RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767 TDD 401-222-4462

August 28, 2013

CERTIFIED MAIL

Mr. Thomas Gordon, Town Manager
Town of Warren
514 Main Street
Warren, RI 02885-4369

RE: Final Permit Modification for the Warren WWTF; RIPDES No. RI0100056

Dear Mr. Gordon:

Enclosed is your final Rhode Island Pollutant Discharge Elimination System (RIPDES) Permit modification issued pursuant to the Town of Warren's (the Town's) Design Flow Report that was submitted to the Rhode Island Department of Environmental Management (DEM) on January 17, 2013. No significant comments were received on the draft permit modification, therefore, a response to comments was not prepared. 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.

Paragraph 10(C) of Consent agreement RIA-410, which was entered into between the Town and the DEM on September 29, 2011, requires the Town to submit a draft Wastewater Facilities Plan Amendment to the DEM within three (3) months of the DEM's issuance of the enclosed permit modification. Therefore, based on the date of this letter, **the Town shall submit a draft Wastewater Facilities Plan Amendment to the DEM by November 28, 2013.** The draft Wastewater Facilities Plan Amendment must include a recommendation of alternative(s) to attain compliance with the final permit limits contained in the attached permit modification and a proposed schedule to submit an Order of Approval application to the DEM. The schedule to submit the Order of Approval application shall assume two (2) months for DEM review of the draft Facilities Plan Amendment and three (3) months for the Town to conduct a public hearing, prepare a response to comments, and submit the final Wastewater Facilities Plan Amendment to DEM. Upon DEM approval of the Facilities Plan Amendment the Town shall submit an Order of Approval application for the selected treatment alternative(s) to the DEM in accordance with the approved schedule.

The DEM appreciates the Town's cooperation throughout the development of this permit modification. If the Town has any questions or would like to discuss any of the conditions contained in this letter, I may be contacted at 401-222-4700, extension 7715.

Sincerely,

Joseph B. Haberek, P.E.
Principal Sanitary Engineer

cc: Eric Beck, DEM (electronic)
Art Zeman, DEM (electronic)
Angelo Liberti, DEM (electronic)
Jonathan Himlan, Woodard and Curran (electronic)

MODIFICATION

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, RIPDES Permit No. RI0100056 issued to the Town of Warren for the Warren Wastewater Treatment Facility located at 427 Water Street in Warren, Rhode Island on September 30, 2010, shall be modified as follows:

The Flow, BOD, and TSS limits in Part I.A.1 of the permit shall be deleted and replaced with the limits in Part I.A.1 found in *Attachment 1* of this modification.

The Total Residual Chlorine (TRC) limits in Part I.A.2 of the permit shall be deleted and replaced with the limits in Part I.A.2 found in *Attachment 2* of this modification.

The Total Nitrogen limits in Part I.A.3 of the permit shall be deleted and replaced with the limits in Part I.A.3 found in *Attachment 3* of this modification.

The Total Copper and Cyanide limits in Part I.A.4 of the permit shall be deleted and replaced with the limits in Part I.A.4 found in *Attachment 4* of this modification.

The remaining effluent limitations, monitoring requirements and other conditions in the original permit are unchanged and in effect.

This modification shall become effective on September 1, 2013.

This permit and the authorization to discharge expire at midnight, November 30, 2015.

This change modifies the permit issued on September 30, 2010.

This modification consists of five (5) pages.

Signed this 28th day of August 2013.

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

PART I

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

1. During the period beginning on the effective date of this permit and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001 (Final Discharge from the WWTF After All Treatment Processes).

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

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs./day		Concentration - specify units				
	Average Monthly	Maximum Daily	Average Monthly *(Minimum)	Average Weekly *(Average)	Maximum Daily *(Maximum)	Measurement Frequency	Sample Type
Flow							
(Nov. 1 – April 30)	3.43 MGD	--- MGD				Continuous	Recorder
(May 1 – Oct. 31)	2.53 MGD	--- MGD				Continuous	Recorder
BOD_5							
(Nov. 1 – April 30)	502	838	17.6 mg/l	26.4 mg/l	29.3 mg/l	3/Week	24-Hr. Comp.
(May 1 – Oct. 31)	502	838	23.8 mg/l	35.8 mg/l	39.7 mg/l	3/Week	24-Hr. Comp.
BOD_5 - % Removal			85%			1/Month	Calculated
TSS							
(Nov. 1 – April 30)	502	838	17.6 mg/l	26.4 mg/l	29.3 mg/l	3/Week	24-Hr. Comp.
(May 1 – Oct. 31)	502	838	23.8 mg/l	35.8 mg/l	39.7 mg/l	3/Week	24-Hr. Comp.
TSS - % Removal			85%			1/Month	Calculated
Settleable Solids				--- ml/l	--- ml/l	1/Day	Grab

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

Sampling for TSS and BOD_5 shall be performed Tuesday, Thursday, and either Saturday or Sunday. All BOD_5 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.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Outfall 001A (Final Discharge from the WWTF After All Treatment Processes).

PART I

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

2. During the period beginning on the effective date of this permit and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001 (Final Discharge from the WWTF After All Treatment Processes).
   Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs./day		Concentration - specify units				
	Average Monthly	Maximum Daily	Average Monthly *(Minimum)	Average Weekly *(Average)	Maximum Daily *(Maximum)	Measurement Frequency	Sample Type
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)							
(Nov. 1 – April 30)			267 ug/l [2]		267 ug/l [2]	Daily	Grab[2]
(May 1 – Oct. 31)			361 ug/l [2]		361 ug/l [2]	Daily	Grab[2]
pH			(6.5 SU)		(8.5 SU)	2/Day	Grab

[1]Two (2) of the three (3) Enterococci samples are to be taken on Tuesday and Thursday. All three (3) of the Enterococci samples shall be taken at the same time of day as the second TRC sample. The Fecal Coliform sample shall be taken at the same time as either the Tuesday or Thursday Enterococci sample. The Geometric Mean shall be used to obtain the "monthly average."

[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 the permit limitations shall be determined by taking three grab samples of the final effluent (after dechlorination) Monday - Friday (except holidays), equally spaced over one (1) eight (8) hour working shift with a minimum of three hours between grabs, and on Saturdays, Sundays, and Holidays by taking at least two (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-Cl G; (2) DPD Titrimetric, EPA No. 330.4 or Standard Methods (18th Edition) No. 4500-Cl F; (3) Amperometric Titration, EPA No. 330.1 or Standard Methods (18th Edition) No. 4500-Cl D or ASTM No. D1253-86(92).

*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.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Outfall 001A (Final Discharge from the WWTF After All Treatment Processes).

PART I

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

3. During the period beginning on the effective date of this permit and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001 (Final Discharge from the WWTF After All Treatment Processes).

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

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs. per day		Concentration - specify units				
	Seasonal Average	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Oil and Grease					--- mg/l	1/Month	3 Grabs[1]
Nitrate, Total (as N)							
(Nov. 1 – April 30)			--- mg/l		--- mg/l	1/Week	24-Hr. Comp.
(May 1 – Oct. 31)			--- mg/l		--- mg/l	1/Week	24-Hr. Comp.
Nitrite, Total (as N)							
(Nov. 1 – April 30)			--- mg/l		--- mg/l	1/Week	24-Hr. Comp.
(May 1 – Oct. 31)			--- mg/l		--- mg/l	1/Week	24-Hr. Comp.
Total Kjeldahl Nitrogen - TKN (as N)							
(Nov. 1 – April 30)			--- mg/l		--- mg/l	1/Week	24-Hr. Comp.
(May 1 – Oct. 31)			--- mg/l		--- mg/l	1/Week	24-Hr. Comp.
Nitrogen, Total (TKN + Nitrate + Nitrite, as N)							
(Nov. 1 – April 30)	239.7 lbs/d[2]		9.5 mg/l[2]		--- mg/l	1/Week	Calculated
(May 1 – Oct. 31)	83.8 lbs/d[2]		5.0 mg/l[2]		--- mg/l	1/Week	Calculated

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

[2]TheTotal Nitrogen quantity limit (lbs/d) is a rolling seasonal average limit. For example, the May value shall be determined by averaging the Total Nitrogen loads from May with the loads from June – October of the previous year and report this value on the May DMR. For each subsequent month that the seasonal limit is in effect, the seasonal average shall be calculated using samples from that month and the previous five (5) months that the seasonal limit is in effect. Th Total Nitrogen concentration limit (mg/l) is a monthly average limit.

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

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday through Friday at the following location: Outfall 001A (Final Discharge from the WWTF After All Treatment Processes).

PART I

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

4. During the period beginning on the effective date of this permit and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001 (Final Discharge from the WWTF After All Treatment Processes).

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

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs. per day		Concentration - specify units				
	Average Monthly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Copper, Total							
(Nov. 1 – April 30)			29.3 ug/l		94.9 ug/l	1/Month	24-Hr. Comp.
(May 1 – Oct. 31)			39.7 ug/l		128.7 ug/l	1/Month	24-Hr. Comp.
Cyanide							
(Nov. 1 – April 30)			16.4 ug/l		16.4 ug/l	1/Quarter	Composite[1]
(May 1 – Oct. 31)			22.2 ug/l		22.2 ug/l	1/Quarter	Composite[1]
Cadmium, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Chromium, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Lead, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Zinc, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Nickel, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Aluminum, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.

[1] Three (3) grab samples shall be equally spaced over one (1) eight (8) hour shift, with a minimum of three (3) hours between grabs. 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 001A (Final Discharge from the WWTF After All Treatment Processes).

Fact Sheet

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

RIPDES PERMIT NO. **RI0100056**

NAME AND ADDRESS OF APPLICANT:

Town of Warren
514 Main Street
Warren, RI 02885

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Warren Wastewater Treatment Facility
427 Water Street
Warren, RI 02885

RECEIVING WATER: **Warren River**

CLASSIFICATION: **SB1**

I. Proposed Action

Effluent limits for Flow, BOD, and TSS from Part I.A.1 of the permit; Total Residual Chlorine (TRC) from Part I.A.2 of the permit; Total Nitrogen from Part I.A.3 of the permit; and Total Copper and Cyanide from Part I.A.4 of the permit are being modified from the limits that were in the original RIPDES permit issued on September 30, 2010.

II. Permit Limitations and Conditions

Effluent limits for Flow in Part I.A.1 of the permit are being changed from an annual limit of 2.01 Million Gallons/Day (MGD) to seasonal limits of 3.43 MGD for November 1 – April 30 and 2.53 MGD for May 1 – October 31. Based on these increased seasonal Flow limits the BOD and TSS concentration limits from Part I.A.1 of the permit, the TRC concentration limits from Part I.A.2 of the permit, and the Total Copper and Cyanide concentration limits from Part I.A.4 of the permit have been decreased to ensure that there is not an increased mass load to the receiving water. In addition, the Total Nitrogen load limits from Part I.A.3 of the permit have been changed from monthly average limits to seasonal average limits and the Total Nitrogen concentration limit for November 1 – April 30 from Part I.A.3 of the permit has been changed to be consistent with the limits included in paragraph 10.B of consent agreement RIA-410.

III. Permit Basis and Explanation of Effluent Limitation Derivation

The Town of Warren owns and operates the Wastewater Treatment Facility (WWTF) located at 427 Water Street in Warren, Rhode Island. The discharge to the Warren River consists of treated sanitary and industrial sewage contributed by the Town. Treatment consists of Coarse Screening, Grit Removal, Comminution, Primary Settling, Aeration, Secondary Flocculation and Clarification, Chlorination, and Dechlorination.

Outfall 001A discharges to the Warren River in the segment defined as waterbody ID number RI0007023E-01A. This segment is described as the Warren River from the confluence with the Barrington and Palmer Rivers, approximately 2500 feet south of the East Bay Bike Path trestles, south to a line between the concrete jetty at the north end of the Warren Town Beach through Nun Buoy 18 and its extension to the Barrington Shore. This segment is located in Barrington and Warren and is classified as a Class SB1 water body according to the RI Water Quality Regulations. Class 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. However, water from this segment flows into the Palmer River (waterbody ID number RI0007022E-01A), which is listed as not supporting Fish and Wildlife habitat due to the fact that it is impaired by Total Nitrogen and Dissolved Oxygen (DO) and not supporting primary and secondary contact recreation and shellfish consumption due to Fecal Coliform impairments.

The Town has an Industrial Pretreatment Program that was approved by the Department of Environmental Management (DEM) on September 10, 1998. Based on the Town's most recent Pretreatment Annual Report the Town receives industrial wastewater from two (2) Significant Industrial Users. The permit includes specific pretreatment requirements that are consistent with the requirements from 40 CFR 403. These requirements are not being changed.

The requirements set forth in this permit modification are from the State's Water Quality Regulations and the State's Regulations for the Rhode Island Pollutant Discharge Elimination System, both filed pursuant to Chapter 46-12, as amended. DEM's primary authority over the permit comes from EPA's delegation of the program in September 1984 under the Federal Clean Water Act (CWA).

On September 30, 2010 the DEM issued a final permit to the Town which included limits for Flow and Total Nitrogen that the Town could not consistently comply with. By letter dated October 25, 2010 the Town requested an administrative hearing and moved to stay certain conditions of the Permit. In lieu of convening an administrative hearing regarding the disputed permit conditions and in order to effect a resolution of all disputed permit conditions, the parties entered into a consent agreement on September 29, 2011. This consent agreement contained a schedule for the Town to

submit a Draft Design Flow Report that includes a determination of a revised design flow based on the results of the Town's Inflow and Infiltration (I/I) removal work and a future sewering needs evaluation. Upon DEM approval of the Final Design Flow Report, the consent agreement required the DEM to modify the Permit as necessary in response to the revised design flow(s).

On December 22, 2011 the Town submitted a Draft Design Flow Report to the DEM. The DEM reviewed this Draft Design Flow Report and issued comments to the Town in a September 11, 2012 letter. The Town submitted a revised Draft Design Flow Report to the DEM on January 17, 2013. The DEM has reviewed the revised Draft Design Flow Report and has prepared the attached permit modification in response to the revised design flows recommended in the Draft Design Flow Report. Within three (3) months of the DEM's issuance of the final permit modification, the consent agreement requires that the Town submit a draft Wastewater Facilities Plan Amendment that will include the revised design flows and a recommendation of alternative(s) to attain compliance with the final permit limits contained in the permit modification. Upon approval of the Facilities Plan Amendment the Town shall submit an Order of Approval application for the selected treatment alternative(s) and, upon receipt of an Order of Approval for the selected treatment alternative(s), the Town shall then complete construction and initiate operation of the required equipment in accordance with the approved schedule.

Total Flow Limits:

The Warren wastewater collection system consists of approximately 40 miles of sewers, 10 pump stations and a WWTF. The original design flow for the WWTF was a maximum monthly average flow of 2.01 MGD. The Town's collection system is subject to infiltration and inflow (I/I), particularly during wet weather. As a result, the monthly average flow limit is exceeded for several months of the year during wet weather. Although the flow limit is exceeded, other RIPDES discharge limits are not typically exceeded. Over the past 15 years, the Town has undertaken multiple I/I studies and removal efforts as follows:

- Phase I Sewer System Evaluation Survey (SSES): The Phase I SSES was completed in July 1996 and recommended further investigation in two sub-areas which were found to contribute 80 percent of the measured inflow. In addition, 21 inflow sources were identified through smoke testing.
- Phase II SSES: The Phase II SSES was complete in March 1998 and included additional smoke testing and building inspections. Results of the Phase II SSES included the identification of an additional 78 inflow sources and 204 suspect inflow sources.
- Contract 1 Sewer Rehabilitation Project: On July 25, 2002, the Town opened bids for Contract 1which included the removal and replacement of approximately 6,700 linear feet of vitrified clay gravity sewer and brick manholes in the Belchers Cove area.
- Contract 2 Sewer Rehabilitation Project: On August 6, 2003, the Town bid Contract 2, which included trenchless rehabilitation work on approximately 7,400 linear feet of sewer and the rehabilitation of 29 manholes.

- Contract 3 Sewer Rehabilitation Project: On June 8, 2006, Contract 3 was bid, which included trenchless rehabilitation work and dig and replace work for approximately 10,000 linear feet of sewer and the rehabilitation of 60 manholes.
- 2007 Inflow Source Investigation: The 2007 investigation was performed as follow-up to the Phase II SSES and included dye testing of roof leaders that were identified as suspect, inspection of buildings to confirm sources had been removed, and inspection of buildings that had not been previously inspected. The 2007 Inflow Source Investigation confirmed 48 sources (identified during the Phase II SSES) were removed, 8 new sources were identified and 117 suspect sources were removed from further consideration.
- 2008 Inflow Metering Report: This report evaluated flow data from collection system monitoring in 2004 and 2008, and WWTF flow data to estimate sewer capacity and measure the effects of I/I reduction efforts.
- 2009 Inflow Investigation Update Report: This report provided an update on inflow work that was performed as follow-up on the recommendations of the 2007 Inflow Source Investigation Report which included dye testing of suspect properties and the investigation and dye testing of 9 large roof buildings.
- Inspection of the 12 Town-owned buildings and 50 "large" buildings with roof areas greater than 10,000 square feet to confirm that they are not inflow sources.

The Town' Draft Design Flow Report reviewed historic flow data, evaluated the future sewering needs for the WWTF's service area, and recommended seasonal flow limits of 2.53 MGD May 1 – October 31 and 3.43 MGD November 1 – April 30. Since the Town has completed the above-mentioned I/I projects and still has regular exceedances of its flow limit, without exceedances of other permit limits, the DEM has determined that it is appropriate to modify the WWTF's flow limit. Therefore, the DEM has reviewed the Town's recommended seasonal flows and has determined that they are the appropriate flows to be included in the WWTF's RIPDES permit. As a result, the permit is being modified to include a monthly average flow limit of 2.53 MGD for the period from May 1 through October 31 and a monthly average flow limit of 3.43 MGD for the period from November 1 through April 30.

Total Nitrogen Limits:

As indicated above, the Palmer River is impaired for nutrients (e.g., Total Nitrogen) and hypoxia (e.g., Dissolved Oxygen). The WWTF and Blount Seafood, both have RIPDES permits authorizing them to discharge into the Warren River. However, it has been determined that the effluent from these facilities enter the Palmer River. Therefore, the discharge from these facilities is pertinent to the Palmer River. In order to address the Palmer River's impairments, DEM sampled the Palmer River as part of an assessment of the Palmer River. During the assessment, it was found that oxygen levels rise after sunrise. This is caused by plant respiration during daylight hours causing elevated oxygen levels and is indicative of eutrophication, which is also evidenced

by the excessive growth of green macroalgae and high chlorophyll a levels in the water column. The excessive growth of macroalgae and the high dissolved oxygen concentrations during daylight hours demonstrates that the Palmer River is eutrophic from excessive amounts of nitrogen entering the system. Therefore, to address the Palmer River's impairments, it is necessary that the amount of nitrogen discharged to the River be controlled. To address the Palmer River's impairments, the DEM had to determine the allowable nitrogen load that could be assimilated without causing eutrophic conditions.

The Buzzards Bay Program (BBP) in Massachusetts developed empirical relationships between nitrogen loadings and eutrophication response from observations made in a number of estuaries. The BBP approach uses land use information to estimate nitrogen loads and is considered by DEM to offer a number of advantages for use in Rhode Island based on physical and biological similarities that make the use of the loading - estuarine response relationships for Buzzards Bay appropriate in the Palmer River. The BBP developed an Eutrophication Index (EI) to assist in determining the level of nutrient enrichment a waterbody is experiencing at any given time. The EI uses a scale of 0 to 100 points where 0 equals the most eutrophic and 100 is equivalent to a pristine waterbody. The BBP estimated that an appropriate EI value for Outstanding Natural Resource Waters (ONRW) is 65. Since the Palmer River is designated as a Special Resource Protection Water, whose designated uses are essentially equivalent to those of ONRWs, it should have an EI of 65 or better. Two sampling stations were established in the Palmer River and the results indicate that the Palmer River is eutrophic with an EI score of 32. This supports the need to reduce nitrogen discharges to the Palmer River.

A relationship between the nitrogen loading rate and EI from the BBP was developed that is a function of the loading rate per unit estuary volume. Acceptable loading rates for ONRWs are 50 mg m^{-3} Vr^{-1}. The calculation for allowable annual load is:

$$\text{Annual Load (in kg yr}^{-1}) = \frac{\text{Loading rate x volume at half tide (in m}^3) \times (1+\tau_w^{1/2})}{\tau_w * 1{,}000{,}000}$$

Where τ_w is the hydraulic turnover time in years and the Vollenweider flushing term is $\tau_w/(1+\tau_w^{1/2})$.

For the Palmer River, with a flushing time of 17.88 hours, a mean volume of 3.13×10^6 m^3, and an allowable loading rate of 50 mg m^{-3} Vr^{-1}, the corresponding nitrogen assimilative capacity of the Palmer River is 80,011 kg/yr. Using the annual allowable Total Nitrogen load for the Palmer River, the allowable seasonal Total Nitrogen loads for the Warren WWTF were established in the DEM's document titled *Evaluation of Nitrogen Targets and Load Reductions for the Palmer River* as being 6,309 Kg May – October and 19,664 Kg November – April. These allowable seasonal nitrogen loads were converted into monthly average load limits of 83.8 lbs/day May 1 – October 31 and 239.7 lbs/day for November 1 – April 30 in the WWTF's September 30, 2010 permit. These load limits were used to determine Total Nitrogen concentration limits of 5.0 mg/l May 1 –

October 31 and 14.3 mg/l November 1 – April 30 at the original 2.01 MGD design flow in the WWTF's September 30, 2010 permit.

In order to ensure that the WWTF's discharge meets the allowable seasonal Total Nitrogen load targets for the Warren WWTF from the DEM's document titled *Evaluation of Nitrogen Targets and Load Reductions for the Palmer River*, the DEM is carrying the load limits of 83.8 lbs/day May 1 – October 31 and 239.7 lbs/day November 1 – April 30 forward into this permit modification. However, since the Nitrogen load targets from the document titled *Evaluation of Nitrogen Targets and Load Reductions for the Palmer River* are seasonal targets, the load limits in this permit modification are being assigned as a seasonal average load. Therefore, the May value shall be determined by averaging the Total Nitrogen loads from May with the loads from June – October of the previous year and report this value on the May Discharge Monitoring Report (DMR). For each subsequent month that the seasonal limit is in effect, the seasonal average shall be calculated using samples from that month and the previous five (5) months that the seasonal limit is in effect. The Total Nitrogen concentration limit of 5.0 mg/l, for the period from May 1 through October 31, is being carried forward from the WWTF's September 30, 2010 permit. The Total Nitrogen concentration limit for the period from November 1 through April 30 is being set at 9.5 mg/l as indicated in paragraph 10.B of the consent agreement that was entered into between the DEM and the Town. The Town agreed not to appeal a permit modification that included these Total Nitrogen concentration limits. The Total Nitrogen concentration limits remain monthly average limits.

Limits for Other Pollutants:

In order to comply with the Antibacksliding and Antidegradation requirements, the DEM decreased the concentration-based allowable discharge levels for all water quality-based limits proportional to the flow increase, such that the mass load is held constant using the following equations:

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

$$Limit = (DF) * (Criteria) * (80\%) * (\text{Original Flow / New Flow})$$

b) Using available background concentration data.

$$Limit = [(DF) * (Criteria) * 90\% - (Background) * (DF - 1)] * (\text{Original Flow / New Flow})$$

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

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

In accordance with 40 CFR 122.4(d)(1)(iii), it is only necessary to establish water quality-based 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 (daily maximum) and chronic (monthly average) limits are compared to the DMR and the State User Fee Program data. Based on this analysis, permit limits are required for Total Residual Chlorine (TRC), Cyanide, and Total Copper.

DEM's User Fee Program detected the presence of the pesticides Aldrin and Heptachlor in the facility's effluent. However, DEM has not established permit limitations for these pollutants because of the sporadic nature of the detection of these parameters (one detect for Aldrin and two detects for Heptachlor), which DEM attributed to laboratory interference. Instead, the permit requires continued monitoring for these pollutants as part of the annual priority pollutant scans.

Although reasonable potential was not established for the following pollutants, monitoring is being required quarterly as part of the bioassay testing: Total Cadmium, Total Chromium, Total Lead, Total Zinc, Total Nickel, and Total Aluminum. These pollutants, in addition to Total Copper and Cyanide, are all part of the DEM's list of standard parameters, for discharges to salt waters, that must be measured as part of the bioassay procedures. Total Copper and Cyanide are already being measured and limited because, as discussed above, these pollutants had reasonable potential to cause or contribute to an exceedance of instream water quality criteria.

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

In order to comply with the Antibacksliding and Antidegradation requirements, the DEM also decreased the BOD_5 and TSS concentration-based limits proportional to the flow increase, such that the mass load is held constant using the following equation:

$$Limit = Original\ Limit * (Original\ Flow / New\ Flow)$$

The remaining general and specific conditions of the permit remain unchanged and 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.

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

All persons, including applicants, who believe any condition of the draft permit modification 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. Any person may submit a request in writing for a public hearing to consider the draft permit to the Rhode Island Department of Environmental Management. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held if the response to this notice indicates significant public interest. In reaching a final decision on the draft permit the Director will respond to all significant comments and make these responses available to the public at DEM's Providence Office.

Following the close of the comment period and after the public hearing, if held, 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.

V. DEM Contact

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

Joseph Haberek, P.E.
Department of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, Rhode Island, 02908-5767
Telephone: (401) 222-4700, ext: 7715
E-mail: joseph.haberek@dem.ri.gov

7/2/13
Date

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

Attachment A

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: **Warren Wastewater Treatment Facility**

RIPDES PERMIT #: **RI0100056**

	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: METAL TRANSLATORS FROM RI WATER QUALITY REGS.

DILUTION FACTORS	
ACUTE =	**35** x
CHRONIC =	**100** x
HUMAN HEALTH =	**100** x

NOTE: TEST WWTF'S DILUTION FACTORS OBTAINED FROM A DYE STUDY.

DESIGN FLOWS	
"ORIGINAL" ANNUAL =	**2.01** MGD
"NEW" MAY - OCT =	**2.53** MGD
"NEW" NOV - APRIL =	**3.43** MGD

TOTAL AMMONIA CRITERIA (ug/L)		
WINTER	ACUTE =	**5600**
	CHRONIC =	**840**
SUMMER	ACUTE =	**4400**
	CHRONIC =	**660**

NOTE 1: LIMITS ARE FROM TABLE 3 IN THE RI WATER QUALITY REGS.
USING:
SALINITY = 20 g/Kg
WINTER (NOV-APRIL) pH=8.4 s.u.;
SUMMER (MAY-OCT) pH=8.2 s.u.
WINTER (NOV-APRIL) TEMP=10.0 C;
SUMMER (MAY-OCT) TEMP=20.0 C.

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: Warren Wastewater Treatment Facility RIPDES PERMIT #: RI0100056

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)	ORIGINAL DAILY MAX LIMIT (ug/L)	SALTWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	ORIGINAL MONTHLY AVE LIMIT (ug/L)
PRIORITY POLLUTANTS:							
TOXIC METALS AND CYANIDE							
ANTIMONY	7440360			No Criteria		640	51200
ARSENIC (limits are total recoverable)	7440382	NA	69	1932	36	1.4	112
ASBESTOS	1332214			No Criteria			No Criteria
BERYLLIUM	7440417			No Criteria			No Criteria
CADMIUM (limits are total recoverable)	7440439	NA	40	1126.760563	8.8		708.249497
CHROMIUM III (limits are total recoverable)	16065831	NA		No Criteria			No Criteria
CHROMIUM VI (limits are total recoverable)	18540299	NA	1100	31017.11984	50		4028.197382
COPPER (limits are total recoverable)	7440508	NA	4.8	161.9277108	3.1		298.7951807
CYANIDE	57125		1	28.00	1	140	80
LEAD (limits are total recoverable)	7439921	NA	210	6182.9653	8.1		681.3880126
MERCURY (limits are total recoverable)	7439976	NA	1.8	59.29411765	0.94	0.15	12
NICKEL (limits are total recoverable)	7440020	NA	74	2092.929293	8.2	4600	662.6262626
SELENIUM (limits are total recoverable)	7782492	NA	290	8136.272545	71	4200	5691.382766
SILVER (limits are total recoverable)	7440224	NA	1.9	62.58823529			No Criteria
THALLIUM	7440280			No Criteria		0.47	37.6
ZINC (limits are total recoverable)	7440666	NA	90	2663.84778	81	26000	6849.894292
VOLATILE ORGANIC COMPOUNDS							
ACROLEIN	107028			No Criteria		290	23200
ACRYLONITRILE	107131			No Criteria		2.5	200
BENZENE	71432			No Criteria		510	40800
BROMOFORM	75252			No Criteria		1400	112000
CARBON TETRACHLORIDE	56235			No Criteria		16	1280
CHLOROBENZENE	108907			No Criteria		1600	128000
CHLORODIBROMOMETHANE	124481			No Criteria		130	10400
CHLOROFORM	67663			No Criteria		4700	376000
DICHLOROBROMOMETHANE	75274			No Criteria		170	13600
1,2DICHLOROETHANE	107062			No Criteria		370	29600
1,1DICHLOROETHYLENE	75354			No Criteria		7100	568000
1,2DICHLOROPROPANE	78875			No Criteria		150	12000
1,3DICHLOROPROPYLENE	542756			No Criteria		21	1680
ETHYLBENZENE	100414			No Criteria		2100	168000
BROMOMETHANE (methyl bromide)	74839			No Criteria		1500	120000
CHLOROMETHANE (methyl chloride)	74873			No Criteria			No Criteria
METHYLENE CHLORIDE	75092			No Criteria		5900	472000

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: Warren Wastewater Treatment Facility RIPDES PERMIT #: RI0100056

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)	ORIGINAL DAILY MAX LIMIT (ug/L)	SALTWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	ORIGINAL MONTHLY AVE LIMIT (ug/L)
1,1,2,2TETRACHLOROETHANE	79345			No Criteria		40	3200
TETRACHLOROETHYLENE	127184			No Criteria		33	2640
TOLUENE	108883			No Criteria		15000	1200000
1,2TRANSDICHLOROETHYLENE	156605			No Criteria		10000	800000
1,1,1TRICHLOROETHANE	71556			No Criteria			No Criteria
1,1,2TRICHLOROETHANE	79005			No Criteria		160	12800
TRICHLOROETHYLENE	79016			No Criteria		300	24000
VINYL CHLORIDE	75014			No Criteria		2.4	192
ACID ORGANIC COMPOUNDS							
2CHLOROPHENOL	95578			No Criteria		150	12000
2,4DICHLOROPHENOL	120832			No Criteria		290	23200
2,4DIMETHYLPHENOL	105679			No Criteria		850	68000
4,6DINITRO2METHYL PHENOL	534521			No Criteria		280	22400
2,4DINITROPHENOL	51285			No Criteria		5300	424000
4NITROPHENOL	88755			No Criteria			No Criteria
PENTACHLOROPHENOL	87865		13	364	7.9	30	632
PHENOL	108952			No Criteria		1700000	136000000
2,4,6TRICHLOROPHENOL	88062			No Criteria		24	1920
BASE NEUTRAL COMPUNDS							
ACENAPHTHENE	83329			No Criteria		990	79200
ANTHRACENE	120127			No Criteria		40000	3200000
BENZIDINE	92875			No Criteria		0.002	0.16
POLYCYCLIC AROMATIC HYDROCARBONS				No Criteria		0.18	14.4
BIS(2CHLOROETHYL)ETHER	111444			No Criteria		5.3	424
BIS(2CHLOROISOPROPYL)ETHER	108601			No Criteria		65000	5200000
BIS(2ETHYLHEXYL)PHTHALATE	117817			No Criteria		22	1760
BUTYL BENZYL PHTHALATE	85687			No Criteria		1900	152000
2CHLORONAPHTHALENE	91587			No Criteria		1600	128000
1,2DICHLOROBENZENE	95501			No Criteria		1300	104000
1,3DICHLOROBENZENE	541731			No Criteria		960	76800
1,4DICHLOROBENZENE	106467			No Criteria		190	15200
3,3DICHLOROBENZIDENE	91941			No Criteria		0.28	22.4
DIETHYL PHTHALATE	84662			No Criteria		44000	3520000
DIMETHYL PHTHALATE	131113			No Criteria		1100000	88000000
DInBUTYL PHTHALATE	84742			No Criteria		4500	360000
2,4DINITROTOLUENE	121142			No Criteria		34	2720

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: Warren Wastewater Treatment Facility RIPDES PERMIT #: RI0100056

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)	ORIGINAL DAILY MAX LIMIT (ug/L)	SALTWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	ORIGINAL MONTHLY AVE LIMIT (ug/L)
1,2DIPHENYLHYDRAZINE	122667			No Criteria		2	160
FLUORANTHENE	206440			No Criteria		140	11200
FLUORENE	86737			No Criteria		5300	424000
HEXACHLOROBENZENE	118741			No Criteria		0.0029	0.232
HEXACHLOROBUTADIENE	87683			No Criteria		180	14400
HEXACHLOROCYCLOPENTADIENE	77474			No Criteria		1100	88000
HEXACHLOROETHANE	67721			No Criteria		33	2640
ISOPHORONE	78591			No Criteria		9600	768000
NAPHTHALENE	91203			No Criteria			No Criteria
NITROBENZENE	98953			No Criteria		690	55200
NNITROSODIMETHYLAMINE	62759			No Criteria		30	2400
NNITROSODINPROPYLAMINE	621647			No Criteria		5.1	408
NNITROSODIPHENYLAMINE	86306			No Criteria		60	4800
PYRENE	129000			No Criteria		4000	320000
1,2,4trichlorobenzene	120821			No Criteria		70	5600
PESTICIDES/PCBs							
ALDRIN	309002		1.3	36.4		0.0005	0.04
Alpha BHC	319846			No Criteria		0.049	3.92
Beta BHC	319857			No Criteria		0.17	13.6
Gamma BHC (Lindane)	58899		0.16	4.48		1.8	144
CHLORDANE	57749		0.09	2.52	0.004	0.0081	0.32
4,4DDT	50293		0.13	3.64	0.001	0.0022	0.08
4,4DDE	72559			No Criteria		0.0022	0.176
4,4DDD	72548			No Criteria		0.0031	0.248
DIELDRIN	60571		0.71	19.88	0.0019	0.00054	0.0432
ENDOSULFAN (alpha)	959988		0.034	0.952	0.0087	89	0.696
ENDOSULFAN (beta)	33213659		0.034	0.952	0.0087	89	0.696
ENDOSULFAN (sulfate)	1031078			No Criteria		89	7120
ENDRIN	72208		0.037	1.036	0.0023	0.06	0.184
ENDRIN ALDEHYDE	7421934			No Criteria		0.3	24
HEPTACHLOR	76448		0.053	1.484	0.0036	0.00079	0.0632
HEPTACHLOR EPOXIDE	1024573		0.053	1.484	0.0036	0.00039	0.0312
POLYCHLORINATED BIPHENYLS3	1336363			No Criteria	0.03	0.00064	0.0512
2,3,7,8TCDD (Dioxin)	1746016			No Criteria		0.000000051	0.00000408
TOXAPHENE	8001352		0.21	5.88	0.0002	0.0028	0.016
TRIBUTYLTIN			0.42	11.76	0.0074		0.592

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: Warren Wastewater Treatment Facility RIPDES PERMIT #: RI0100056

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)	ORIGINAL DAILY MAX LIMIT (ug/L)	SALTWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	ORIGINAL 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		4603 | 3616.8	128890 101270	690.5 | 542.5		55238.4 | 43401.6
4BROMOPHENYL PHENYL ETHER				No Criteria			No Criteria
CHLORIDE	16887006			No Criteria			No Criteria
CHLORINE	7782505		13	455	7.5		750
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: Warren Wastewater Treatment Facility

RIPDES PERMIT #: RI0100056

CHEMICAL NAME	MAY-OCT DAILY MAX LIMIT (ug/L)	NOV-APR DAILY MAX LIMIT (ug/L)	MAY-OCT MONTHLY AVE LIMIT (ug/L)	NOV-APR MONTHLY AVE LIMIT (ug/L)
PRIORITY POLLUTANTS:				
TOXIC METALS AND CYANIDE				
ANTIMONY	No Criteria	No Criteria	40676.68	30003.50
ARSENIC, TOTAL	1534.91	1132.1633	88.98	65.63
ASBESTOS	No Criteria	No Criteria	No Criteria	No Criteria
BERYLLIUM	No Criteria	No Criteria	No Criteria	No Criteria
CADMIUM, TOTAL	895.17	660.28826	562.68	415.04
CHROMIUM III, TOTAL	No Criteria	No Criteria	No Criteria	No Criteria
CHROMIUM VI, TOTAL	24642.06	18176.213	3200.27	2360.55
COPPER, TOTAL	128.65	94.890583	128.65	94.89
CYANIDE	22.25	16.408163	22.25	16.41
LEAD, TOTAL	4912.16	3623.2537	541.34	399.30
MERCURY, TOTAL	47.11	34.746699	9.53	7.03
NICKEL, TOTAL	1662.76	1226.4688	526.43	388.30
SELENIUM, TOTAL	6464.00	4767.9032	4521.61	3335.18
SILVER, TOTAL	49.72	36.677071	49.72	36.68
THALLIUM	No Criteria	No Criteria	29.87	22.03
ZINC, TOTAL	2116.34	1561.0303	2116.34	1561.03
VOLATILE ORGANIC COMPOUNDS				
ACROLEIN	No Criteria	No Criteria	18431.62	13595.34
ACRYLONITRILE	No Criteria	No Criteria	158.89	117.20
BENZENE	No Criteria	No Criteria	32414.23	23909.04
BROMOFORM	No Criteria	No Criteria	88980.24	65632.65
CARBON TETRACHLORIDE	No Criteria	No Criteria	1016.92	750.09
CHLOROBENZENE	No Criteria	No Criteria	101691.70	75008.75
CHLORODIBROMOMETHANE	No Criteria	No Criteria	8262.45	6094.46
CHLOROFORM	No Criteria	No Criteria	298719.37	220338.2
DICHLOROBROMOMETHANE	No Criteria	No Criteria	10804.74	7969.68
1,2DICHLOROETHANE	No Criteria	No Criteria	23516.21	17345.77
1,1DICHLOROETHYLENE	No Criteria	No Criteria	451256.92	332851.3
1,2DICHLOROPROPANE	No Criteria	No Criteria	9533.60	7032.07
1,3DICHLOROPROPYLENE	No Criteria	No Criteria	1334.70	984.49
ETHYLBENZENE	No Criteria	No Criteria	133470.36	98448.98
BROMOMETHANE (methyl brom	No Criteria	No Criteria	95335.97	70320.70
CHLOROMETHANE (methyl chlo	No Criteria	No Criteria	No Criteria	No Criteria
METHYLENE CHLORIDE	No Criteria	No Criteria	374988.14	276594.8
1,1,2,2TETRACHLOROETHANE	No Criteria	No Criteria	2542.29	1875.22

CHEMICAL NAME	MAY-OCT DAILY MAX LIMIT (ug/L)	NOV-APR DAILY MAX LIMIT (ug/L)	MAY-OCT MONTHLY AVE LIMIT (ug/L)	NOV-APR MONTHLY AVE LIMIT (ug/L)
TETRACHLOROETHYLENE	No Criteria	No Criteria	2097.39	1547.0554
TOLUENE	No Criteria	No Criteria	953359.68	703207
1,2TRANSDICHLOROETHYLENE	No Criteria	No Criteria	635573.12	468804.66
1,1,1TRICHLOROETHANE	No Criteria	No Criteria	No Criteria	No Criteria
1,1,2TRICHLOROETHANE	No Criteria	No Criteria	10169.17	7500.8746
TRICHLOROETHYLENE	No Criteria	No Criteria	19067.19	14064.14
VINYL CHLORIDE	No Criteria	No Criteria	152.54	112.51312
ACID ORGANIC COMPOUNDS				
2CHLOROPHENOL	No Criteria	No Criteria	9533.60	7032.07
2,4DICHLOROPHENOL	No Criteria	No Criteria	18431.62	13595.335
2,4DIMETHYLPHENOL	No Criteria	No Criteria	54023.72	39848.397
4,6DINITRO2METHYL PHENOL	No Criteria	No Criteria	17796.05	13126.531
2,4DINITROPHENOL	No Criteria	No Criteria	336853.75	248466.47
4NITROPHENOL	No Criteria	No Criteria	No Criteria	No Criteria
PENTACHLOROPHENOL	289.19	213.30612	289.19	213.30612
PHENOL	No Criteria	No Criteria	108047431	79696793
2,4,6TRICHLOROPHENOL	No Criteria	No Criteria	1525.38	1125.1312
BASE NEUTRAL COMPUNDS				
ACENAPHTHENE	No Criteria	No Criteria	62921.74	46411.662
ANTHRACENE	No Criteria	No Criteria	2542292.5	1875218.7
BENZIDINE	No Criteria	No Criteria	0.13	0.0937609
PAHs	No Criteria	No Criteria	11.44	8.438484
BIS(2CHLOROETHYL)ETHER	No Criteria	No Criteria	336.85	248.46647
BIS(2CHLOROISOPROPYL)ETHER	No Criteria	No Criteria	4131225.3	3047230.3
BIS(2ETHYLHEXYL)PHTHALATE	No Criteria	No Criteria	1398.26	1031.3703
BUTYL BENZYL PHTHALATE	No Criteria	No Criteria	120758.89	89072.886
2CHLORONAPHTHALENE	No Criteria	No Criteria	101691.70	75008.746
1,2DICHLOROBENZENE	No Criteria	No Criteria	82624.51	60944.606
1,3DICHLOROBENZENE	No Criteria	No Criteria	61015.02	45005.248
1,4DICHLOROBENZENE	No Criteria	No Criteria	12075.89	8907.2886
3,3DICHLOROBENZIDENE	No Criteria	No Criteria	17.80	13.126531
DIETHYL PHTHALATE	No Criteria	No Criteria	2796521.7	2062740.5
DIMETHYL PHTHALATE	No Criteria	No Criteria	69913043	51568513
DI-n-BUTYL PHTHALATE	No Criteria	No Criteria	286007.91	210962.1
2,4DINITROTOLUENE	No Criteria	No Criteria	2160.95	1593.9359
1,2DIPHENYLHYDRAZINE	No Criteria	No Criteria	127.11	93.760933
FLUORANTHENE	No Criteria	No Criteria	8898.02	6563.2653

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: Warren Wastewater Treatment Facility

RIPDES PERMIT #: RI0100056

CHEMICAL NAME	MAY-OCT DAILY MAX LIMIT (ug/L)	NOV-APR DAILY MAX LIMIT (ug/L)	MAY-OCT MONTHLY AVE LIMIT (ug/L)	NOV-APR MONTHLY AVE LIMIT (ug/L)
FLUORENE	No Criteria	No Criteria	336853.75	248466.5
HEXACHLOROBENZENE	No Criteria	No Criteria	0.18	0.14
HEXACHLOROBUTADIENE	No Criteria	No Criteria	11440.32	8438.48
HEXACHLOROCYCLOPENTADI	No Criteria	No Criteria	69913.04	51568.51
HEXACHLOROETHANE	No Criteria	No Criteria	2097.39	1547.06
ISOPHORONE	No Criteria	No Criteria	610150.20	450052.5
NAPHTHALENE	No Criteria	No Criteria	No Criteria	No Criteria
NITROBENZENE	No Criteria	No Criteria	43854.55	32347.52
N-NITROSODIMETHYLAMINE	No Criteria	No Criteria	1906.72	1406.41
N-NITROSODI-N-PROPYLAMINE	No Criteria	No Criteria	324.14	239.09
N-NITROSODIPHENYLAMINE	No Criteria	No Criteria	3813.44	2812.83
PYRENE	No Criteria	No Criteria	254229.25	187521.9
1,2,4trichlorobenzene	No Criteria	No Criteria	4449.01	3281.63
PESTICIDES/PCBs				
ALDRIN	28.92	21.33	0.03	0.02
Alpha BHC	No Criteria	No Criteria	3.11	2.30
Beta BHC	No Criteria	No Criteria	10.80	7.97
Gamma BHC (Lindane)	3.56	2.63	3.56	2.63
CHLORDANE	2.00	1.48	0.25	0.19
4,4DDT	2.89	2.13	0.06	0.05
4,4DDE	No Criteria	No Criteria	0.14	0.10
4,4DDD	No Criteria	No Criteria	0.20	0.15
DIELDRIN	15.79	11.65	0.03	0.03
ENDOSULFAN (alpha)	0.76	0.56	0.55	0.41
ENDOSULFAN (beta)	0.76	0.56	0.55	0.41
ENDOSULFAN (sulfate)	No Criteria	No Criteria	5656.60	4172.36
ENDRIN	0.82	0.61	0.15	0.11
ENDRIN ALDEHYDE	No Criteria	No Criteria	19.07	14.06
HEPTACHLOR	1.18	0.87	0.05	0.04
HEPTACHLOR EPOXIDE	1.18	0.87	0.02	0.02
POLYCHLORINATED BIPHENYL	No Criteria	No Criteria	0.04	0.03
2,3,7,8TCDD (Dioxin)	No Criteria	No Criteria	0.00	0.00
TOXAPHENE	4.67	3.45	0.01	0.01
TRIBUTYLTIN	9.34	6.89	0.47	0.35

CHEMICAL NAME	MAY-OCT DAILY MAX LIMIT (ug/L)	NOV-APR DAILY MAX LIMIT (ug/L)	MAY-OCT MONTHLY AVE LIMIT (ug/L)	NOV-APR MONTHLY AVE LIMIT (ug/L)
NON PRIORITY POLLUTANTS:				
OTHER SUBSTANCES				
ALUMINUM, TOTAL	No Criteria	No Criteria	No Criteria	No Criteria
AMMONIA (as N), WINTER (NOV-A	102398.46	75530.06	43885.05	32370.024
AMMONIA (as N), SUMMER (MAY-	80455.93	59345.04	34481.11	25433.591
4BROMOPHENYL PHENYL ETHER	No Criteria	No Criteria	No Criteria	No Criteria
CHLORIDE	No Criteria	No Criteria	No Criteria	No Criteria
CHLORINE	361.48	266.63	361.48	266.63265
4CHLORO2METHYLPHENOL	No Criteria	No Criteria	No Criteria	No Criteria
1CHLORONAPHTHALENE	No Criteria	No Criteria	No Criteria	No Criteria
4CHLOROPHENOL	No Criteria	No Criteria	No Criteria	No Criteria
2,4DICHLORO6METHYLPHENOL	No Criteria	No Criteria	No Criteria	No Criteria
1,1DICHLOROPROPANE	No Criteria	No Criteria	No Criteria	No Criteria
1,3DICHLOROPROPANE	No Criteria	No Criteria	No Criteria	No Criteria
2,3DINITROTOLUENE	No Criteria	No Criteria	No Criteria	No Criteria
2,4DINITRO6METHYL PHENOL	No Criteria	No Criteria	No Criteria	No Criteria
IRON	No Criteria	No Criteria	No Criteria	No Criteria
pentachlorobenzene	No Criteria	No Criteria	No Criteria	No Criteria
PENTACHLOROETHANE	No Criteria	No Criteria	No Criteria	No Criteria
1,2,3,5tetrachlorobenzene	No Criteria	No Criteria	No Criteria	No Criteria
1,1,1,2TETRACHLOROETHANE	No Criteria	No Criteria	No Criteria	No Criteria
2,3,4,6TETRACHLOROPHENOL	No Criteria	No Criteria	No Criteria	No Criteria
2,3,5,6TETRACHLOROPHENOL	No Criteria	No Criteria	No Criteria	No Criteria
2,4,5TRICHLOROPHENOL	No Criteria	No Criteria	No Criteria	No Criteria
2,4,6TRINITROPHENOL	No Criteria	No Criteria	No Criteria	No Criteria
XYLENE	No Criteria	No Criteria	No Criteria	No Criteria

Facility Name: ***Warren WWTF***
RIPDES Permit #: ***RI0100056***
Outfall #: ***001A***

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	UFP Data (ug/L) 3/08 - 3/13		DMR Data (ug/L) 9/04 - 9/09		Potential Permit Limits (ug/L)				Reasonable Potential (y/n)
					May - Oct		Nov - April		
	Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	
PRIORITY POLLUTANTS									
TOXIC METALS AND CYANIDE									
ANTIMONY	---	---	---	---	---	40676.67984	---	30003.49854	
ARSENIC (limits are total recoverable)	2	1.55	---	---	1534.909091	88.98023715	1132.163265	65.63265306	
ASBESTOS	---	---	---	---	---	---	---	---	
BERYLLIUM	---	---	---	---	---	---	---	---	
CADMIUM (limits are total recoverable)	---	---	13	1.6	895.2	562.7	660.3	415.0	n
CHROMIUM III (limits are total recoverable)	---	---	---	---	---	---	---	---	
CHROMIUM VI (limits are total recoverable)	1.3	1.15	1	0.13	24642.1	3200.3	18176.2	2360.5	n
COPPER (limits are total recoverable)	52	26.07	58.8	7.3	128.6	128.6	94.9	94.89058274	y
CYANIDE	20	20	10	1.3	22.24505929	22.24505929	16.40816327	16.40816327	y
LEAD (limits are total recoverable)	6	4.275	3	0.5	4912.2	541.3	3623.3	399.3	n
MERCURY (limits are total recoverable)	---	---	---	---	47.1	9.5	34.7	7.032069971	
NICKEL (limits are total recoverable)	---	---	---	---	1662.8	526.4	1226.5	388.3	
SELENIUM (limits are total recoverable)	---	---	---	---	6464.0	4521.6	4767.9	3335.2	
SILVER (limits are total recoverable)	---	---	---	---	49.7	49.7	36.7	36.7	
THALLIUM	---	---	---	---	---	29.87193676	---	22.03381924	
ZINC (limits are total recoverable)	56	39.4	34	12.9	2116.3	2116.3	1561.0	1561.0	n
VOLATILE ORGANIC COMPOUNDS									
ACROLEIN	---	---	---	---	---	18431.62055	---	13595.33528	
ACRYLONITRILE	---	---	---	---	---	158.8932806	---	117.2011662	
BENZENE	---	---	---	---	---	32414.22925	---	23909.0379	
BROMOFORM	1	1	---	---	---	88980.23715	---	65632.65306	n
CARBON TETRACHLORIDE	---	---	---	---	---	1016.916996	---	750.0874636	
CHLOROBENZENE	---	---	---	---	---	101691.6996	---	75008.74636	
CHLORODIBROMOMETHANE	3.8	2.5	---	---	---	8262.450593	---	6094.460641	n
CHLOROFORM	4.4	2.66	---	---	---	298719.3676	---	220338.1924	n
DICHLOROBROMOMETHANE	8	4.23	---	---	---	10804.74308	---	7969.6793	n
1,2DICHLOROETHANE	---	---	---	---	---	23516.20553	---	17345.77259	
1,1DICHLOROETHYLENE	---	---	---	---	---	451256.917	---	332851.312	
1,2DICHLOROPROPANE	---	---	---	---	---	9533.596838	---	7032.069971	

1,3DICHLOROPROPYLENE	---	---	---	---	---	1334.703557	---	984.4897959	
ETHYLBENZENE	---	---	---	---	---	133470.3557	---	98448.97959	
BROMOMETHANE (methyl bromide)	---	---	---	---	---	95335.96838	---	70320.69971	
CHLOROMETHANE (methyl chloride)	---	---	---	---	---	No Criteria	---	No Criteria	
METHYLENE CHLORIDE	---	---	---	---	---	374988.1423	---	276594.7522	
1,1,2,2TETRACHLOROETHANE	---	---	---	---	---	2542.29249	---	1875.218659	
TETRACHLOROETHYLENE	1.6	1.6	---	---	---	2097.391304	---	1547.055394	n
TOLUENE	---	---	---	---	---	953359.6838	---	703206.9971	
1,2TRANSDICHLOROETHYLENE	---	---	---	---	---	635573.1225	---	468804.6647	
1,1,1TRICHLOROETHANE	---	---	---	---	---	No Criteria	---	No Criteria	
1,1,2TRICHLOROETHANE	---	---	---	---	---	10169.16996	---	7500.874636	
TRICHLOROETHYLENE	---	---	---	---	---	19067.19368	---	14064.13994	
VINYL CHLORIDE	---	---	---	---	---	152.5375494	---	112.5131195	
ACID ORGANIC COMPOUNDS									
2CHLOROPHENOL	---	---	---	---	---	9533.596838	---	7032.069971	
2,4DICHLOROPHENOL	---	---	---	---	---	18431.62055	---	13595.33528	
2,4DIMETHYLPHENOL	---	---	---	---	---	54023.71542	---	39848.3965	
4,6DINITRO2METHYL PHENOL	---	---	---	---	---	17796.04743	---	13126.53061	
2,4DINITROPHENOL	---	---	---	---	---	336853.7549	---	248466.4723	
4NITROPHENOL	---	---	---	---	---	No Criteria	---	No Criteria	
PENTACHLOROPHENOL	---	---	---	---	289.1857708	289.1857708	213.3061224	213.3061224	
PHENOL	---	---	---	---	---	108047430.8	---	79696793	
2,4,6TRICHLOROPHENOL	---	---	---	---	---	1525.375494	---	1125.131195	
BASE NEUTRAL COMPOUNDS									
ACENAPHTHENE	---	---	---	---	---	62921.73913	---	46411.66181	
ANTHRACENE	---	---	---	---	---	2542292.49	---	1875218.659	
BENZIDINE	---	---	---	---	---	0.127114625	---	0.093760933	
POLYCYCLIC AROMATIC HYDROCARBONS	---	---	---	---	---	11.44031621	---	8.438483965	
BIS(2CHLOROETHYL)ETHER	---	---	---	---	---	336.8537549	---	248.4664723	
BIS(2CHLOROISOPROPYL)ETHER	---	---	---	---	---	4131225.296	---	3047230.321	
BIS(2ETHYLHEXYL)PHTHALATE	23.8	17.5	---	---	---	1398.26087	---	1031.370262	n
BUTYL BENZYL PHTHALATE	---	---	---	---	---	120758.8933	---	89072.8863	
2CHLORONAPHTHALENE	---	---	---	---	---	101691.6996	---	75008.74636	
1,2DICHLOROBENZENE	---	---	---	---	---	82624.50593	---	60944.60641	
1,3DICHLOROBENZENE	---	---	---	---	---	61015.01976	---	45005.24781	
1,4DICHLOROBENZENE	---	---	---	---	---	12075.88933	---	8907.28863	
3,3DICHLOROBENZIDENE	---	---	---	---	---	17.79604743	---	13.12653061	
DIETHYL PHTHALATE	---	---	---	---	---	2796521.739	---	2062740.525	
DIMETHYL PHTHALATE	---	---	---	---	---	69913043.48	---	51568513.12	
DInBUTYL PHTHALATE	---	---	---	---	---	286007.9051	---	210962.0991	

2,4DINITROTOLUENE	---	---	---	---	---	2160.948617	---	1593.93586	
1,2DIPHENYLHYDRAZINE	---	---	---	---	---	127.1146245	---	93.76093294	
FLUORANTHENE	---	---	---	---	---	8898.023715	---	6563.265306	
FLUORENE	---	---	---	---	---	336853.7549	---	248466.4723	
HEXACHLOROBENZENE	---	---	---	---	---	0.184316206	---	0.135953353	
HEXACHLOROBUTADIENE	---	---	---	---	---	11440.31621	---	8438.483965	
HEXACHLOROCYCLOPENTADIENE	---	---	---	---	---	69913.04348	---	51568.51312	
HEXACHLOROETHANE	---	---	---	---	---	2097.391304	---	1547.055394	
ISOPHORONE	---	---	---	---	---	610150.1976	---	450052.4781	
NAPHTHALENE	---	---	---	---	---	No Criteria	---	No Criteria	
NITROBENZENE	---	---	---	---	---	43854.54545	---	32347.52187	
NNITROSODIMETHYLAMINE	---	---	---	---	---	1906.719368	---	1406.413994	
NNITROSODINPROPYLAMINE	---	---	---	---	---	324.1422925	---	239.090379	
NNITROSODIPHENYLAMINE	---	---	---	---	---	3813.438735	---	2812.827988	
PYRENE	---	---	---	---	---	254229.249	---	187521.8659	
1,2,4trichlorobenzene	---	---	---	---	---	4449.011858	---	3281.632653	
PESTICIDES/PCBs									
ALDRIN	0.05	0.05	---	---	28.91857708	0.031778656	21.33061224	0.023440233	n
Alpha BHC	0.07	0.07	---	---	---	3.1143083	---	2.297142857	n
Beta BHC	0.06	0.06	---	---	---	10.80474308	---	7.9696793	n
Gamma BHC (Lindane)	0.07	0.07	---	---	3.559209486	3.559209486	2.625306122	2.625306122	n
CHLORDANE	---	---	---	---	2.002055336	0.254229249	1.476734694	0.187521866	
4,4DDT	---	---	---	---	2.891857708	0.063557312	2.133061224	0.046880466	
4,4DDE	---	---	---	---	---	0.139826087	---	0.103137026	
4,4DDD	---	---	---	---	---	0.197027668	---	0.145329446	
DIELDRIN	---	---	---	---	15.79399209	0.034320949	11.64979592	0.025315452	
ENDOSULFAN (alpha)	0.07	0.07	---	---	0.756332016	0.552948617	0.557877551	0.407860058	n
ENDOSULFAN (beta)	---	---	---	---	0.756332016	0.552948617	0.557877551	0.407860058	
ENDOSULFAN (sulfate)	---	---	---	---	---	5656.600791	---	4172.361516	
ENDRIN	---	---	---	---	0.823067194	0.146181818	0.607102041	0.107825073	
ENDRIN ALDEHYDE	---	---	---	---	---	19.06719368	---	14.06413994	
HEPTACHLOR	0.2	0.135	---	---	1.178988142	0.050210277	0.869632653	0.037035569	n
HEPTACHLOR EPOXIDE	---	---	---	---	1.178988142	0.024787352	0.869632653	0.018283382	
POLYCHLORINATED BIPHENYLS3	---	---	---	---	---	0.04067668	---	0.030003499	
2,3,7,8TCDD (Dioxin)	---	---	---	---	---	3.24142E-06	---	2.3909E-06	
TOXAPHENE	---	---	---	---	4.671462451	0.012711462	3.445714286	0.009376093	
TRIBUTYLTIN	---	---	---	---	9.342924901	0.470324111	6.891428571	0.346915452	
NON PRIORITY POLLUTANTS:									
OTHER SUBSTANCES									
ALUMINUM (limits are total recoverable)	---	---	21	21	---	---	---	---	

AMMONIA (winter)	---	---	4200	---	102398.4569	43885.05296	75530.05714	32370.02449	n
AMMONIA (summer)	---	---	4200	---	80455.93043	34481.11304	59345.0449	25433.59067	n
4BROMOPHENYL PHENYL ETHER	---	---	---	---	---	---	---	---	
CHLORIDE	---	---	---	---	---	---	---	---	
CHLORINE	---	---	330	21	361.4822134	361.4822134	266.6326531	266.6326531	y
4CHLORO2METHYLPHENOL	---	---	---	---	---	---	---	---	
1CHLORONAPHTHALENE	---	---	---	---	---	---	---	---	
4CHLOROPHENOL	---	---	---	---	---	---	---	---	
2,4DICHLORO6METHYLPHENOL	---	---	---	---	---	---	---	---	
1,1DICHLOROPROPANE	---	---	---	---	---	---	---	---	
1,3DICHLOROPROPANE	---	---	---	---	---	---	---	---	
2,3DINITROTOLUENE	---	---	---	---	---	---	---	---	
2,4DINITRO6METHYL PHENOL	---	---	---	---	---	---	---	---	
IRON	---	---	---	---	---	---	---	---	
pentachlorobenzene	---	---	---	---	---	---	---	---	
PENTACHLOROETHANE	---	---	---	---	---	---	---	---	
1,2,3,5tetrachlorobenzene	---	---	---	---	---	---	---	---	
1,1,1,2TETRACHLOROETHANE	---	---	---	---	---	---	---	---	
2,3,4,6TETRACHLOROPHENOL	---	---	---	---	---	---	---	---	
2,3,5,6TETRACHLOROPHENOL	---	---	---	---	---	---	---	---	
2,4,5TRICHLOROPHENOL	---	---	---	---	---	---	---	---	
2,4,6TRINITROPHENOL	---	---	---	---	---	---	---	---	
XYLENE	---	---	---	---	---	---	---	---	