	80.96	73.50	---	3200	487	8.25	5.6	80.96	73.5
CYANIDE	57125	14.00	14.00	---	---	---	---	---	14	14
LEAD (limits are total recoverable)	7439921	3091.48	167.62	---	---	---	---	---	3091.48	167.62
MERCURY (limits are total recoverable)	7439976	29.65	2.95	---	---	---	---	---	29.65	2.95
NICKEL (limits are total recoverable)	7440020	1046.46	163.01	---	---	---	---	---	1046.46	163.01
SELENIUM (limits are total recoverable)	7782492	4068.14	1400.08	---	---	---	---	---	4068.14	1400.08
SILVER (limits are total recoverable)	7440224	31.29	31.29	---	---	---	---	---	31.29	31.29
THALLIUM	7440280	No Criteria	9.25	---	---	---	---	---	---	9.25
ZINC (limits are total recoverable)	7440666	1331.92	1331.92	---	85	71	---	---	1331.92	1331.92
VOLATILE ORGANIC COMPOUNDS										
ACROLEIN	107028	No Criteria	5707.20	---	---	---	---	---	---	5707.2
ACRYLONITRILE	107131	No Criteria	49.20	---	---	---	---	---	---	49.2
BENZENE	71432	No Criteria	10036.80	---	---	---	---	---	---	10036.8
BROMOFORM	75252	No Criteria	27552.00	---	---	---	---	---	---	27552
CARBON TETRACHLORIDE	56235	No Criteria	314.88	---	---	---	---	---	---	314.88
CHLOROBENZENE	108907	No Criteria	31488.00	---	---	---	---	---	---	31488
CHLORODIBROMOMETHANE	124481	No Criteria	2558.40	---	---	---	---	---	---	2558.4
CHLOROFORM	67663	No Criteria	92496.00	---	0.6	0.55	---	---	---	92496
DICHLOROBROMOMETHANE	75274	No Criteria	3345.60	---	---	---	---	---	---	3345.6
1,2DICHLOROETHANE	107062	No Criteria	7281.60	---	---	---	---	---	---	7281.6
1,1DICHLOROETHYLENE	75354	No Criteria	139728.00	---	---	---	---	---	---	139728
1,2DICHLOROPROPANE	78875	No Criteria	2952.00	---	---	---	---	---	---	2952
1,3DICHLOROPROPYLENE	542756	No Criteria	413.28	---	---	---	---	---	---	413.28
ETHYLBENZENE	100414	No Criteria	41328.00	---	---	---	---	---	---	41328
BROMOMETHANE (methyl bromide)	74839	No Criteria	29520.00	---	---	---	---	---	---	29520

Facility Name: New Shoreham WPCF
RIPDES Permit #: RI0100196
Outfall #: 100A

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L)		Antideg. Limits (ug/L) Monthly Ave	Permit Application Data (ug/L)		Ave. DMR Data (ug/L)		Potential Permit Limits (ug/L)	
		Based on WQ Criteria			Max	Ave	10/2010 - 9/2015		Daily Max	Monthly Ave
		Daily Max	Monthly Ave				Daily Max	Monthly Ave		
CHLOROMETHANE (methyl chloride)	74873	No Criteria	0.00	---	---	---	---	---	---	0
METHYLENE CHLORIDE	75092	No Criteria	116112.00	---	0.9	0.9	---	---	---	116112
1,1,2,TETRACHLOROETHANE	79345	No Criteria	787.20	---	---	---	---	---	---	787.2
TETRACHLOROETHYLENE	127184	No Criteria	649.44	---	---	---	---	---	---	649.44
TOLUENE	108883	No Criteria	295200.00	---	---	---	---	---	---	295200
1,2TRANS-DICHLOROETHYLENE	156605	No Criteria	196800.00	---	---	---	---	---	---	196800
1,1,1,TRICHLOROETHANE	71556	No Criteria	0.00	---	---	---	---	---	---	0
1,1,2,TRICHLOROETHANE	79005	No Criteria	3148.80	---	---	---	---	---	---	3148.8
TRICHLOROETHYLENE	79016	No Criteria	5904.00	---	---	---	---	---	---	5904
VINYL CHLORIDE	75014	No Criteria	47.23	---	---	---	---	---	---	47.23
ACID ORGANIC COMPOUNDS										
2CHLOROPHENOL	95578	No Criteria	2952.00	---	---	---	---	---	---	2952
2,4DICHLOROPHENOL	120832	No Criteria	5707.20	---	---	---	---	---	---	5707.2
2,4DIMETHYLPHENOL	105679	No Criteria	16728.00	---	---	---	---	---	---	16728
4,6DINITRO-2-METHYL PHENOL	534521	No Criteria	5510.40	---	---	---	---	---	---	5510.4
2,4DINITROPHENOL	51285	No Criteria	104304.00	---	---	---	---	---	---	104304
4-NITROPHENOL	88755	No Criteria	0.00	---	---	---	---	---	---	0
PENTACHLOROPHENOL	87865	182.00	155.47	---	---	---	---	---	---	155.47
PHENOL	108952	No Criteria	33456000.00	---	---	---	---	---	---	33456000
2,4,6-TRICHLOROPHENOL	88062	No Criteria	472.32	---	---	---	---	---	---	472.32
BASE NEUTRAL COMPOUNDS										
ACENAPHTHENE	83329	No Criteria	19483.20	---	---	---	---	---	---	19483.2
ANTHRACENE	120127	No Criteria	787200.00	---	---	---	---	---	---	787200
BENZIDINE	92875	No Criteria	0.04	---	---	---	---	---	---	0.04
POLYCYCLIC AROMATIC HYDROCARBONS		No Criteria	3.54	---	---	---	---	---	---	3.54
BIS(2CHLOROETHYL)ETHER	111444	No Criteria	104.30	---	---	---	---	---	---	104.3
BIS(2CHLOROISOPROPYL)ETHER	108601	No Criteria	1279200.00	---	---	---	---	---	---	1279200
BIS(2ETHYLHEXYL)PHTHALATE	117817	No Criteria	432.96	---	---	---	---	---	---	432.96
BUTYL BENZYL PHTHALATE	85687	No Criteria	37392.00	---	---	---	---	---	---	37392
2CHLORONAPHTHALENE	91587	No Criteria	31488.00	---	---	---	---	---	---	31488
1,2DICHLOROBENZENE	95501	No Criteria	25584.00	---	---	---	---	---	---	25584
1,3DICHLOROBENZENE	541731	No Criteria	18892.80	---	---	---	---	---	---	18892.8
1,4DICHLOROBENZENE	106467	No Criteria	3739.20	---	---	---	---	---	---	3739.2
3,3DICHLOROBENZIDENE	91941	No Criteria	5.51	---	---	---	---	---	---	5.51

Facility Name: *New Shoreham WPCF*
RIPDES Permit #: *RI0100196*
Outfall #: *100A*

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L)		Antideg. Limits (ug/L) Monthly Ave	Permit Application Data (ug/L)		Ave. DMR Data (ug/L) 10/2010 - 9/2015		Potential Permit Limits (ug/L)	
		Based on WQ Criteria			Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave
		Daily Max	Monthly Ave							
DIETHYL PHTHALATE	84662	No Criteria	865920.00	---	---	---	---	---	---	865920
DIMETHYL PHTHALATE	131113	No Criteria	21648000.00	---	---	---	---	---	---	21648000
DInBUTYL PHTHALATE	84742	No Criteria	88560.00	---	---	---	---	---	---	88560
2,4DINITROTOLUENE	121142	No Criteria	669.12	---	---	---	---	---	---	669.12
1,2DIPHENYLHYDRAZINE	122667	No Criteria	39.36	---	---	---	---	---	---	39.36
FLUORANTHENE	206440	No Criteria	2755.20	---	---	---	---	---	---	2755.2
FLUORENE	86737	No Criteria	104304.00	---	---	---	---	---	---	104304
HEXACHLOROENZENE	118741	No Criteria	0.06	---	---	---	---	---	---	0.06
HEXACHLOROBUTADIENE	87683	No Criteria	3542.40	---	---	---	---	---	---	3542.4
HEXACHLOROCYCLOPENTADIENE	77474	No Criteria	21648.00	---	---	---	---	---	---	21648
HEXACHLOROETHANE	67721	No Criteria	649.44	---	---	---	---	---	---	649.44
ISOPHORONE	78591	No Criteria	188928.00	---	---	---	---	---	---	188928
NAPHTHALENE	91203	No Criteria	0.00	---	0.4	0.4	---	---	---	0
NITROBENZENE	98953	No Criteria	13579.20	---	---	---	---	---	---	13579.2
NNITROSODIMETHYLAMINE	62759	No Criteria	590.40	---	---	---	---	---	---	590.4
NNITROSODINPROPYLAMINE	621647	No Criteria	100.37	---	---	---	---	---	---	100.37
NNITROSODIPHENYLAMINE	86306	No Criteria	1180.80	---	---	---	---	---	---	1180.8
PYRENE	129000	No Criteria	78720.00	---	---	---	---	---	---	78720
1,2,4trichlorobenzene	120821	No Criteria	1377.60	---	---	---	---	---	---	1377.6
PESTICIDES/PCBs										
ALDRIN	309002	18.20	0.01	---	---	---	---	---	18.2	0.01
Alpha BHC	319846	No Criteria	0.96	---	---	---	---	---	---	0.96
Beta BHC	319857	No Criteria	3.35	---	---	---	---	---	---	3.35
Gamma BHC (Lindane)	58899	2.24	2.24	---	---	---	---	---	2.24	2.24
CHLORDANE	57749	1.26	0.08	---	---	---	---	---	1.26	0.08
4,4DDT	50293	1.82	0.02	---	---	---	---	---	1.82	0.02
4,4DDE	72559	No Criteria	0.04	---	---	---	---	---	---	0.04
4,4DDD	72548	No Criteria	0.06	---	---	---	---	---	---	0.06
DIELDRIN	60571	9.94	0.01	---	---	---	---	---	9.94	0.01
ENDOSULFAN (alpha)	959988	0.48	0.17	---	---	---	---	---	0.48	0.17
ENDOSULFAN (beta)	33213659	0.48	0.17	---	---	---	---	---	0.48	0.17
ENDOSULFAN (sulfate)	1031078	No Criteria	1751.52	---	---	---	---	---	---	1751.52
ENDRIN	72208	0.52	0.05	---	---	---	---	---	0.52	0.05
ENDRIN ALDEHYDE	7421934	No Criteria	5.90	---	---	---	---	---	---	5.9

Facility Name: *New Shoreham WPCF*
RIPDES Permit #: *RI0100196*
Outfall #: *100A*

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L)		Antideg. Limits (ug/L)	Permit Application Data (ug/L)		Ave. DMR Data (ug/L)		Potential Permit Limits (ug/L)		
		Based on WQ Criteria			Monthly Ave	Max	Ave	10/2010 - 9/2015		Daily Max	Monthly Ave
		Daily Max	Monthly Ave					Daily Max	Monthly Ave		
HEPTACHLOR	76448	0.74	0.02	---	---	---	---	---	0.74	0.02	
HEPTACHLOR EPOXIDE	1024573	0.74	0.01	---	---	---	---	---	0.74	0.01	
POLYCHLORINATED BIPHENYLS3	1336363	No Criteria	0.01	---	---	---	---	---	---	0.01	
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.0000010	---	---	---	---	---	---	0.000001	
TOXAPHENE	8001352	2.94	0.00	---	---	---	---	---	2.94	0	
TRIBUTYL TIN		5.88	0.15	---	---	---	---	---	5.88	0.15	
NON PRIORITY POLLUTANTS											
OTHER SUBSTANCES											
ALUMINUM (limits are total recoverable)	7429905	No Criteria	0.00	---	---	---	---	---	---	0	
AMMONIA (winter)	7664417	241668.00	50148.58	8300	---	---	---	---	241668	8300	
AMMONIA (summer)		84008.40	17794.66	8300	---	---	1047	482	84008.4	8300	
4BROMOPHENYL PHENYL ETHER	16887006	No Criteria	0.00	---	---	---	---	---	---	0	
CHLORIDE	7782505	No Criteria	0.00	---	---	---	---	---	---	0	
CHLORINE		227.50	184.50	---	---	---	28	8.9	227.5	184.5	
4CHLORO2METHYLPHENOL		No Criteria	0.00	---	---	---	---	---	---	0	
1CHLORONAPHTHALENE	106489	No Criteria	0.00	---	---	---	---	---	---	0	
4CHLOROPHENOL		No Criteria	0.00	---	---	---	---	---	---	0	
2,4DICHLORO6METHYLPHENOL		No Criteria	0.00	---	---	---	---	---	---	0	
1,1DICHLOROPROPANE	142289	No Criteria	0.00	---	---	---	---	---	---	0	
1,3DICHLOROPROPANE		No Criteria	0.00	---	---	---	---	---	---	0	
2,3DINITROTOLUENE		No Criteria	0.00	---	---	---	---	---	---	0	
2,4DINITRO6METHYL PHENOL	7439896	No Criteria	0.00	---	---	---	---	---	---	0	
IRON	608935	No Criteria	0.00	---	---	---	---	---	---	0	
pentachlorobenzene		No Criteria	0.00	---	---	---	---	---	---	0	
PENTACHLOROETHANE		No Criteria	0.00	---	---	---	---	---	---	0	
1,2,3,5tetrachlorobenzene	630206	No Criteria	0.00	---	---	---	---	---	---	0	
1,1,1,2TETRACHLOROETHANE	58902	No Criteria	0.00	---	---	---	---	---	---	0	
2,3,4,6TETRACHLOROPHENOL		No Criteria	0.00	---	---	---	---	---	---	0	
2,3,5,6TETRACHLOROPHENOL	95954	No Criteria	0.00	---	---	---	---	---	---	0	
2,4,5TRICHLOROPHENOL	88062	No Criteria	0.00	---	---	---	---	---	---	0	
2,4,6TRINITROPHENOL	1330207	No Criteria	0.00	---	---	---	---	---	---	0	
XYLENE		No Criteria	0.00	---	0.1	0.1	---	---	---	0	

Facility Name: *New Shoreham WPCF*

RIPDES Permit #: *RI0100196*

Outfall #: *200A*

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L)		Antideg. Limits (ug/L) Monthly Ave	Permit Application Data (ug/L)		Ave. DMR Data (ug/L) 10/2010 - 9/2015		Potential Permit Limits (ug/L)	
		Based on WQ Criteria			Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave
		Daily Max	Monthly Ave							
PRIORITY POLLUTANTS										
TOXIC METALS AND CYANIDE										
ANTIMONY	7440360	No Criteria	12595.20	---	---	---	---	---	---	12595.2
ARSENIC (limits are total recoverable)	7440382	966.00	27.55	---	8.3	6.3	---	---	966	27.55
ASBESTOS	1332214	No Criteria	0.00	---	---	---	---	---	---	0
BERYLLIUM	7440417	No Criteria	0.00	---	---	---	---	---	---	0
CADMIUM (limits are total recoverable)	7440439	563.38	174.23	---	---	---	---	---	563.38	174.23
CHROMIUM III (limits are total recoverable)	16065831	No Criteria	0.00	---	---	---	---	---	---	0
CHROMIUM VI (limits are total recoverable)	18540299	15508.56	990.94	---	---	---	---	---	15508.56	990.94
COPPER (limits are total recoverable)	7440508	80.96	73.50	---	---	---	0.55	0.55	80.96	73.5
CYANIDE	57125	14.00	14.00	---	---	---	---	---	14	14
LEAD (limits are total recoverable)	7439921	3091.48	167.62	---	---	---	---	---	3091.48	167.62
MERCURY (limits are total recoverable)	7439976	29.65	2.95	---	---	---	---	---	29.65	2.95
NICKEL (limits are total recoverable)	7440020	1046.46	163.01	---	---	---	---	---	1046.46	163.01
SELENIUM (limits are total recoverable)	7782492	4068.14	1400.08	---	---	---	---	---	4068.14	1400.08
SILVER (limits are total recoverable)	7440224	31.29	31.29	---	---	---	---	---	31.29	31.29
THALLIUM	7440280	No Criteria	9.25	---	---	---	---	---	---	9.25
ZINC (limits are total recoverable)	7440666	1331.92	1331.92	---	---	---	---	---	1331.92	1331.92
VOLATILE ORGANIC COMPOUNDS										
ACROLEIN	107028	No Criteria	5707.20	---	---	---	---	---	---	5707.2
ACRYLONITRILE	107131	No Criteria	49.20	---	---	---	---	---	---	49.2
BENZENE	71432	No Criteria	10036.80	---	---	---	---	---	---	10036.8
BROMOFORM	75252	No Criteria	27552.00	---	---	---	---	---	---	27552
CARBON TETRACHLORIDE	56235	No Criteria	314.88	---	---	---	---	---	---	314.88
CHLOROBENZENE	108907	No Criteria	31488.00	---	---	---	---	---	---	31488
CHLORODIBROMOMETHANE	124481	No Criteria	2558.40	---	---	---	---	---	---	2558.4
CHLOROFORM	67663	No Criteria	92496.00	---	---	---	---	---	---	92496
DICHLOROBROMOMETHANE	75274	No Criteria	3345.60	---	---	---	---	---	---	3345.6
1,2DICHLOROETHANE	107062	No Criteria	7281.60	---	---	---	---	---	---	7281.6
1,1DICHLOROETHYLENE	75354	No Criteria	139728.00	---	---	---	---	---	---	139728
1,2DICHLOROPROPANE	78875	No Criteria	2952.00	---	---	---	---	---	---	2952
1,3DICHLOROPROPYLENE	542756	No Criteria	413.28	---	---	---	---	---	---	413.28
ETHYLBENZENE	100414	No Criteria	41328.00	---	---	---	---	---	---	41328
BROMOMETHANE (methyl bromide)	74839	No Criteria	29520.00	---	---	---	---	---	---	29520

Facility Name: *New Shoreham WPCF*

RIPDES Permit #: *RI0100196*

Outfall #: *200A*

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L)		Antideg. Limits (ug/L) Monthly Ave	Permit Application Data (ug/L)		Ave. DMR Data (ug/L) 10/2010 - 9/2015		Potential Permit Limits (ug/L)	
		Based on WQ Criteria			Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave
		Daily Max	Monthly Ave							
CHLOROMETHANE (methyl chloride)	74873	No Criteria	0.00	---	---	---	---	---	---	0
METHYLENE CHLORIDE	75092	No Criteria	116112.00	---	---	---	---	---	---	116112
1,1,2,2TETRACHLOROETHANE	79345	No Criteria	787.20	---	---	---	---	---	---	787.2
TETRACHLOROETHYLENE	127184	No Criteria	649.44	---	---	---	---	---	---	649.44
TOLUENE	108883	No Criteria	295200.00	---	---	---	---	---	---	295200
1,2TRANS-DICHLOROETHYLENE	156605	No Criteria	196800.00	---	---	---	---	---	---	196800
1,1,1TRICHLOROETHANE	71556	No Criteria	0.00	---	---	---	---	---	---	0
1,1,2TRICHLOROETHANE	79005	No Criteria	3148.80	---	---	---	---	---	---	3148.8
TRICHLOROETHYLENE	79016	No Criteria	5904.00	---	---	---	---	---	---	5904
VINYL CHLORIDE	75014	No Criteria	47.23	---	---	---	---	---	---	47.23
ACID ORGANIC COMPOUNDS										
2CHLOROPHENOL	95578	No Criteria	2952.00	---	---	---	---	---	---	2952
2,4DICHLOROPHENOL	120832	No Criteria	5707.20	---	---	---	---	---	---	5707.2
2,4DIMETHYLPHENOL	105679	No Criteria	16728.00	---	---	---	---	---	---	16728
4,6DINITRO2METHYL PHENOL	534521	No Criteria	5510.40	---	---	---	---	---	---	5510.4
2,4DINITROPHENOL	51285	No Criteria	104304.00	---	---	---	---	---	---	104304
4NITROPHENOL	88755	No Criteria	0.00	---	---	---	---	---	---	0
PENTACHLOROPHENOL	87865	182.00	155.47	---	---	---	---	---	---	155.47
PHENOL	108952	No Criteria	33456000.00	---	---	---	---	---	---	33456000
2,4,6TRICHLOROPHENOL	88062	No Criteria	472.32	---	---	---	---	---	---	472.32
BASE NEUTRAL COMPOUNDS										
ACENAPHTHENE	83329	No Criteria	19483.20	---	---	---	---	---	---	19483.2
ANTHRACENE	120127	No Criteria	787200.00	---	---	---	---	---	---	787200
BENZIDINE	92875	No Criteria	0.04	---	---	---	---	---	---	0.04
POLYCYCLIC AROMATIC HYDROCARBONS		No Criteria	3.54	---	---	---	---	---	---	3.54
BIS(2CHLOROETHYL)ETHER	111444	No Criteria	104.30	---	---	---	---	---	---	104.3
BIS(2CHLOROISOPROPYL)ETHER	108601	No Criteria	1279200.00	---	---	---	---	---	---	1279200
BIS(2ETHYLHEXYL)PHTHALATE	117817	No Criteria	432.96	---	---	---	---	---	---	432.96
BUTYL BENZYL PHTHALATE	85687	No Criteria	37392.00	---	---	---	---	---	---	37392
2CHLORONAPHTHALENE	91587	No Criteria	31488.00	---	---	---	---	---	---	31488
1,2DICHLOROBENZENE	95501	No Criteria	25584.00	---	---	---	---	---	---	25584
1,3DICHLOROBENZENE	541731	No Criteria	18892.80	---	---	---	---	---	---	18892.8
1,4DICHLOROBENZENE	106467	No Criteria	3739.20	---	---	---	---	---	---	3739.2
3,3DICHLOROBENZIDENE	91941	No Criteria	5.51	---	---	---	---	---	---	5.51

Facility Name: New Shoreham WPCF
RIPDES Permit #: RI0100196

Outfall #: 200A

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L)		Antideg. Limits (ug/L) Monthly Ave	Permit Application Data (ug/L)		Ave. DMR Data (ug/L) 10/2010 - 9/2015		Potential Permit Limits (ug/L)	
		Based on WQ Criteria			Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave
		Daily Max	Monthly Ave							
DIETHYL PHTHALATE	84662	No Criteria	865920.00	---	---	---	---	---	---	865920
DIMETHYL PHTHALATE	131113	No Criteria	21648000.00	---	---	---	---	---	---	21648000
DInBUTYL PHTHALATE	84742	No Criteria	88560.00	---	---	---	---	---	---	88560
2,4DINITROTOLUENE	121142	No Criteria	669.12	---	---	---	---	---	---	669.12
1,2DIPHENYLHYDRAZINE	122667	No Criteria	39.36	---	---	---	---	---	---	39.36
FLUORANTHENE	206440	No Criteria	2755.20	---	---	---	---	---	---	2755.2
FLUORENE	86737	No Criteria	104304.00	---	---	---	---	---	---	104304
HEXACHLORO BENZENE	118741	No Criteria	0.06	---	---	---	---	---	---	0.06
HEXACHLOROBUTADIENE	87683	No Criteria	3542.40	---	---	---	---	---	---	3542.4
HEXACHLOROCYCLOPENTADIENE	77474	No Criteria	21648.00	---	---	---	---	---	---	21648
HEXACHLOROETHANE	67721	No Criteria	649.44	---	---	---	---	---	---	649.44
ISOPHORONE	78591	No Criteria	188928.00	---	---	---	---	---	---	188928
NAPHTHALENE	91203	No Criteria	0.00	---	---	---	---	---	---	0
NITROBENZENE	98953	No Criteria	13579.20	---	---	---	---	---	---	13579.2
NNITROSODIMETHYLAMINE	62759	No Criteria	590.40	---	---	---	---	---	---	590.4
NNITROSODINPROPYLAMINE	621647	No Criteria	100.37	---	---	---	---	---	---	100.37
NNITROSODIPHENYLAMINE	86306	No Criteria	1180.80	---	---	---	---	---	---	1180.8
PYRENE	129000	No Criteria	78720.00	---	---	---	---	---	---	78720
1,2,4trichlorobenzene	120821	No Criteria	1377.60	---	---	---	---	---	---	1377.6
PESTICIDES/PCBs										
ALDRIN	309002	18.20	0.01	---	---	---	---	---	18.2	0.01
Alpha BHC	319846	No Criteria	0.96	---	---	---	---	---	---	0.96
Beta BHC	319857	No Criteria	3.35	---	---	---	---	---	---	3.35
Gamma BHC (Lindane)	58899	2.24	2.24	---	---	---	---	2.24	2.24	2.24
CHLORDANE	57749	1.26	0.08	---	---	---	---	1.26	0.08	0.08
4,4DDT	50293	1.82	0.02	---	---	---	---	1.82	0.02	0.02
4,4DDE	72559	No Criteria	0.04	---	---	---	---	---	---	0.04
4,4DDD	72548	No Criteria	0.06	---	---	---	---	---	---	0.06
DIELDRIN	60571	9.94	0.01	---	---	---	---	9.94	0.01	0.01
ENDOSULFAN (alpha)	959988	0.48	0.17	---	---	---	---	0.48	0.17	0.17
ENDOSULFAN (beta)	33213659	0.48	0.17	---	---	---	---	0.48	0.17	0.17
ENDOSULFAN (sulfate)	1031078	No Criteria	1751.52	---	---	---	---	---	---	1751.52
ENDRIN	72208	0.52	0.05	---	---	---	---	0.52	0.05	0.05
ENDRIN ALDEHYDE	7421934	No Criteria	5.90	---	---	---	---	---	---	5.9

Facility Name: New Shoreham WPCF
RIPDES Permit #: RI0100196

Outfall #: 200A

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L) Based on WQ Criteria		Antideg. Limits (ug/L) Monthly Ave	Permit Application Data (ug/L)		Ave. DMR Data (ug/L) 10/2010 - 9/2015		Potential Permit Limits (ug/L)	
		Daily Max	Monthly Ave		Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave
HEPTACHLOR	76448	0.74	0.02	---	---	---	---	---	0.74	0.02
HEPTACHLOR EPOXIDE	1024573	0.74	0.01	---	---	---	---	---	0.74	0.01
POLYCHLORINATED BIPHENYLS3	1336363	No Criteria	0.01	---	---	---	---	---	---	0.01
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.0000010	---	---	---	---	---	---	0.000001
TOXAPHENE	8001352	2.94	0.00	---	---	---	---	---	2.94	0
TRIBUTYL TIN		5.88	0.15	---	---	---	---	---	5.88	0.15
NON PRIORITY POLLUTANTS										
OTHER SUBSTANCES										
ALUMINUM (limits are total recoverable)	7429905	No Criteria	0.00	---	---	---	---	---	---	0
AMMONIA (winter)	7664417	241668.00	50148.58	8300	---	---	---	---	241668	8300
AMMONIA (summer)		84008.40	17794.66	8300	---	---	7633	5040	84008.4	8300
4BROMOPHENYL PHENYL ETHER	16887006	No Criteria	0.00	---	---	---	---	---	---	0
CHLORIDE	7782505	No Criteria	0.00	---	---	---	---	---	---	0
CHLORINE		227.50	184.50	---	---	---	0	0	227.5	184.5
4CHLORO2METHYLPHENOL		No Criteria	0.00	---	---	---	---	---	---	0
1CHLORONAPHTHALENE	106489	No Criteria	0.00	---	---	---	---	---	---	0
4CHLOROPHENOL		No Criteria	0.00	---	---	---	---	---	---	0
2,4DICHLORO6METHYLPHENOL		No Criteria	0.00	---	---	---	---	---	---	0
1,1DICHLOROPROPANE	142289	No Criteria	0.00	---	---	---	---	---	---	0
1,3DICHLOROPROPANE		No Criteria	0.00	---	---	---	---	---	---	0
2,3DINITROTOLUENE		No Criteria	0.00	---	---	---	---	---	---	0
2,4DINITRO6METHYL PHENOL	7439896	No Criteria	0.00	---	---	---	---	---	---	0
IRON	608935	No Criteria	0.00	---	---	---	---	---	---	0
pentachlorobenzene		No Criteria	0.00	---	---	---	---	---	---	0
PENTACHLOROETHANE		No Criteria	0.00	---	---	---	---	---	---	0
1,2,3,5tetrachlorobenzene	630206	No Criteria	0.00	---	---	---	---	---	---	0
1,1,1,2TETRACHLOROETHANE	58902	No Criteria	0.00	---	---	---	---	---	---	0
2,3,4,6TETRACHLOROPHENOL		No Criteria	0.00	---	---	---	---	---	---	0
2,3,5,6TETRACHLOROPHENOL	95954	No Criteria	0.00	---	---	---	---	---	---	0
2,4,5TRICHLOROPHENOL	88062	No Criteria	0.00	---	---	---	---	---	---	0
2,4,6TRINITROPHENOL	1330207	No Criteria	0.00	---	---	---	---	---	---	0
XYLENE		No Criteria	0.00	---	---	---	---	---	---	0

PART II
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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) 222-3961, (401) 222-6519 or (401) 222-2284 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