AUTHORIZATION TO DISCHARGE UNDER THE
RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM

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

Kenyon Industries, Incorporated
36 Sherman Avenue
Kenyon, Rhode Island 02836

is authorized to discharge from a facility located at

36 Sherman Avenue
Kenyon, Rhode Island 02836

to receiving waters named

Pawcatuck River
(WBID: RI00008039R-18B)

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

This permit shall become effective on April 1, 2022.

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

This permit supersedes the permit issued on July 20, 2010.

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

Signed this 25th day of February 2022.

Joseph B. Haberek, P.E., Administrator of Surface Water Protection
Office of Water Resources
Rhode Island Department of Environmental Management
Providence, Rhode Island

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001A. (Outlet from the second aeration lagoon)
   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	0.49 MGD	--- MGD				Continuous	Recorder
Production[1]	---	---				1/Day	Calculated
BOD_5	251	502				2/Week	24-Hr. Comp.
COD	3062	6125				2/Month	24-Hr. Comp.
TSS	676	1353				2/Month	24-Hr. Comp.
Sulfide	7.6	15.2				2/Month	24-Hr. Comp.
pH[2]			(6.0 S.U.)		(9.0 S.U.)	2/Week	3 Grabs
Chromium, Total	2.28	4.56				2/Month[3]	24-Hr. Comp.
Chromium, Hexavalent			105 ug/l		149 ug/l	2/Month[3]	24-Hr. Comp.
Phenols[4]	1.90	3.80				1/Week	Grab

The limits on this page shall be invoked when the permittee's total average monthly production is greater than 68,000 pounds of cloth per discharge day. See also Section I.A.18.

--- 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.

[1] Production (the quantity of fabric processed) shall be reported based on the number of calendar days rather than the number of production days.

[2] Compliance with these limitations shall be determined by taking a minimum of three (3) grab samples over the day with a minimum of three (3) hours between grabs.

[3] Samples for Total Chromium and Hexavalent Chromium shall be taken at the same time two times per month. If the results of twelve (12) consecutive months of monitoring show effluent concentrations of Hexavalent Chromium below the applicable minimum detection limit from Part I.D, then the permittee is no longer required to continue sampling for Hexavalent Chromium.

[4] Phenols shall mean total phenols as measured by the procedure listed in 40 CFR Part 136.

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday-Friday (Sunday – Saturday for flow) at the following location: Outfall 001A.

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 001B. (Outlet from the second aeration lagoon)
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	0.49 MGD	--- MGD				Continuous	Recorder
Production[1]	68,000	---				1/Day	Calculated
BOD_5	224	449				2/Week	24-Hr. Comp.
COD	2740	5480				2/Month	24-Hr. Comp.
TSS	605	1210				2/Month	24-Hr. Comp.
Sulfide	6.8	13.6				2/Month	24-Hr. Comp.
pH[2]			(6.0 S.U.)		(9.0 S.U.)	2/Week	3 Grabs
Chromium, Total	2.04	4.08				2/Month[3]	24-Hr. Comp.
Chromium, Hexavalent			105 ug/l		149 ug/l	2/Month[3]	24-Hr. Comp.
Phenols[4]	1.70	3.40				1/Week	Grab

The limits on this page shall be invoked when the permittee's total average monthly production is less than or equal to 68,000 pounds of cloth per discharge day and greater than 60,000 pounds of cloth per discharge day. See also Section I.A.18.

--- 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.

[1] Production (the quantity of fabric processed) shall be reported based on the number of calendar days rather than the number of production days.

[2] Compliance with these limitations shall be determined by taking a minimum of three (3) grab samples over the day with a minimum of three (3) hours between grabs.

[3] Samples for Total Chromium and Hexavalent Chromium shall be taken at the same time two times per month. If the results of twelve (12) consecutive months of monitoring show effluent concentrations of Hexavalent Chromium below the applicable minimum detection limit from Part I.D, then the permittee is no longer required to continue sampling for Hexavalent Chromium.

[4] Phenols shall mean total phenols as measured by the procedure listed in 40 CFR Part 136.

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday-Friday (Sunday – Saturday for flow) at the following location: Outfall 001B.

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 001C. (Outlet from the second aeration lagoon)
   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	0.49 MGD	--- MGD				Continuous	Recorder
Production[1]	60,000	---				1/Day	Calculated
BOD_5	198	396				2/Week	24-Hr. Comp.
COD	2418	4836				2/Month	24-Hr. Comp.
TSS	534	1068				2/Month	24-Hr. Comp.
Sulfide	6.0	12.0				2/Month	24-Hr. Comp.
pH[2]			(6.0 S.U.)		(9.0 S.U.)	2/Week	3 Grabs
Chromium, Total	1.80	3.60				2/Month[3]	24-Hr. Comp.
Chromium, Hexavalent			105 ug/l		149 ug/l	2/Month[3]	24-Hr. Comp.
Phenols[4]	1.50	3.00				1/Week	Grab

The limits on this page shall be invoked when the permittee's total average monthly production is less than or equal to 60,000 pounds of cloth per discharge day and greater than 52,000 pounds of cloth per discharge day. See also Section I.A.18.

--- 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.

[1] Production (the quantity of fabric processed) shall be reported based on the number of calendar days rather than the number of production days.

[2] Compliance with these limitations shall be determined by taking a minimum of three (3) grab samples over the day with a minimum of three (3) hours between grabs.

[3] Samples for Total Chromium and Hexavalent Chromium shall be taken at the same time two times per month. If the results of twelve (12) consecutive months of monitoring show effluent concentrations of Hexavalent Chromium below the applicable minimum detection limit from Part I.D, then the permittee is no longer required to continue sampling for Hexavalent Chromium.

[4] Phenols shall mean total phenols as measured by the procedure listed in 40 CFR part 136.

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday-Friday (Sunday – Saturday for flow) at the following location: Outfall 001C.

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 001D. (Outlet from the second aeration lagoon)
   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	0.49 MGD	--- MGD				Continuous	Recorder
Production[1]	52,000	---				1/Day	Calculated
BOD_5	172	343				2/Week	24-Hr. Comp.
COD	2096	4191				2/Month	24-Hr. Comp.
TSS	463	926				2/Month	24-Hr. Comp.
Sulfide	5.2	10.4				2/Month	24-Hr. Comp.
pH[2]			(6.0 S.U.)		(9.0 S.U.)	2/Week	3 Grabs
Chromium, Total	1.56	3.12				2/Month[3]	24-Hr. Comp.
Chromium, Hexavalent			105 ug/l		149 ug/l	2/Month[3]	24-Hr. Comp.
Phenols[4]	1.30	2.60				1/Week	Grab

The limits on this page shall be invoked when the permittee's total average monthly production is less than or equal to 52,000 pounds of cloth per discharge day and greater than 44,000 pounds of cloth per discharge day. See also Section I.A.18.

--- 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.

[1] Production (the quantity of fabric processed) shall be reported based on the number of calendar days rather than the number of production days.

[2] Compliance with these limitations shall be determined by taking a minimum of three (3) grab samples over the day with a minimum of three (3) hours between grabs.

[3] Samples for Total Chromium and Hexavalent Chromium shall be taken at the same time two times per month. If the results of twelve (12) consecutive months of monitoring show effluent concentrations of Hexavalent Chromium below the applicable minimum detection limit from Part I.D, then the permittee is no longer required to continue sampling for Hexavalent Chromium.

[4] Phenols shall mean total phenols as measured by the procedure listed in 40 CFR part 136.

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday-Friday (Sunday – Saturday for flow) at the following location: Outfall 001D.

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 001E. (Outlet from the second aeration lagoon)
   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	0.49 MGD	--- MGD				Continuous	Recorder
Production[1]	44,000	---				1/Day	Calculated
BOD_5	145	290				2/Week	24-Hr. Comp.
COD	1773	3546				2/Month	24-Hr. Comp.
TSS	392	783				2/Month	24-Hr. Comp.
Sulfide	4.4	8.8				2/Month	24-Hr. Comp.
pH[2]			(6.0 S.U.)		(9.0 S.U.)	2/Week	3 Grabs
Chromium, Total	1.32	2.64				2/Month[3]	24-Hr. Comp.
Chromium, Hexavalent			105 ug/l		149 ug/l	2/Month[3]	24-Hr. Comp.
Phenols[4]	1.10	2.20				1/Week	Grab

The limits on this page shall be invoked when the permittee's total average monthly production is less than or equal to 44,000 pounds of cloth per discharge day and greater than 36,000 pounds of cloth per discharge day. See also Section I.A.18.

--- 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.

[1] Production (the quantity of fabric processed) shall be reported based on the number of calendar days rather than the number of production days.

[2] Compliance with these limitations shall be determined by taking a minimum of three (3) grab samples over the day with a minimum of three (3) hours between grabs.

[3] Samples for Total Chromium and Hexavalent Chromium shall be taken at the same time two times per month. If the results of twelve (12) consecutive months of monitoring show effluent concentrations of Hexavalent Chromium below the applicable minimum detection limit from Part I.D, then the permittee is no longer required to continue sampling for Hexavalent Chromium.

[4] Phenols shall mean total phenols as measured by the procedure listed in 40 CFR part 136.

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday-Friday (Sunday – Saturday for flow) at the following location: Outfall 001E.

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 001F. (Outlet from the second aeration lagoon)
   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	0.49 MGD	--- MGD				Continuous	Recorder
Production[1]	36,000	---				1/Day	Calculated
BOD_5	119	238				2/Week	24-Hr. Comp.
COD	1451	2902				2/Month	24-Hr. Comp.
TSS	320	641				2/Month	24-Hr. Comp.
Sulfide	3.6	7.2				2/Month	24-Hr. Comp.
pH[2]			(6.0 S.U.)		(9.0 S.U.)	2/Week	3 Grabs
Chromium, Total	1.08	2.16				2/Month[3]	24-Hr. Comp.
Chromium, Hexavalent			105 ug/l		149 ug/l	2/Month[3]	24-Hr. Comp.
Phenols[4]	0.90	1.80				1/Week	Grab

The limits on this page shall be invoked when the permittee's total average monthly production is less than or equal to 36,000 pounds of cloth per discharge day and greater than 28,000 pounds of cloth per discharge day. See also Section I.A.18.

--- 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.

[1] Production (the quantity of fabric processed) shall be reported based on the number of calendar days rather than the number of production days.

[2] Compliance with these limitations shall be determined by taking a minimum of three (3) grab samples over the day with a minimum of three (3) hours between grabs.

[3] Samples for Total Chromium and Hexavalent Chromium shall be taken at the same time two times per month. If the results of twelve (12) consecutive months of monitoring show effluent concentrations of Hexavalent Chromium below the applicable minimum detection limit from Part I.D, then the permittee is no longer required to continue sampling for Hexavalent Chromium.

[4] Phenols shall mean total phenols as measured by the procedure listed in 40 CFR part 136.

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday-Friday (Sunday – Saturday for flow) at the following location: Outfall 001F.

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 001G. (Outlet from the second aeration lagoon)
   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	0.49 MGD	--- MGD				Continuous	Recorder
Production[1]	28,000	--				1/Day	Calculated
BOD_5	92	185				2/Week	24-Hr. Comp.
COD	1128	2257				2/Month	24-Hr. Comp.
TSS	249	498				2/Month	24-Hr. Comp.
Sulfide	2.8	5.6				2/Month	24-Hr. Comp.
pH[2]			(6.0 S.U.)		(9.0 S.U.)	2/Week	3 Grabs
Chromium, Total	0.84	1.68				2/Month[3]	24-Hr. Comp.
Chromium, Hexavalent			105 ug/l		149 ug/l	2/Month[3]	24-Hr. Comp.
Phenols[4]	0.70	1.40				1/Week	Grab

The limits on this page shall be invoked when the permittee's total average monthly production is less than or equal to 28,000 pounds of cloth per discharge day. See also Section I.A.18.

--- 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.

[1] Production (the quantity of fabric processed) shall be reported based on the number of calendar days rather than the number of production days.

[2] Compliance with these limitations shall be determined by taking a minimum of three (3) grab samples over the day with a minimum of three (3) hours between grabs.

[3] Samples for Total Chromium and Hexavalent Chromium shall be taken at the same time two times per month. If the results of twelve (12) consecutive months of monitoring show effluent concentrations of Hexavalent Chromium below the applicable minimum detection limit from Part I.D, then the permittee is no longer required to continue sampling for Hexavalent Chromium.

[4] Phenols shall mean total phenols as measured by the procedure listed in 40 CFR part 136.

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday-Friday (Sunday – Saturday for flow) at the following location: Outfall 001G.

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

8. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001A. (Outlet from the second aeration lagoon)
   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			39.19 ug/l		54.28 ug/l	1/Week	24-Hr. Comp.
Phenol[1]			51 ug/l		2300 ug/l	1/Quarter	24-Hr. Comp.
Aluminum, Total			797 ug/l		6874 ug/l	1/Quarter	24-Hr. Comp.
Nickel, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Zinc, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Lead, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Cadmium, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Silver, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.

The limits on this page apply during all production tiers. See also Section I.A.18.

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

[1] Phenol shall mean the parameter with CAS Number 108-95-2 whose approved analytical methods are established in Table IC.100 of 40 CFR §136.3

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday through Friday at the following locations: Outfall 001A.

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

9. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001A. (Outlet from the second aeration lagoon)
   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
Phosphorus, Total							
(Nov. – March)			--- mg/l		--- mg/l	1/Quarter	24-Hr. Comp.
(April – Oct.)			--- mg/l		--- mg/l	1/Month	24-Hr. Comp.
Nitrate, Total (as N)							
(Nov. – April)			--- mg/l		--- mg/l	1/Quarter	24-Hr. Comp.
(May – Oct.)			--- mg/l		--- mg/l	1/Month	24-Hr. Comp.
Nitrite, Total (as N)							
(Nov. – April)			--- mg/l		--- mg/l	1/Quarter	24-Hr. Comp.
(May – Oct.)			--- mg/l		--- mg/l	1/Month	24-Hr. Comp.
TKN (as N)							
(Nov. – April)			--- mg/l		--- mg/l	1/Quarter	24-Hr. Comp.
(May – Oct.)			--- mg/l		--- mg/l	1/Month	24-Hr. Comp.
Nitrogen, Total (Total Nitrate + Total Nitrite + TKN, as N)							
(Nov. – April)			--- mg/l		--- mg/l	1/Quarter	24-Hr. Comp.
(May – Oct.)			--- mg/l		--- mg/l	1/Month	24-Hr. Comp.
Ammonia, Total (as N)							
(Nov. – April)			145 mg/l		834 mg/l	1/Month	24-Hr. Comp.
(May– Oct)			68.4 mg/l		429 mg/l	1/Month	24-Hr. Comp.

The limits on this page apply during all production tiers. See also Section I.A.18.

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

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday through Friday at the following locations: Outfall 001A.

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

10. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001A. (Outlet from the second aeration lagoon)
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
Ceriodaphnia Sp.							
LC_{50}[1]					50% or Greater	1/Quarter	24-Hr. Comp.
Pimephales promelas					55%	1/Quarter	24-Hr. Comp.
LC_{50}[1]					or Greater		

The limits on this page apply during all production tiers. See also Section I.A.18.

[1] LC_{50} is defined as the concentration of wastewater that causes mortality to 50% of the test organisms.

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

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

11. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 002A. (Non-contact cooling water)
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	0.12 MGD					1/Month	Estimate
Temperature (Intake)[1]					---°F	1/Month	8 Grabs
Temperature[1]					80°F	1/Month	8 Grabs
pH[1]			(--- S.U.)		(--- S.U.)	1/Month	8 Grabs

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

[1] Eight grab samples shall be taken on the same day, equally spaced through the scheduled workday.

* Values in parentheses ( ) are to be reported as Minimum/Maximum for the reporting period.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: Outfall 002A

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

12. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 004A. (Water from under the floor of the Greige Room)
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	--- MGD	--- MGD				1/Month	Estimate/Recorder[1]
Tetrachloroethylene			--- ug/l		--- ug/l	1/Month[2]	Grab
Trichloroethylene			--- ug/l		--- ug/l	1/Month[2]	Grab
Trans-dichloroethylene			--- ug/l		--- ug/l	1/Month[2]	Grab
Vinyl Chloride			--- ug/l		--- ug/l	1/Month[2]	Grab

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

[1]Within one (1) year of the effective date for this permit, the permittee shall install a flowmeter for measuring the amount of water discharged from Outfall 004A. See Part I.A. 19.

[2]Monitoring for the above pollutants shall only be required when the gage height of the Pawcatuck River upstream of the Kenyon facility is less than two feet at the time of the discharge.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: Outfall 004A

13. a. The effluent shall not cause the receiving water to have a pH less than 6.5 S.U. nor greater than 9.0 S.U. standard units at any time unless these pH values in the receiving water are exceeded due to natural causes.

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.

14. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) One hundred micrograms per liter (100 ug/l);

(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitro-phenol; and one milligram per liter (1 mg/l) for antimony;

(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7);

(4) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f) and Rhode Island Regulations.

b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) Five hundred micrograms per liter (500 ug/l);

(2) One milligram per liter (1 mg/l) for antimony;

(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7); or

(4) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f) and Rhode Island Regulations.

c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or by-product any toxic pollutant which was not reported in the permit application.

15. The permittee shall analyze its effluent from outfall 001 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 by January 15th of each year for the previous calendar year's sample. If the priority pollutant scan is to be used to satisfy part I.B.8, the scan must be submitted with the 3rd quarter bioassay by October 15th. 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.

16. This permit serves as the State's Water Quality Certificate for the discharges described herein.

17. The permittee is not authorized to use chemical additives in the cooling water. The permittee shall obtain Department approval before the use of any additive(s) in the cooling water.

18. The permittee shall record the production of the facility as regulated under 40 CFR, Part 910.42/410.43 (b), (c), and (d) monthly through inventory control calculations. The data shall be summarized and reported annually by January 15th of the following year.

19. The permittee shall install a flowmeter, with a totalizer, for measuring the amount of water discharged from under the floor of the greige room (Outfall 004) and submit a report identifying the type of meter installed and the date installation was complete to the DEM within one (1) year from the effective date of this permit.

20. Within three (3) years of the effective date of this permit, the permittee shall submit to the DEM an Engineering Report evaluating the permittee's ability to remove Total Phosphorus and Total Nitrogen from its effluent to the maximum extent practicable using existing equipment and/or chemical addition. At minimum, the Engineering Report shall consider:

    a. The equipment available at the facility which can be used to remove nitrogen (e.g., through cycling of aeration and/or creating anoxic zones) and phosphorus (e.g., through dosing chemicals);

    b. The extent to which chemicals can be dosed while meeting all other effluent limitations;

    c. Alternative chemicals available to the permittee for phosphorus removal and the feasibility of using these chemicals in existing treatment processes;

    d. The extent to which the existing treatment equipment/processes could be modified to increase nitrogen and phosphorus removal, and;

    e. The technical and economic factors associated with:
        i. any facility upgrades required;
        ii. procurement and long-term storage of chemicals;
        iii. energy required;
        iv. impacts on sludge generation and disposal.

    The Engineering Report shall be subject to DEM review and approval. Any deficiency in the report will be identified by the DEM in writing and appropriate revisions to the Engineering Report shall be submitted to the DEM within thirty (30) days of notice of the deficiency, unless a longer timeframe is specified.

B. BIOMONITORING REQUIREMENTS AND INTERPRETATION OF RESULTS

1. General

Beginning on the effective date of the permit, the permittee shall perform eight (8) acute toxicity tests per year on samples collected from discharge outfall 001A. The permittee shall conduct the tests during dry weather periods (no rain within 48 hours prior to or during sampling unless approved by RIDEM) according to the following test frequency and protocols. Acute toxicity data shall be reported as outlined in Part I.B.9. 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

For four (4) sampling events, (one each calendar quarter) the permittee will conduct 48 hour acute definitive toxicity tests on the two species listed below, for a total of eight acute toxicity tests per year. This requirement entails performing two-species testing as follows:

Species	Test Type	Frequency
	Two Species Test (Four Times Annually)	
Daphnids (Ceriodaphnia dubia) OR (Daphnia pulex)	Definitive 48-Hour Acute Static (LC_{50})	Quarterly
Fathead Minnows (Pimephales promelas)	Definitive 48-Hour Acute Static (LC_{50})	Quarterly

A sampling event is defined as three 24-hour composites collected over the seven-day test period (see Part I.B.4).

3. Testing Methods

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

4. Sample Collection

For each sampling event a 24-hour flow proportioned composite final effluent sample shall be collected during a dry weather (no rain 48 hours prior to or during sampling unless approved by RIDEM). For each sampling event, the effluent samples shall be collected on days 0, 3 and 5 of the 7-day exposure period. The first sample is used for test initiation, Day 1, and for test solution renewal on Day 2. The second sample would be used for test solution renewal on Days 3 and 4. The third sample would be used for test solution renewal on Days 5, 6 and 7.

To eliminate the problem of potential rainfall interference during the five-day sampling period for the chronic tests, the permittee shall collect enough sample on Day 0 to properly store and use one-third on both Days 3 and 5 if rain has occurred since Day 0. In addition, if no rainfall has occurred since Day 3, enough sample shall also be collected on Day 3 to use for Day 5 if necessary.

In the laboratory, the initial sample (Day 0) will be split into two (2) subsamples, after thorough mixing, for the following:

A: Chemical Analysis
B: Acute Toxicity Testing

Day 3 and 5 samples will be held until test completion. If either the Day 3 or 5 renewal sample is of sufficient potency to cause lethality to 50% or more test organisms in any of the dilutions for either species, then a chemical analysis shall be performed on the appropriate sample(s) as well.

All samples held overnight shall be refrigerated at 4°C.

5. Dilution Water

Dilution water used for freshwater acute toxicity analyses should be of sufficient quality to meet minimum acceptability of test results (see parts I.B.6 and I.B.7). For both species, natural freshwater shall be used as the dilution water. This water shall be collected from the Wood River at the Skunk Hill Road Bridge. If this natural freshwater diluent is found to be, or suspected to be toxic or unreliable, an alternate or laboratory source of water of known quality with a hardness and pH similar to that of the receiving water may be substituted AFTER RECEIVING WRITTEN APPROVAL FROM RIDEM.

6. Effluent Toxicity Test Conditions for the Daphnids (Ceriodaphnia dubia and Daphnia pulex)[1]

Test conditions are required to be complaint with 40 CFR 136 using the following effllluent concentrations:

Six (6) dilutions plus a control: 100%, 85%, 75%, 50%, 25%, 12.5%, and 0% effluent.

7. Effluent Toxicity Conditions for the Fathead Minnow (Pimephales promelas)[1]

Test conditions are required to be complaint with 40 CFR 136 using the following effllluent concentrations:

Six (6) dilutions plus a control: 100%, 85%, 75%, 55%, 25%, 12.5%, and 0% effluent.

8. Chemical Analysis

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

Parameter	Saline Effluent	Detection Diluent	Limit (mg/l)
Hardness	X	X	0.5
Alkalinity	X	X	2.0
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
Total Phenols	X		0.05
Cyanide	X		0.01

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

Total Metals	Effluent	Saline Diluent	Detection Limit (ug/l)
Total Nickel	X	X	1.0
Total Copper	X	X	1.0
Total Aluminum	X	X	20.0
Total Lead	X	X	1.0
Total Zinc	X	X	5.0
Total Cadmium	X	X	0.1
Total Silver	X	X	0.5

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 the other permit conditions to fulfill any priority pollutant scan requirements.

9. 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.
- 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:

- Survival for each concentration and replication at time 24 and 48 hours.
- LC_{50} 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 LC_{50} may be estimated using the graphical method.

10. Reporting of Bioassay Testing

Bioassay Testing shall be reported as follows:

Quarter Testing to be Performed	Report Due No Later Than	Results Submitted on DMR for
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

Bioassay testing following the protocol described herein shall commence during the first quarter after the effective date of this permit.

A signed copy of these, and all other reports required herein, shall be submitted electronically in accordance with Part I.E.2.b.

C. **OPERATION AND MAINTENANCE**

Operation and maintenance of the treatment 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. Sludge

The permittee shall conform and adhere to all conditions, practices and regulations as contained in the State of Rhode Island Solid Waste Management Facilities and Organic Waste Management Facilities (250-RICR-140-05-1).

D. 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, and the following terms and conditions:

1. All analyses of parameters under this permit must comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting* rule. Only sufficiently sensitive test methods may be used for analyses of parameters under this permit. The permittee shall assure that all testing required by this permit is performed 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 Rhode Island Pollutant Discharge Elimination System (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).

   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.

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

   a. “could not be analyzed” data shall be excluded and shall not be considered as a failure to comply with the permit sampling requirements.

   b. Results reported as less than the MDL shall be reported as zeros in accordance with the DEM’s DMR Instructions.

   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)**
1V	acrolein	10.0
2V	acrylonitrile	5.0
3V	benzene	1.0
5V	bromoform	1.0
6V	carbon tetrachloride	1.0
7V	chlorobenzene	1.0
8V	chlorodibromomethane	1.0
9V	chloroethane	1.0
10V	2-chloroethylvinyl ether	5.0
11V	chloroform	1.0
12V	dichlorobromomethane	1.0
14V	1,1-dichloroethane	1.0
15V	1,2-dichloroethane	1.0
16V	1,1-dichloroethylene	1.0
17V	1,2-dichloropropane	1.0
18V	1,3-dichloropropylene	1.0
19V	ethylbenzene	1.0
20V	methyl bromide	1.0
21V	methyl chloride	1.0
22V	methylene chloride	1.0
23V	1,1,2,2-tetrachloroethane	1.0
24V	tetrachloroethylene	1.0
25V	toluene	1.0
26V	1,2-trans-dichloroethylene	1.0
27V	1,1,1-trichloroethane	1.0
28V	1,1,2-trichloroethane	1.0
29V	trichloroethylene	1.0
31V	vinyl chloride	1.0

Acid Compounds - EPA Method 625		**MDL ug/l (ppb)**
1A	2-chlorophenol	1.0
2A	2,4-dichlorophenol	1.0
3A	2,4-dimethylphenol	1.0
4A	4,6-dinitro-o-cresol	1.0
5A	2,4-dinitrophenol	2.0
6A	2-nitrophenol	1.0
7A	4-nitrophenol	1.0
8A	p-chloro-m-cresol	2.0
9A	pentachlorophenol	1.0
10A	phenol	1.0
11A	2,4,6-trichlorophenol	1.0

Pesticides - EPA Method 608		**MDL ug/l (ppb)**
1P	aldrin	0.059
2P	alpha-BHC	0.058
3P	beta-BHC	0.043
4P	gamma-BHC	0.048
5P	delta-BHC	0.034
6P	chlordane	0.211
7P	4,4 ' -DDT	0.251
8P	4,4 ' -DDE	0.049
9P	4,4 ' -DDD	0.139
10P	dieldrin	0.082
11P	alpha-endosulfan	0.031
12P	beta-endosulfan	0.036
13P	endosulfan sulfate	0.109
14P	endrin	0.050
15P	endrin aldehyde	0.062
16P	heptachlor	0.029
17P	heptachlor epoxide	0.040

Pesticides - EPA Method 608		**MDL ug/l (ppb)**
18P	PCB-1242	0.289
19P	PCB-1254	0.298
20P	PCB-1221	0.723
21P	PCB-1232	0.387
22P	PCB-1248	0.283
23P	PCB-1260	0.222
24P	PCB-1016	0.494
25P	toxaphene	1.670

Base/Neutral - EPA Method 625		**MDL ug/l (ppb)**
1B	acenaphthene *	1.0
2B	acenaphthylene *	1.0
3B	anthracene *	1.0
4B	benzidine	4.0
5B	benzo(a)anthracene *	2.0
6B	benzo(a)pyrene *	2.0
7B	3,4-benzofluoranthene *	1.0
8B	benzo(ghi)perylene *	2.0
9B	benzo(k)fluoranthene *	2.0
10B	bis(2-chloroethoxy)methane	2.0
11B	bis(2-chloroethyl)ether	1.0
12B	bis(2-chloroisopropyl)ether	1.0
13B	bis(2-ethylhexyl)phthalate	1.0
14B	4-bromophenyl phenyl ether	1.0
15B	butylbenzyl phthalate	1.0
16B	2-chloronaphthalene	1.0
17B	4-chlorophenyl phenyl ether	1.0
18B	chrysene *	1.0
19B	dibenzo (a,h)anthracene *	2.0
20B	1,2-dichlorobenzene	1.0
21B	1,3-dichlorobenzene	1.0
22B	1,4-dichlorobenzene	1.0
23B	3,3 ' -dichlorobenzidine	2.0
24B	diethyl phthalate	1.0
25B	dimethyl phthalate	1.0
26B	di-n-butyl phthalate	1.0
27B	2,4-dinitrotoluene	2.0
28B	2,6-dinitrotoluene	2.0
29B	di-n-octyl phthalate	1.0
30B	1,2-diphenylhydrazine (as azobenzene)	1.0
31B	fluoranthene *	1.0
32B	fluorene *	1.0
33B	hexachlorobenzene	1.0
34B	hexachlorobutadiene	1.0
35B	hexachlorocyclopentadiene	2.0
36B	hexachloroethane	1.0
37B	indeno(1,2,3-cd)pyrene *	2.0
38B	isophorone	1.0
39B	naphthalene *	1.0
40B	nitrobenzene	1.0
41B	N-nitrosodimethylamine	1.0
42B	N-nitrosodi-n-propylamine	1.0
43B	N-nitrosodiphenylamine	1.0
44B	phenanthrene *	1.0
45B	pyrene *	1.0
46B	1,2,4-trichlorobenzene	1.0

OTHER TOXIC POLLUTANTS

	MDL ug/l (ppb)
Antimony, Total	3.0
Arsenic, Total	1.0
Beryllium, Total	0.2
Cadmium, Total	0.1
Chromium, Total	1.0
Chromium, Hexavalent	20.0
Copper, Total	1.0
Lead, Total	1.0
Mercury, Total	0.2
Nickel, Total	1.0
Selenium, Total	2.0
Silver, Total	0.5
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

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

NOTE:

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

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

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

E. MONITORING AND REPORTING

1. Monitoring

All monitoring required by this permit shall be done in accordance with sampling and analytical testing procedures specified in Federal Regulations (40 CFR Part 136).

2. Submittal of DMRs Using NetDMR

a. The Permittee shall continue to submit its monthly monitoring data via 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.

b. 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
- Analytical Data Summary Tables
- Bioassay Reports

c. 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.

- Written notifications required under Part II
- Notice of unauthorized discharges
- Priority Pollutant Scan results for Outfall 001A
- Annual Production Reports (See Part I.A.18)
- Flowmeter Installation Report (See Part I.A.19)
- Phosphorus/Nitrogen Removal Engineering Report (See Part I.A.20)

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

d. 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(l)(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.

PART II
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GENERAL REQUIREMENTS

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 250-RICR-150-10-1.12 of the Rhode Island Pollutant Discharge Elimination System (RIPDES) Regulations. Rhode Island General Laws, Chapter 46-12 provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $5,000 per violation, or by imprisonment for not more than 30 days per violation, or by both.

(l) Reporting Requirements

(1) Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.

(2) Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with the permit requirements.

(3) Transfers. This permit is not transferable to any person except after written notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under State and Federal law.

(4) Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(5) Twenty-four hour reporting. The permittee shall immediately report any noncompliance which may endanger health or the environment by calling DEM at (401) 222-4700 or (401) 222-3070 at night.

A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

The following information must be reported immediately:

(i) Any unanticipated bypass which causes a violation of any effluent limitation in the permit; or

(ii) Any upset which causes a violation of any effluent limitation in the permit; or

(iii) Any violation of a maximum daily discharge limitation for any of the pollutants specifically listed by the Director in the permit.

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

(6) Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (1), (2), and (5), of this section, at the time monitoring reports are submitted. The reports shall contain the information required in paragraph (l)(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 250-RICR-150-10-1.14(R) 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 250-RICR-150-10-1.14(R) of the RIPDES Regulations; and

(d) The permittee complied with any remedial measures required under 250-RICR-150-10-1.14(E) 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, 235 Promenade Street, Providence, Rhode Island 02908. 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 250-RICR-150-10-1.16 and 250-RICR-150-10-1.24 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 pubic 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 250-RICR-150-10-1.50 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. ^oC	temperature in degrees Centigrade
Temp. ^oF	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
$C1_2$	total residual chlorine

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. **RI0000191**

NAME AND ADDRESS OF APPLICANT:

Kenyon Industries, Incorporated
36 Sherman Avenue
Kenyon, Rhode Island 02832

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Kenyon Industries, Incorporated
36 Sherman Avenue
Kenyon, Rhode Island 02832

RECEIVING WATER: **Pawcatuck River (Waterbody ID RI0008039R-18B)**

CLASSIFICATION: **B1**

Kenyon Draft Permit Table of Contents

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

The above-named applicant has applied to the Rhode Island Department of Environmental Management for reissuance of a RIPDES Permit to discharge into the designated receiving water. The facility is engaged in the manufacturing of natural and synthetic textile products. The discharge consists of treated process industrial wastewater, non-contact cooling water, and river/ground water collected under floor of the Greige Room. Site layout and process diagrams of the facility are shown in Attachment B.

II. Description of Discharge

A quantitative description of the discharge in terms of significant effluent parameters based on DMR data from January 2016 to November 2020 is shown on Attachment A.

III. Permit and Administrative Compliance Order Limitations and Conditions

The final effluent limitations and monitoring requirements may be found in the permit. The DEM proposes to issue a new Consent Agreement that will establish interim limits and a compliance schedules for Total Copper, Whole Effluent Toxicity (WET), and Phenol.

IV. Permit Basis and Explanation of Effluent Limitation Derivation

Facility Description

Kenyon Industries, Incorporated (Kenyon) is a commission textile mill, located at 36 Sherman Avenue in Kenyon, Rhode Island, which performs scouring, dyeing, printing, finishing, and coating of woven fabrics. The work performed at Kenyon is highly variable in nature and each customer may require that a variety of woven fabrics be processed. This results in point source discharges of wastewater and non-contact cooling water to the Pawcatuck River. The wastewater discharges to the Pawcatuck River (Waterbody ID: RI0008039R-18B) consist of treated industrial wastewater effluent. Treatment of industrial wastewater is accomplished using an activated sludge secondary treatment process and is discharged to the Pawcatuck River through an effluent diffuser.

Treatment of industrial wastewater consists of an aeration basin, coagulation tank and feed system, polymer tank and feed system, flocculation tank, two (2) clarifiers, polishing pond, sludge conditioning tank, and a filter press. Treated effluent is discharged to the Pawcatuck River through an effluent diffuser. A process flow diagram is shown in Attachment B.

Kenyon's most recent permit was reissued on July 20, 2010 and became effective on October 1, 2010. The permit expired on September 30, 2015. However, since a complete reapplication was submitted to DEM on May 21, 2015, the existing permit remains in effect in accordance with State's regulations for the Rhode Island Pollutant Discharge Elimination System (250-RICR-150-10-1) §1.13. Because Kenyon is not a municipal wastewater treatment plant and does not accept wastewater from another source, Kenyon does not have an industrial pretreatment program.

Receiving Water Description

The water body segment for the Pawcatuck River is Waterbody ID RI0008039R-18B and is located in Washington County in the southern section of the Town of Richmond and the northern portion of the Town of Charlestown. This segment is delineated by the Pawcatuck River and tributaries from the dam at Kenyon to the beginning of the Carolina Mill Pond in Carolina. Richmond, Charlestown. This segment is listed on DEM's 2018-2020 303(d) impaired waters list for not supporting Fish and Wildlife habitat due to Whole Effluent Toxicity (WET). Additionally, this segment is listed for not supporting Primary Contact Recreation or Secondary Contact Recreation due to enterococcus. This segment has a TMDL for enterococcus approved as of September 22, 2011. The TMDL lists Kenyon industries as a potential source of bacteria in the Pawcatuck River as Kenyon's discharge historically consisted of treated domestic wastewater effluent. However, Subsequent to issuance of the July 20, 2010 permit, Kenyon rerouted all domestic wastewater to a new, subsurface onsite wastewater treatment system (OWTS) in October 2010. Kenyon submitted a report to DEM on June 14, 2011 documenting that all domestic wastewater has been removed from the treatment lagoons' discharge (outfall 001). This conclusion is supported by effluent data reported on

Kenyon's Discharge Monitoring Reports from January 2011 – July 2011 showing fecal coliform concentrations in outfall 001 to be well below allowable levels (typically single digits). Permit limits for the Kenyon WWTF were developed to be consistent with water quality regulations and any applicable wasteload allocation.

This segment of the Pawcatuck River is designated as a Warmwater habitat for fisheries and has a Waterbody Classification of B1; B1 waters are designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value.

Permit Limit Development

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, both filed pursuant to RIGL Chapter 46-12, as amended. RIDEM's primary authority over the permit comes from EPA's authorization of the program in September 1984 under the Federal Clean Water Act (CWA).

Development of the Rhode Island Pollutant Discharge Elimination System (RIPDES) permit limitations is a multi-step process consisting of: calculating allowable technology-based discharge levels based on Federal categorical standards and historic production data; calculating allowable water quality-based discharge levels based on water quality criteria, background data, and available dilution; assigning appropriate Best Professional Judgement (BPJ) based limits; comparing technology-based and water quality-based allowable discharge levels to each other and taking the most stringent as Kenyon's allowable discharge level; comparing existing permit limits to the new allowable discharge levels; and evaluating the ability of the facility to meet the final limits. A brief description of these steps is presented below.

Water quality criteria are comprised of numeric and narrative criteria. Numeric criteria are scientifically derived ambient concentrations developed by EPA or the State for various pollutants of concern to protect human health and aquatic life. Narrative criteria are statements that describe the desired water quality goal. A technology-based limit is a numeric limit, which is determined by examining the capability of a treatment process to reduce or eliminate pollutants.

Technology-Based Effluent Limitations

40 CFR Part 410 establishes Federal effluent guidelines for textile mills that "discharge or may discharge process wastewater pollutants to the waters of the United States". A "commission finisher" finishes textile materials that are 50% or more owned by others, in mills that are 51% or more independent, by processing 20% or more of the commissioned products through batch processes and having 50% or more of the commissioned orders being processed in 5,000 yard or smaller lots. "Complex manufacturing operations" are defined as a "simple" unit process (i.e., desizing, fiber preparation, any dyeing) plus any additional manufacturing operations such as printing, water proofing, or applying stain resistance or other functional fabric finishes. Since 99.2% of the textiles processed by Kenyon are owned by others with 100% processed through batch operations, 99% of which are in lots smaller than 5,000 yards, Kenyon is defined as a "commission finisher" that finishes synthetic woven and natural/synthetic blended fabrics using "complex manufacturing operations". Therefore, Kenyon is subject to 40 CFR Part 410.42 Subpart D (Woven Fabric Finishing Subcategory). The NPDES Permit Writer's Manual (EPA 2010) states that "for existing facilities and existing sources (where NSPS do not apply), existing source standards (i.e., BPT, BCT, BAT) apply. The permit writer would use the more stringent technology level of control for each pollutant." Therefore, the more stringent of the applicable BPT and BAT standards outlined in §§410.42(a-e) and 410.43(a-e) apply to Kenyon's effluent. The technology-based limits that apply to Kenyon are as follows:

Table 1: Technology-Based Loading Rates (per 40 CFR 410)

Pollutant or pollutant property	**Maximum for any 1 day**	**Average of daily values for 30 consecutive days**
	Kg/kkg (or pounds per 1,000 lb) of product	

BOD_5	6.6	3.3
COD	See Below	See Below
TSS	17.8	8.9
Sulfide	0.20	0.10
Phenols	0.10	0.05
Total Chromium	0.10	0.05
pH	6.0 s.u. - 9.0 s.u.	

The Woven Fabric Finishing Subcategory, as established in §§410.42(b-d) and 410.43(b-d), has different technology-based effluent limitations (TBELs) for chemical oxygen demand (COD) depending on the fabric prepared, types of unit operations used, and complexity of the manufacturing operations. Kenyon has historically produced textiles that meet the descriptions in paragraphs (b), (c), and (d) of the above-referenced sections. According to the NPDES Permit Writer's Manual, "when a facility is subject to effluent guidelines for two or more processes in a subcategory to effluent guidelines from two or more categories or subcategories, the permit writer must apply each of the applicable effluent guidelines to derive TBELs." The Manual further states that in the case where individual wastewater streams regulated by effluent guidelines are combined during or before treatment, as is the case for Kenyon, "the permit writer combines the allowable pollutant loadings from each set of requirements or from each set of effluent guidelines to arrive at a single TBEL for the facility using a building block approach." Moreover, according to the 1974 Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Textile Mills Point Source Category, when combinations of the different woven fabric classifications occur, "a prorated approach will be taken to establish the allowable residual COD level." To determine an appropriate COD TBEL for Kenyon, DEM analyzed historic production data based on each subcategory in Part 410 Subpart D:

Table 2: 2016-2020 40 CFR 410.42 Kenyon Production Categories

	40 CFR 410.42(b)	% of Annual Total	40 CFR 410.42(c)	% of Annual Total	40 CFR 410.42(d)	% of Annual Total	Total (yards)
2016	2,419,831	9.56	22,855,985	90.34	24,502	0.10	25,300,318
2017	2,802,818	10.27	24,411,068	89.47	70,723	0.26	27,284,609
2018	2,505,723	9.83	22,936,313	90.01	40,577	0.16	25,482,613
2019	2,899,162	12.28	20,662,172	87.51	48,577	0.21	23,609,911
2020	2,110,869	10.73	16,969,670	86.28	587,317	2.99	19,667,856
Category Total	12,738,403		107,835,208		771,696		121,345,307
% of total	10.50		88.87		0.64		

Based on the above production data from 2016-2020, it was determined that an appropriate measure of actual production for Kenyon is 10.50% for 40 CFR 410.42(b), 89.0% for 40 CFR 410.42(c), and 0.5% for 40 CFR 410.42(d). Accordingly, the COD Monthly Average and Daily Maximum TBEL for Kenyon was calculated as follows:

Maximum Daily:

$$60 + \frac{20.0(10.50) + 40(89.0) + 60(0.50)}{100} = 98.0 \frac{kg}{kkg} (or\ lbs\ per\ 1{,}000\ lbs\ product)$$

Average Monthly:

$$30 + \frac{10.0(10.50) + 20(89.0) + 30(0.50)}{100} = 49 \frac{kg}{kkg} (or\ lbs\ per\ 1{,}000\ lbs\ product)$$

The additional COD allocation based on most of Kenyon's production being finishing of textiles according to 40 CFR 410.42(c) is consistent with the Textile Mills Point Source Category Effluent Guidelines. According to the Development Document for the Effluent Guidelines: "In the woven fabric finishing subcategory, at mills where complex processing operations (printing, water-proofing and application of functional finishes in addition to dyeing and fiber preparation) are performed, wastewaters are discharged that are higher in volume and have higher BOD_5, COD, and TSS raw waste loads than at mills where simple operations (dyeing and fiber preparation) are performed." Therefore, the higher COD limits better account for the higher strength wastewater being treated.

Antibacksliding requirements, found at Section 402(o) of the Clean Water Act, prohibit the relaxation of effluent limits by using a technology-based effluent limitation that is based on an effluent guideline that is less stringent. Therefore, the effluent limitations found in Table 1 and the calculated limit for COD were compared to the pollutant discharge rates used to determine limits in the previous permit. The pollutant discharge rates from the previous permit are outlined in the table below:

Table 3: Pollutant Discharge Rates from 2010 Permit

Parameter	Maximum for any 1 day (lbs/1000 lbs)	Average of daily values for 30 consecutive days (lbs/1000 lbs)
BOD_5	10.3	5.2
COD	80.6	40.3
TSS	18.9	13.9
Sulfide	0.21	0.10
Phenols	0.05	0.025
Total Chromium	0.06	0.03
pH	6.0 s.u. – 9.0 s.u.	

Some of the effluent limitations from 40 CFR Part 410 – Subpart D were less stringent than the comparable limit established in the previous permit. Since the Clean Water Act prevents backsliding for TBELs established in a previous permit, the previous permit limit was used for COD, Phenol, and Total Chromium. The final pollutant discharge rates used to determine technology-based limits is outlined in the table below:

Table 4: Pollutant Discharge Rates for Current Permit

Parameter	Maximum for any 1 day (lbs/1000 lbs)	Average of daily values for 30 consecutive days (lbs/1000 lbs)
BOD_5	6.6	3.3
COD	80.6	40.3
TSS	17.8	8.9
Sulfide	0.20	0.10
Phenols	0.05	0.025
Total Chromium	0.06	0.03
pH	6.0 s.u. - 9.0 s.u.	

§1.18(B)(2) of the Regulations for the Rhode Island Pollutant Discharge Elimination System (RIPDES Regulations), requires that "calculation of any permit limitations, standards, or prohibitions which are based on production (or other measure of operation) shall be based not upon the design production capacity but rather upon a reasonable measure of actual production of the facility…" Therefore, since the technology-based limits listed above are based on production, the technology based allowable discharge levels must be based on a reasonable measure of actual production. It is important to note that, according to the EPA guidance document entitled Guidance Manual for the Use of Production Based Pretreatment Standards, and the Combined Wastestream Formula, the production rate should be based on the production per discharge day rather than production per production day. Since Kenyon discharges seven (7) days per week the production per discharge day is equivalent to the production per calendar day. This is what the previous permit required to be reported on Discharge Monitoring Reports (DMRs). Therefore, the production values reported on the DMRs are those that were used to calculate limits. Table 5 includes the annual average production in lbs/day for each of the past five (5) years.

Table 5: Average Monthly Production (2016-2020)

Production Year	Annual Monthly Average (lbs/d)
2016	48055
2017	49708
2018	47869
2019	44055
2020	40137

Based on the historic production data, it was determined that tiers at 28,000 lbs/day, 36,000 lbs/day, 44,000 lbs/day, 52,000 lbs/day, 60,000 lbs/day, and 68,000 lbs/day, which were the production tiers used in the previous permit, are appropriate. Using the technology-based effluent limits from Table 4 and the above-mentioned production tiers, the following technology-based allowable discharge levels were calculated:

Table 6a: TBELs @ >68,000 lbs/day Average Monthly Rate

Parameter	Maximum for any 1 day (lbs/day)	Average of daily values for 30 consecutive days (lbs/day)
BOD_5	502	251
COD	6,125	3,062
TSS	1,353	676
Sulfide	15.2	7.6
Phenols	3.80	1.9
Total Chromium	4.56	2.28
pH	6.0 s.u. - 9.0 s.u.	

Table 6b: TBELs @ 68,000 lbs/day Average Monthly Rate

Parameter	Maximum for any 1 day (lbs/day)	Average of daily values for 30 consecutive days (lbs/day)
BOD_5	449	224
COD	5,480	2,740
TSS	1,210	605
Sulfide	13.6	6.8
Phenols	3.40	1.7
Total Chromium	4.08	2.04
pH	6.0 s.u. - 9.0 s.u.	

Table 6c: TBELs @ 60,000 lbs/day Average Monthly Rate

Parameter	Maximum for any 1 day (lbs/day)	Average of daily values for 30 consecutive days (lbs/day)
BOD_5	396	198
COD	4,836	2,418
TSS	1068	534
Sulfide	12.0	6.0
Phenols	3.0	1.5
Total Chromium	3.6	1.8
pH	6.0 s.u. - 9.0 s.u.	

Table 6d: TBELs @ 52,000 lbs/day Average Monthly Rate

Parameter	Maximum for any 1 day (lbs/day)	Average of daily values for 30 consecutive days (lbs/day)
BOD_5	343	172
COD	4,191	2,096
TSS	926	463

Sulfide	10.4	5.2
Phenols	2.6	1.3
Total Chromium	3.12	1.56
pH	6.0 s.u. - 9.0 s.u.	

Table 6e: TBELs @ 44,000 lbs/day Average Monthly Rate

Parameter	Maximum for any 1 day (lbs/day)	Average of daily values for 30 consecutive days (lbs/day)
BOD_5	290	145
COD	3,546	1,773
TSS	783	391.6
Sulfide	8.8	4.4
Phenols	2.2	1.1
Total Chromium	2.64	1.32
pH	6.0 s.u. - 9.0 s.u.	

Table 6f: TBELs @ 36,000 lbs/day Average Monthly Rate

Parameter	Maximum for any 1 day (lbs/day)	Average of daily values for 30 consecutive days (lbs/day)
BOD_5	238	119
COD	2,902	1,451
TSS	641	320
Sulfide	7.2	3.6
Phenols	1.8	0.9
Total Chromium	2.16	1.08
pH	6.0 s.u. - 9.0 s.u.	

Table 6g: TBELs @ 28,000 lbs/day Average Monthly Rate

Parameter	Maximum for any 1 day (lbs/day)	Average of daily values for 30 consecutive days (lbs/day)
BOD_5	185	92
COD	2,257	1,128
TSS	498	249
Sulfide	5.6	2.8
Phenols	1.4	0.7
Total Chromium	1.68	0.84
pH	6.0 s.u. - 9.0 s.u.	

Water Quality-Based Permit Limitations

The allowable effluent limitations were established based on 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.

CWA section 301(b)(1)(C) requires that permits include any effluent limitations necessary to meet water quality standards. The waterbody segment is a Class B1 warm freshwater according to the Rhode Island Water Quality Regulations. These waters are designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall

have good aesthetic value. Primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges. The NPDES Permit Writer's Manual states that when characterizing the effluent and receiving water the permit writer should first identify pollutants of concern in the effluent, which include: pollutants with applicable TBELs, pollutants with a wasteload allocation from a TMDL, pollutants identified as needing WQBELs in the previous permit, pollutants identified as present in the effluent through monitoring, and pollutants otherwise expected to be present in the discharge. The pollutants of concern and any applicable water quality criteria for the pollutant were identified based on these categories:

Table 7: Pollutants of Concern in Kenyon's effluent

Pollutant of Concern	Why a Pollutant of Concern?	Applicable Water Quality Criteria
BOD_5	Applicable TBEL	No -- Dissolved Oxygen Criteria
COD	Applicable TBEL	No -- Dissolved Oxygen Criteria
TSS	Applicable TBEL	No
Sulfide	Applicable TBEL	No
Phenols	Applicable TBEL	No
Total Chromium	Applicable TBEL	Yes – Cr(III) and Cr(VI)
pH	Applicable TBEL	Yes
Ammonia	WQBEL in previous permit	Yes
Copper	WQBEL in previous permit	Yes
Lead	WQBEL in previous permit	Yes
Cadmium	WQBEL in previous permit	Yes
Silver	WQBEL in previous permit	Yes
Nickel	WQBEL in previous permit	Yes
Aluminum	WQBEL in previous permit	Yes
Zinc	WQBEL in previous permit	Yes
Total Residual Chlorine	WQBEL in previous permit	Yes
Fecal Coliform	WQBEL in previous permit	Yes
Ceriodaphnia LC_{50}	WQBEL in previous permit	Yes -- Narrative Criteria §1.10(D)(1)
Pimphales LC_{50}	WQBEL in previous permit	Yes -- Narrative Criteria §1.10(D)(1)
Total Phosphorus	Present through monitoring	Yes -- Narrative Nutrient Criteria
Nitrate	Present through monitoring	Yes -- Narrative Nutrient Criteria
Nitrite	Present through monitoring	Yes -- Narrative Nutrient Criteria
TKN	Present through monitoring	Yes -- Narrative Nutrient Criteria
Total Nitrogen	Present through monitoring	Yes -- Narrative Nutrient Criteria
Antimony	Present through monitoring - PPS	Yes
bis(2-ethylhexyl)phthalate	Present through monitoring - PPS	Yes
Phenol	Present through monitoring - PPS	Yes
Chlorobenzene	Present through monitoring - Application Data	Yes
Oil & Grease	Present through monitoring - Application Data	Yes -- Narrative Criteria §1.10(D)(1)
Sulfate	Present through monitoring - Application Data	No
Cobalt	Present through monitoring - Application Data	No

Iron	Present through monitoring - Application Data	Yes
Color	Present through monitoring - Application Data	Yes -- Narrative Criteria §1.10(D)(1)
Fluoride	Present through monitoring - Application Data	No

The Pawcatuck River has a completed TMDL for Enterococcus. However, Kenyon disconnected the sanitary wastewater source from their treatment system train in 2010, and now only discharges treated process wastewater and non-contact cooling water to surface waters. Therefore, there is no reasonable potential for the Kenyon discharge to cause an excursion above a water quality standard for bacteria, and bacteria limits are not required in the permit.

RIPDES Regulations at §1.16(A)(5)(b) state that effluent limitations "must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Department determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." Therefore, it was determined whether the Kenyon discharge has a reasonable potential to cause or contribute to an excursion above any State water quality standard for the pollutants of concern with an applicable water quality criterion. To make this determination, DEM compares the discharge concentration for the pollutant to the applicable water quality criterion. If the discharge concentration, found in discharge monitoring reports, priority pollutant scans, and application data, is greater than or equal to half of the applicable water quality-based permit limit, then DEM determines that there is reasonable potential for the discharge to cause or contribute to an excursion above the State water quality standard and assigns effluent limits for that pollutant.

§§1.10(C)(1) and 1.10(C)(2) of the Water Quality Regulations describes the flows used to determine compliance with human health and aquatic life criteria. Freshwater human health criteria use the harmonic mean flow as the design flow. The harmonic mean flow is a long-term mean flow value calculated by dividing the number of daily flows analyzed by the sum of the reciprocals of those daily flows. Aquatic life criteria shall not be exceeded at or above the lowest average 7 consecutive day low flow with an average recurrence frequency of once in 10 years (7Q10).

In accordance with the RIPDES 7Q10 Policy, revised December 2019, the 7Q10 flow for the Pawcatuck River at Kenyon Industries was compared to the USGS gage on the Pawcatuck River at Kenyon, RI (USGS Station Number 01117430). This station became active in 2007, just prior to the previous permit's reissuance. Due to the gage's proximity to Kenyon's discharge, the 7Q10 for the Pawcatuck River at the gage was applied directly to the dilution factor calculation, where:

Drainage Area for the Gauge = 72.7 square miles
7Q10 for the Gauge = 7.928 cubic feet per second (cfs)

Using the upstream 7Q10 river flow of 7.928 cfs (for aquatic life criteria) and a mean harmonic flow of 54.104 cfs (for human health criteria) the appropriate dilution factors were determined. A 2013 wastewater Treatment Plant Upgrade Engineering Report noted that the facility's highest average specific water usage is 6.9 gal/lb of production. At a maximum monthly average production rate of 70,000 lbs/day and the specific water usage of 6.9 gal/lbs, the average monthly flow rate was calculated to be 0.49 MGD. This was determined to be a reasonable measure of actual production in accordance with §1.18(B)(2) of the RIPDES Regulations. Using the permitted flow of 0.49 MGD (0.758 cfs), a water quality dilution factor of 11.457 for acute and chronic criteria and a human health dilution factor of 72.359 were calculated using the following equation:

$$DF = \frac{Q_D + Q_U}{Q_D}$$

Where: DF = Dilution Factor
Q_D = Design Flow
Q_U = Flow upstream of the Facility (Receiving Water Flow)

An exception to these dilution factors was made for Ammonia limitations. Ammonia removal is strongly dependent on temperature (nitrification rate decreases as temperature decreases). Since Ammonia does not bioaccumulate or accumulate in sediment, seasonal dilution factors and historical pH and temperature

background data were used to determine the appropriate Ammonia limitations. A winter 7Q10 river flow of 16.142 cfs was used to yield a dilution factor of 22.289 and a summer 7Q10 of 7.928 cfs used to give a dilution factor of 11.457.

Based on the above dilution factors and the freshwater aquatic life and non-Class A human health criteria, from the Rhode Island Water Quality Regulations, allowable discharge concentrations were established using 80% allocation for pollutants without background data, 90% allocation for pollutants with background data, and 100% allocation of total residual chlorine (TRC) due to the fact that Chlorine is not expected to be found in ambient water and it is a non-conservative pollutant.

Using the above dilution factors and hardness, 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.

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

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

Note: The right side of this formula is divided by the appropriate metals translator when this formula is used to calculate limits for metals.

b) Using available background concentration data

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

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

Note: The right side of this formula is divided by the appropriate metals translator when this formula is used to calculate limits for metals.

All limits were calculated using 80% allocation, due to a lack of background data.

Reference Attachment D 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:

I. 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.

II. Total residual chlorine. The limits for total residual chlorine (TRC) were established in accordance with the RIDEM Effluent Disinfection Policy. The "Monthly Average" and "Daily Maximum" were based on a 100% allocation, a zero background concentration, and the appropriate dilution factor(s). 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.

III. 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.

In accordance with 40 CFR Part 122.4(d)(1)(iii), it is only necessary to establish limitations for those pollutants in the discharge which have the reasonable potential to cause or contribute to the exceedance of the in-stream criteria. In order to evaluate the need for permit limitations, the allowable discharge levels (permit limits) were compared to Discharge Monitoring Report (DMR) data, Priority Pollutant Scan data, and data provided in the permit application. An assessment was made to determine if limits were necessary, using the data collected from 2016-2020. Based on the discharge data, it was determined that the discharge has a reasonable potential to cause or contribute to excursions above the State Water Quality criteria for Copper, Phenol, Aluminum, and Ammonia. Therefore, water quality-based effluent limits for each of these

parameters have been assigned in the permit. It was also determined that the discharge no longer has reasonable potential to cause or contribute to excursions above the State Water Quality criteria for lead, cadmium, silver, nickel, or zinc. Monitoring for these pollutants has been moved to once per quarter consistent with the permit's quarterly bioassay requirements.

As discussed previously, Kenyon has removed the sanitary source from their wastewater treatment process and, as such, no longer uses chlorine for effluent disinfection purposes. Kenyon also does not use chlorine in any part of the production process and has not shown detectable levels of chlorine using the amperometric chlorine test method. Accordingly, DEM finds that Kenyon does not have reasonable potential to cause or contribute to an excursion above the State water quality criteria for chlorine and monitoring for chlorine has been removed from the permit.

Phenols Limits

Kenyon is a textile mill with an applicable effluent guideline (40 CFR 410 Part D – Woven Fabric Finishing Subcategory). This effluent guideline establishes total phenols limits based on the weight of the textiles produced. Based on the above production tiers and the applicable maximum daily and average monthly total phenols technology-based effluent limitations (TBELs) of 0.05 and 0.025 lbs/1,000 lbs of production, the mass loading TBEL at each production rate are:

Table 8: 2010 Total Phenols TBELs

Production Rate (lbs/day)	Daily Max. (lbs/day)	Monthly Average (lbs/day)
>68,000	3.80	1.90
68,000	3.40	1.70
60,000	3.00	1.50
52,000	2.60	1.30
44,000	2.20	1.10
36,000	1.80	0.90
28,000	1.40	0.70

Chromium Limits

The textile mills effluent guidelines also establish total chromium limits based on the weight of the textiles produced. The Rhode Island Water Quality Regulations have water quality standards for both Cr(III) and Cr(VI).

Based on the above production tiers and the applicable maximum daily and average monthly total chromium technology-based effluent limitations (TBELs) of 0.06 and 0.03 lbs/1,000 lbs of production, the mass loading TBEL at each production rate are:

Table 9: 2010 Total Chromium TBELs

Production Rate (lbs/day)	Daily Max. (lbs/day)	Monthly Average (lbs/day)
>68,000	4.56	2.28
68,000	4.08	2.04
60,000	3.6	1.8
52,000	3.12	1.56
44,000	2.64	1.32
36,000	2.16	1.08
28,000	1.68	0.84

Dyestuffs used by Kenyon Industries contain organically bound trivalent chromium. Additionally, the 1974 Development Document for the Textile Mill Point Source Category notes that the "toxicity of chromium salts towards aquatic life varies widely with the species, temperature, pH," and "valence of the chromium." Kenyon has not previously been required to monitor its effluent for hexavalent chromium. DEM has established new effluent limitations for hexavalent chromium in addition to the technology-based total chromium limits to determine the speciation of chromium in Kenyon's wastewater and to ensure that water quality criteria for hexavalent chromium are not violated.

For Cr(III), consistent with Part §1.26(K) of the Rhode Island Water Quality Regulations, the acute and chronic criteria were calculated as 269.734 and 35.086 µg/L, respectively. The acute and chronic metals translators are 0.316 and 0.86, respectively. The maximum daily and average monthly limitations for Cr(III) are calculated:

$$Daily\ Max.Limit = \frac{(80\%) * (11.457) * (269.734\ \mu g/L)}{0.316} = 7823.50\ \mu g/L$$

$$Monthly\ Avg.Limit = \frac{(80\%) * (11.457) * (35.086\ \mu g/L)}{0.86} = 373.94\ \mu g/L$$

Because the historic total chromium discharge concentration is less than 50% of the calculated water quality-based permit limit for Cr(III), there is no reasonable potential for the Kenyon discharge to cause or contribute to an excursion above the water quality standard to Cr(III).

The Cr(VI) limits are calculated using the following equations:

$$Daily\ Max.Limit = \frac{(80\%) * (11.457) * (16\ \mu g/L)}{0.982} = 149.33\ \mu g/L$$

$$Monthly\ Avg.Limit = \frac{(80\%) * (11.457) * (11\ \mu g/L)}{0.962} = 104.80\ \mu g/L$$

As mentioned previously, the above-calculated Cr(VI) limits were established in the permit. Below is a table summarizing the effluent limitations and reporting requirements for chromium at each production tier:

Table 10: Final Chromium Limits for Kenyon

Production Rate	Parameter	Quantity – lbs./day		Concentration - µg/L		Frequency	Sample Type
		Avg. Monthly	Max. Daily	Avg. Monthly	Max. Daily		
>68,000 lbs	Chromium, Total	2.28	4.56			2/Month	24-Hr. Comp.
	Chromium, Hexavalent			105	149	2/Month	24-Hr. Comp.
68,000 lbs	Chromium, Total	2.04	4.08			2/Month	24-Hr. Comp.
	Chromium, Hexavalent			105	149	2/Month	24-Hr. Comp.
60,000 lbs	Chromium, Total	1.80	3.60			2/Month	24-Hr. Comp.
	Chromium, Hexavalent			105	149	2/Month	24-Hr. Comp.
52,000 lbs	Chromium, Total	1.56	3.12			2/Month	24-Hr. Comp.
	Chromium, Hexavalent			105	149	2/Month	24-Hr. Comp.
44,000 lbs	Chromium, Total	1.32	2.64			2/Month	24-Hr. Comp.
	Chromium, Hexavalent			105	149	2/Month	24-Hr. Comp.
36,000 lbs	Chromium, Total	1.08	2.16			2/Month	24-Hr. Comp.

	Chromium, Hexavalent			105	149	2/Month	24-Hr. Comp.
28,000 lbs	Chromium, Total	0.84	1.68			2/Month	24-Hr. Comp.
	Chromium, Hexavalent			105	149	2/Month	24-Hr. Comp.

The samples for Total Chromium and Hexavalent Chromium shall be taken together two times per month. The permit also includes a condition which states that if the results of twelve consecutive months of monitoring show effluent concentrations of hexavalent chromium below the specified detection limit, then the permittee is no longer required to continue sampling for hexavalent chromium.

pH Limits

The permit includes a narrative condition for pH, found in Part I.A.13.a, that the discharge shall not cause the pH of the receiving water to be below 6.5 or above 9.0 standard units (S.U.). This condition is based on the Rhode Island Water Quality Regulations §1.10(D)(1) Class Specific Criteria for Freshwaters, which states that the pH of freshwaters shall be between 6.5 and 9.0 S.U.

The technology-based effluent limitations for woven textiles set out in 40 CFR Part 410 Subpart D require Kenyon's effluent pH to be between 6.0 and 9.0 S.U. Accordingly, the pH of the discharge from Outfall 001 must be monitored and shall not be below 6.0 S.U. or above 9.0 S.U. Kenyon must also report the minimum and maximum pH of the discharge from Outfall 002 on a monthly basis.

WET Limits

According to the Rhode Island Water Quality Regulations at §1.10(D)(1), freshwaters shall not contain chemical constituents "in concentrations or combinations that could be harmful to humans or fish and wildlife for the most sensitive and governing water class use." §1.10(B)(1) also states that "all waters shall be free of pollutants in concentration or combinations" that "adversely affect the composition of fish and wildlife," adversely affect the physical, chemical, or biological integrity of the habitat," "interfere with the propagation of fish and wildlife," and "adversely alter the life cycle functions, uses, processes and activities of fish and wildlife." Moreover, Section 101(a)(3) of the Clean Water Act states that "it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited." Whole Effluent Toxicity (WET) tests measure the degree of response of exposed aquatic test organisms to an effluent. WET testing is a valuable way to measure the toxic effects of a discharge with multiple toxic pollutants present, such as the Kenyon effluent, thereby more accurately determining if the discharge meets water quality standards for toxicity. DEM has previously determined that the Kenyon effluent has a reasonable potential to cause or contribute to an excursion above the State water quality criterion for toxicity. Accordingly, DEM has established WET limits for the Kenyon discharge.

EPA's *Technical Support Document for Water Quality-Based Toxics Control* (TSD) provides procedural recommendations and guidance for controlling adverse water quality impacts caused by toxic discharges to surface waters. As explained in the TSD, for toxic pollutants, many waste load allocations (WLAs) used to develop effluent limits have two outputs: an acute requirement and a chronic requirement. To develop Kenyon's WLAs for WET, DEM calculated the following:

$$WLA = \frac{[WQC * (Q_e + Q_s) - Q_s * C_s]}{Q_e}$$

Where:

Qe = The effluent flow, or Kenyon's design flow (0.758 cfs)
Qs = Receiving water flow (7.928 cfs @ 7Q10)
Cs = Background concentration (assumed zero for toxicity)
WQC = Applicable Water Quality Criteria. For Acute Toxicity, EPA recommends a standard of 0.3 TU_a. For Chronic Toxicity, EPA recommends a standard of 1.0 TU_c.

Based on the above, the acute and chronic WLAs were calculated:

$$WLA_a = \frac{[0.3 * (0.758 + 7.928) - 7.928 * 0]}{0.758} = 3.44\, TU_a$$

$$WLA_c = \frac{[1.0 * (0.758 + 7.928) - 7.928 * 0]}{0.758} = 11.46\, TU_c$$

For WET, the equivalent acute WLA in chronic toxic units is found by multiplying the acute WLA by the acute-to-chronic ratio (ACR). The TSD estimates the ACR value to be 10 based on historic data:

$$WLA_{a,c} = WLA_a * ACR = 3.44 * 10 = 34.4\, TU_c$$

Next, a long-term average (LTA) is back-calculated using Kenyon's historic WET Data. Kenyon's LC_{50} (Ceriodaphnia Dubia) data from 2016-2020 is shown below:

Table 11: 2016-2020 Ceriodaphnia WET Results

Date	Minimum	TU_a
3/31/2016	47	2.13
06/30/2016	100	1.00
09/30/2016	100	1.00
12/31/2016	100	1.00
3/31/2017	46	2.17
06/30/2017	100	1.00
09/30/2017	61	1.64
12/31/2017	6	16.67
3/31/2018	70	1.43
06/30/2018	69	1.45
09/30/2018	36	2.78
12/31/2018	40	2.50
3/31/2019	29	3.45
06/30/2019	63	1.59
09/30/2019	23	4.35
12/31/2019	36	2.78
3/31/2020	68	1.47
06/30/2020	71	1.41
09/30/2020	40	2.50
	Average TU_a	2.75
	Standard Deviation TU_a	3.40
	CV	1.23

Based on the Coefficient of Variation (CV) of 1.23, the acute WLA multiplier (99th percentile) from Table 5-1 of the TSD is 0.169. The chronic WLA multiplier is 0.314. The acute (in chronic units) and chronic long-term averages are calculated:

$$LTA_{a,c} = WLA_{a,c} * WLA\ Multiplier = 34.4 * 0.169 = 5.814\, TU_c$$
$$LTA_c = WLA_c * WLA\ Multiplier = 11.46 * 0.314 = 3.596\, TU_c$$

The limiting LTA is selected to calculate WET limits in order to ensure protection of both acute and chronic water quality criteria:

$$LTA = \min(LTA_{a,c}, LTA_c)$$

The acute permit limit (maximum daily limit, or MDL) is calculated by multiplying the LTA by the LTA multiplier for MDL (99th percentile) from Table 5-2 of the TSD, then converted to acute toxic units by dividing the result by the ACR. The LTA multiplier for MDL at a CV of 1.234 is 5.899:

$$MDL = Limiting\ LTA * LTA\ Multiplier\ for\ MDL = 21.2\, TU_C = 2.12\, TU_a$$

Since a toxic unit is the inverse of the sample fraction, the reciprocal of the MDL is multiplied by 100 to obtain the LC_{50} (Ceriodaphnia Dubia) limit:

$$LC_{50} = \frac{1}{2.12\ TU_a} * 100 = 47.14\% \approx 50\%$$

The same analysis was performed using the Pimephales promelas WET testing data.

Table 12: 2016-2020 Pimphales WET Results

Date	Minimum	TUa
3/31/2016	31	3.23
6/30/2016	70	1.43
9/30/2016	79	1.27
12/31/2016	100	1.00
3/31/2017	100	1.00
6/30/2017	100	1.00
9/30/2017	100	1.00
12/31/2017	100	1.00
3/31/2018	100	1.00
6/30/2018	100	1.00
9/30/2018	88	1.14
12/31/2018	100	1.00
3/31/2019	35	2.86
6/30/2019	100	1.00
9/30/2019	36	2.78
12/31/2019	79	1.27
3/31/2020	100	1.00
6/30/2020	100	1.00
9/30/2020	100	1.00
	Average TU_a	1.37
	Standard Deviation TU_a	0.70
	CV	0.51

Since the WLA is dependent on effluent flow and available dilution, the LTA was calculated with the CV of 0.51 using the LTA multiplier from Table 5-1 of the TSD (99th percentile), which are 0.366 (acute) and 0.574 (chronic):

$$LTA_{a,c} = 34.4 * 0.366 = 12.59\ TU_c$$
$$LTA_c = 11.46 * 0.574 = 6.578\ TU_c$$

The limiting LTA is LTA_c = 6.578 TU_c. The MDL is calculated using the LTA Multiplier from Table 5-2 of the TSD (99th percentile), which at the CV of 0.51 is 2.735:

$$MDL = 6.578 * 2.735 = 17.99\ TU_c = 1.799\ TU_a$$

The LC50 is then calculated:

$$LC_{50} = \frac{1}{1.799} * 100 = 55.56\% \approx 55\%$$

DEM's 2018-2020 Final 303(d) List states that the Pawcatuck River is not supporting the Fish and Wildlife habitat designated used due to Whole Effluent Toxicity. The WET limits established in this permit shall ensure that the waterbody supports the designated use.

Nutrients

Kenyon's previous permit required monitoring for Total Nitrogen and Total Phosphorus. Part §1.10(D)(1) of the Rhode Island Water Quality Regulations states that nutrients shall not be present in freshwaters "in such concentration that would impair any usages assigned to said Class, or cause undesirable or nuisance aquatic species associated with cultural eutrophication." In freshwater systems, phosphorus is the limiting nutrient and controls the production of aquatic plants and algae in the water. The Pawcatuck River which receives the Kenyon discharge (Waterbody ID RI0008039R-18B) is a Class B1 freshwater according to the Rhode Island Water Quality Regulations. Class B1 waters "are designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value."

Phosphorus

Compliance Evaluation

In addition to the general freshwater nutrient criteria, the Rhode Island Water Quality Regulations at §1.10(D)(1) state that "phosphates shall be removed from existing discharges to the extent that such removal is or may become technically and reasonable feasible." In textile wastewaters, dyebath effluents containing phosphate buffers are the main source of phosphorus[1]. Kenyon's average monthly effluent concentration for phosphorus is 13.75 mg/L from 2016-2020 as shown in Attachment A.

In April of 2016, after the treatment plant had been upgraded to an activated sludge secondary treatment process, Kenyon began using a polyaluminum chloride (PAC) coagulant along with a cationic polymer to remove fine colloidal solids that were interfering with the nitrification process (converting ammonia into nitrite, then nitrate). To improve settling of solids, Kenyon also dosed an anionic polymer beginning in September 2016. The use of PAC and the anionic polymer was discontinued in December 2016. During this time, effluent concentrations of phosphorus were significantly lower than the average concentration from 2016-2020:

Table 13: Kenyon 2016 Total Phosphorus Effluent Data

Date	Monthly Average (mg/L)
05/31/2016	3.8
06/30/2016	2.9
07/31/2016	2.1
08/31/2016	1.8
09/30/2016	6.9
10/31/2016	1.8
11/30/2016	6.5
12/31/2016	3.5

According to EPA's Nutrient Control Design Manual, various forms of polyaluminum chloride (PAC) can be used to chemically precipitate and remove phosphorus from wastewater. Kenyon has shown that lower effluent phosphorus concentrations can be achieved through chemical addition in their treatment process. During this time, however, Kenyon also saw violations of their monthly average and daily maximum Aluminum limits (1774 µg/L and 15297 µg/L in the previous permit, respectively) due to the addition of PAC:

Table 14: Kenyon 2016 Aluminum Effluent Data

Date	Monthly Average (µg/L)	Daily Maximum (µg/L)
06/30/2016	3568	8450
09/30/2016	4029	16200
12/31/2016	25267	33400

The Whole Effluent Toxicity Data during this time is shown below:

Table 15: Kenyon 2016 WET Data

Date	LC50 C. Dubia	LC50 Pimphales

[1]Delée W., O'Neill C., Hawkes F.R. and Pinheiro H.M., Anaerobic treatment of textile effluents: A review, J. Chem. Technol. Biotechnol., 73, 323-335 (1998)

	(% Effluent	(% Effluent)
5/25/2016	>100	70.7
6/8/2016	>100	70.7
7/20/2016	>100	>100
8/10/2016	>100	>100

Instream Water Quality

As noted above, nutrients shall not be present in any quantities that would cause undesirable or nuisance aquatic species associated with cultural eutrophication. In freshwater systems, excess levels of phosphorus will promote the growth of nuisance algae and rooted aquatic plants, decreasing dissolved oxygen levels in the waterbody. In this way, dissolved oxygen is a useful measure of instream cultural eutrophication. Below is a summary of URI Watershed Watch Dissolved Oxygen (DO) data from 2017-2019 for the Pawcatuck River at Biscuit City Road (upstream of Kenyon discharge) and Route 91 (downstream of Kenyon discharge):

Table 16: Pawcatuck River DO Data (2017-2019)

Year	Pawcatuck River @ Biscuit City Road Average DO (mg/L)	Pawcatuck River @ Route 91 Average DO (mg/L)
2017	N/A	7.8
2018	4.9	7.3
2019	N/A	7.1

Additional USGS sampling conducted in 2019 at Alton-Bradford Road also measured DO and total phosphorus concentrations downstream of the Kenyon discharge:

Table 17: 2019 USGS Pawcatuck River DO and Total Phosphorus Data

Sampling Date	Dissolved Oxygen (mg/L)	Total Phosphorus (mg/L)
5/8/2019	9.15	0.0277
5/21/2019	8.48	0.032
6/11/2019	8.13	0.0589
6/25/2019	7.89	0.0466
7/9/2019	7.39	0.0359
7/23/2019	7.26	0.0847
8/13/2019	7.80	0.0376
8/27/2019	8.48	0.0352
9/10/2019	9.27	0.0361
9/24/2019	9.27	0.1227
10/29/2019	8.98	0.0437
(May-Oct) Average	8.37	0.051

The instream dissolved oxygen downstream of the Kenyon discharge has consistently met the 5.0 mg/L instantaneous minimum dissolved oxygen criterion for warm water fish habitats set out in §1.10(D)(1) of the Rhode Island Water Quality Regulations. Moreover, EPA's 1986 Quality Criteria of Water ("the Gold Book") recommends in-stream phosphorus concentrations of 0.1 mg/L for any stream not discharging directly to lakes or impoundments. The Pawcatuck River has historically had instream total phosphorus concentrations well below the Gold Book criterion. Since there is no indication of cultural eutrophication in the receiving water, DEM has kept the monitoring requirement for total phosphorus to monitor ongoing nutrient loadings into the Pawcatuck River.

Phosphorus Removal Engineering Report

As discussed above, phosphates must be removed from existing discharges to the extent that such removal is or may become technically and reasonably feasible. EPA Regulations at 40 CFR §122.4(k)(4) note that RIPDES permits shall include Best Management Practices (BMPs) to control the discharge of pollutants when such practices are "reasonably necessary to achieve effluent limitations and standards or

to carry out the purposes and intent of the CWA." The 2016 effluent data has shown that lower concentrations of total phosphorus are achievable in the Kenyon discharge through chemical addition in the treatment process. Since the Water Quality Regulations require Kenyon to remove phosphates from existing discharges to the extent that it is reasonably and technically feasible, Part I.A.20 of the permit requires Kenyon to submit an Engineering Report which evaluates Kenyon's ability to remove phosphorus from the effluent using chemical addition without resulting in exceedances of any other permit limits. The results of the Engineering Report will be used to determine appropriate phosphorus BMPs for the Kenyon facility.

Nitrogen

In saltwater systems, nitrogen is the limiting nutrient and controls the growth of aquatic plants and algae. The Pawcatuck River (which receives the Kenyon discharge) is 31 miles long and drains approximately 70,000 acres of land in southern Rhode Island and eastern Connecticut, ending in the estuarine Tidal Pawcatuck River and Little Narragansett Bay. The Tidal Pawcatuck River (RI0008038E-01A) is identified in the 2018-2020 DEM Section 303(d) List as not supporting the Fish and Wildlife Habitat due to low dissolved oxygen. A Total Maximum Daily Load (TMDL) for this impairment is scheduled to be completed in 2023. The 2018-2020 Impaired Waters Report notes that "RIDEM, in partnership with CT Department of Energy and Environmental Protection, will also undertake efforts to further characterize existing nutrient related conditions in the Tidal Pawcatuck River and Little Narragansett Bay, and work towards development of TMDLs, as relevant and resources allow. RIDEM and CT DEEP will look to collaborate with US EPA and others in this effort." The TMDL, once completed, will identify the maximum amount of nitrogen that can be received by the watershed while still meeting water quality standards. This permit includes monitoring for the nitrogen components (i.e., nitrate, nitrite, TKN, and ammonia) to ensure that adequate data is collected to assist in the completion of the TMDL.

Sludge

The previous permit required Kenyon to conform to the conditions and practices in the Rhode Island Sewage Sludge Regulations. Kenyon has since removed the sanitary wastewater source from their wastewater treatment train and now uses an onsite wastewater treatment system (OWTS) for disposal of their domestic wastewater. As such, Kenyon no longer has an Order of Approval for sludge under the Rhode Island Sewage Sludge Regulations. Kenyon is required to follow all applicable rules and regulations for their waste, which is considered a commercial waste under 250-RICR-140-05-1.

Non-Contact Cooling Water Limits

The Rhode Island Water Quality Regulations establishes freshwater water quality criteria for temperature. This criterion sets the maximum temperature increase as 4^{o}F, and in no case to exceed 83^{o}F. Kenyon discharges non-contact cooling water through outfall 002A. Based on the degree of dilution available at this outfall, it has been determined that the proposed temperature limit of 80^{o}F will be protective of the water quality criteria. Attachment F includes the calculations that were used to verify compliance with the water quality criteria.

Groundwater/Stormwater Discharge

The permit establishes a new outfall (Outfall 004) for the pumped flow of groundwater and stormwater from under the floor of the Greige Room. Kenyon's facility is situated in a low-lying area on two sides of the Pawcatuck River between the Towns of Richmond and Charlestown, Rhode Island. As a result, water from the Pawcatuck River can infiltrate the area below the facility, particularly during seasonal high groundwater. A pump located in the "Greige Room" on the Richmond side of the site operates off level controls and serves to pump the accumulated waters from under the floor. Historically, this water that accumulates has been ultimately discharged to the process wastewater treatment system. During periods of heavy rain, floodwater can enter the facility under the floor of the Greige Room and overflow the Ludell sumps. This floodwater, if not diverted out of the facility, can overwhelm the treatment process, resulting in the discharge of untreated process wastewater. Analytical data shows that both the untreated groundwater and floodwater have pollutant concentrations below applicable water quality criteria for B1 freshwaters. Analytical data for this source can be found in Attachment H.

RIPDES Regulations at §1.14(F) state that the permittee "shall at all times maintain in good working order

and operate as efficiently as possible all treatment works, facilities, and systems of treatment and control (and related appurtenances) for collection and treatment which are installed or used by the permittee for water pollution control and abatement to achieve compliance with the terms and conditions of the permit." Moreover, §1.14(B)(2) states that a permittee "shall not achieve any effluent concentration by dilution." Since the addition of the groundwater discharge to the treatment facility reduces the strength of process wastewater and increases the hydraulic load of the treatment plant, reducing the efficiency of the approved treatment train, and because the addition of non-process water can reduce effluent concentrations of pollutants via dilution, DEM is establishing a new outfall (Outfall 004A) for the discharge of water from under the floor of the Greige Room. Certain chlorinated hydrocarbons have been detected in monitoring wells at the facility. Accordingly, monitoring requirements for Tetrachloroethylene, Trichloroethylene, Trans-dichloroethylene, and Vinyl Chloride have also been included for this outfall. The monitoring requirements for these compounds shall be effective when the gage height of the Pawcatuck River upstream of the Kenyon facility is less than two feet at the time of discharge to ensure that any pollutant concentrations are representative of groundwater and are not diluted by river water collected under the floor.

The permit requires Kenyon to install a flowmeter for measuring the amount of water discharged from under the floor of the Greige Room. This is required in order to monitor the mass loading of any pollutants present in the groundwater to the Pawcatuck River.

Antibacksliding

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 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:

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

2. 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 asked 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 pollutant levels, which would result after the consideration of all currently valid RIPDES permit limits or historical discharge data (whichever is greater), background data (when available), and any new information (e.g., dilution factors).

Antidegradation

The DEM's "*Policy on the Implementation of the Antidegradation Provisions of the Rhode Island Water Quality Regulations July 2006*" (the Policy) established 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 criteria 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 in water quality as determined by the Director and in accordance with the Antidegradation Implementation Policy, as amended. In addition, the Director may allow significant degradation, which is determined to be necessary to achieve important economic or social benefits to the State in accordance with the Antidegradation Policy.

Tier 2½. Where high quality waters constitute Special Resource Protection Waters SRPWs[2], there shall be

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

no measurable degradation of the existing water quality necessary to protect the characteristics which cause the waterbody to be designated a SRPW. Notwithstanding that all public drinking water supplies are SRPWs, public drinking water suppliers may undertake temporary and short-term activities within the boundary perimeter of a public drinking water supply impoundment for essential maintenance or to address emergency conditions in order to prevent adverse effect on public health or safety. These activities must comply with the requirements set forth in Tier 1 and Tier 2.

Tier 3. Where high quality waters constitute an Outstanding Natural Resource ONRWs[3], that water quality shall be maintained and protected. The State may allow some limited activities that result in temporary or 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, DEM 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 rule DEM 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 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 in 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, DEM 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.

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

$$C_p = \frac{(DF - 1) \cdot C_B + (1 \cdot C_d)}{DF}$$

where: C_b = background concentration[4]
C_d = discharge data[5]

[3] ONRWs are a special subset of high-quality water bodies, identified by the State as having significant recreational or ecological water uses.
[4] Data collected at a location that is unimpacted by significant point source discharges.
[5] Discharge data refers to the maximum of the permit limit or the historical discharge level. The historical discharge level is determined by calculating the upper 95th confidence interval for the monthly average reported data for the past five (5) years. For

DF = dilution factor

In this permit, the monthly average limits for Total Ammonia (May – October and November -- April) was calculated to be higher than the 2010 permit for water quality-based permit limitations. Because this constitutes a relaxation of permit limitations, Antibacksliding and Antidegradation apply. Each of the above-mentioned parameters was evaluated to be consistent with the Department's Antidegradation policy and relevant regulations. The Antidegradation limit calculations and data are presented in Attachment E of this Fact Sheet.

Final Permit Limits

Below is a summary of the final permit limits for Kenyon Industries.

NOTE: Part I.A of the permit should be referenced for all final permit limitations and other requirements related to monitoring, including sample type. "---" signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

Production Rate (lbs/day)	Parameter	Monthly Average (Quantity)	Daily Maximum (Quantity)	Monthly Average (Conc.)	Daily Maximum (Conc.)	Measurement Frequency	Derivation
Outfall 001A (Outlet from Second Aeration Lagoon)							
>68,000	BOD_5	251 lb/d	502 lb/d			2/Week	TBEL
	COD	3062 lb/d	6125 lb/d			2/Month	TBEL
	TSS	676 lb/d	1353 lb/d			2/Month	TBEL
	Sulfide	7.6 lb/d	15.2 lb/d			2/Month	TBEL
	pH			6.0 (min.)	9.0 (max.)	2/Week	TBEL
	Total Chromium	2.28 lb/d	4.56 lb/d			2/Month	TBEL
	Hexavalent Chromium			105 µg/L	149 µg/L	2/Month	WQBEL
	Phenols	1.90 lb/d	3.80 lb/d			1/Week	TBEL
68,000	BOD_5	224 lb/d	449 lb/d			2/Week	TBEL
	COD	2740 lb/d	5480 lb/d			2/Month	TBEL
	TSS	605 lb/d	1210 lb/d			2/Month	TBEL
	Sulfide	6.8 lb/d	13.6 lb/d			2/Month	TBEL
	pH			6.0 (min.)	9.0 (max.)	2/Week	TBEL
	Total Chromium	2.04 lb/d	4.08 lb/d			2/Month	TBEL
	Hexavalent Chromium			105 µg/L	149 µg/L	2/Month	WQBEL
	Phenols	1.70 lb/d	3.40 lb/d			1/Week	TBEL
60,000	BOD_5	198 lb/d	396 lb/d			2/Week	TBEL
	COD	2418 lb/d	4836 lb/d			2/Month	TBEL
	TSS	534 lb/d	1068 lb/d			2/Month	TBEL
	Sulfide	6.0 lb/d	12.0 lb/d			2/Month	TBEL
	pH			6.0 (min.)	9.0 (max.)	2/Week	TBEL
	Total Chromium	1.80 lb/d	3.60 lb/d			2/Month	TBEL
	Hexavalent Chromium			105 µg/L	149 µg/L	2/Month	WQBEL
	Phenols	1.50 lb/d	3.00 lb/d			1/Week	TBEL
52,000	BOD_5	172 lb/d	343 lb/d			2/Week	TBEL
	COD	2096 lb/d	4191 lb/d			2/Month	TBEL
	TSS	463 lb/d	926 lb/d			2/Month	TBEL
	Sulfide	5.2 lb/d	10.4 lb/d			2/Month	TBEL
	pH			6.0 (min.)	9.0 (max.)	2/Week	TBEL
	Total Chromium	1.56 lb/d	3.12 lb/d			2/Month	TBEL
	Hexavalent Chromium			105 µg/L	149 µg/L	2/Month	WQBEL
	Phenols	1.30 lb/d	2.60 lb/d			1/Week	TBEL
44,000	BOD_5	145 lb/d	290 lb/d			2/Week	TBEL
	COD	1773 lb/d	3546 lb/d			2/Month	TBEL
	TSS	392 lb/d	783 lb/d			2/Month	TBEL

specific cases, changes in treatment efficiency or pretreatment limitations may support the use of an alternative period of time.

	Sulfide	4.4 lb/d	8.8 lb/d			2/Month	TBEL
	pH			6.0 (min.)	9.0 (max.)	2/Week	TBEL
	Total Chromium	1.32 lb/d	2.64 lb/d			2/Month	TBEL
	Hexavalent Chromium			105 µg/L	149 µg/L	2/Month	WQBEL
	Phenols	1.10 lb/d	2.20 lb/d			1/Week	TBEL
36,000	BOD_5	119 lb/d	238 lb/d			2/Week	TBEL
	COD	1451 lb/d	2902 lb/d			2/Month	TBEL
	TSS	320 lb/d	641 lb/d			2/Month	TBEL
	Sulfide	3.6 lb/d	7.2 lb/d			2/Month	TBEL
	pH			6.0 (min.)	9.0 (max.)	2/Week	TBEL
	Total Chromium	1.08 lb/d	2.16 lb/d			2/Month	TBEL
	Hexavalent Chromium			105 µg/L	149 µg/L	2/Month	WQBEL
	Phenols	0.90 lb/d	1.80 lb/d			1/Week	TBEL
28,000	BOD_5	92 lb/d	185 lb/d			2/Week	TBEL
	COD	1128 lb/d	2257 lb/d			2/Month	TBEL
	TSS	249 lb/d	498 lb/d			2/Month	TBEL
	Sulfide	2.8 lb/d	5.6 lb/d			2/Month	TBEL
	pH			6.0 (min.)	9.0 (max.)	2/Week	TBEL
	Total Chromium	0.84 lb/d	1.68 lb/d			2/Month	TBEL
	Hexavalent Chromium			105 µg/L	149 µg/L	2/Month	WQBEL
	Phenols	0.70 lb/d	1.40 lb/d			1/Week	TBEL
All	Flow	0.49 MGD	--- MGD			Continuous	BPJ
All	Copper			39.19 µg/L	54.28 µg/L	1/Week	WQBEL
All	Phenol			51 µg/L	2300 µg/L	1/Quarter	WQBEL
All	Aluminum			797 µg/L	6874 µg/L	1/Quarter	WQBEL
All	Nickel			--- µg/L	--- µg/L	1/Quarter	WQBEL
All	Zinc			--- µg/L	--- µg/L	1/Quarter	WQBEL
All	Lead			--- µg/L	--- µg/L	1/Quarter	WQBEL
All	Cadmium			--- µg/L	--- µg/L	1/Quarter	WQBEL
All	Silver			--- µg/L	--- µg/L	1/Quarter	WQBEL
All	Phosphorus (Nov.-Mar.)			--- mg/L	--- mg/L	1/Quarter	WQBEL
All	Phosphorus (Apr.-Oct.)			--- mg/L	--- mg/L	1/Month	WQBEL
All	Nitrate (Nov.-Apr.)			--- mg/L	--- mg/L	1/Quarter	WQBEL
All	Nitrate (May-Oct.)			--- mg/L	--- mg/L	1/Month	WQBEL
All	Nitrite (Nov.-Apr.)			--- mg/L	--- mg/L	1/Quarter	WQBEL
All	Nitrite (May-Oct.)			--- mg/L	--- mg/L	1/Month	WQBEL
All	TKN (Nov.-Apr.)			--- mg/L	--- mg/L	1/Quarter	WQBEL
All	TKN (May-Oct.)			--- mg/L	--- mg/L	1/Month	WQBEL
All	Total Nitrogen (Nov.-Apr.)			--- mg/L	--- mg/L	1/Quarter	WQBEL
All	Total Nitrogen (May-Oct.)			--- mg/L	--- mg/L	1/Month	WQBEL
All	Ammonia (Nov.-Apr.)			145 mg/L	834 mg/L	1/Month	WQBEL
All	Ammonia (May-Oct.)			68.4 mg/L	429 mg/L	1/Month	WQBEL
All	Ceriodaphnia Sp. LC_{50}				50% or Greater	1/Quarter	WQBEL
All	Pimephales Promelas LC_{50}				55% or Greater	1/Quarter	WQBEL
Outfall 002A (Non-Contact Cooling Water)							
All	Flow	0.12 MGD				1/Month	BPJ
All	Temperature (Intake)				---°F	1/Month	WQBEL
All	Temperature				80°F	1/Month	WQBEL
All	pH			--- (min.)	--- (max.)	1/Month	WQBEL
Outfall 004A (Water from Under the Floor of the Greige Room)							
All	Flow	--- MGD	--- MGD			1/Month	BPJ
All	Tetrachloro-ethylene			--- µg/L	--- µg/L	1/Month	WQBEL

All	Trichloro-ethylene			--- µg/L	--- µg/L	1/Month	WQBEL
All	Trans-dichloro-ethylene			--- µg/L	--- µg/L	1/Month	WQBEL
All	Vinyl Chloride			--- µg/L	--- µg/L	1/Month	WQBEL

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 250-RICR-150-10-1.50 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:

Max Maher, Environmental Engineer I
Department of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, Rhode Island 02908
Telephone: (401) 222-4700 Ext. 2777201
Email: maximilian.maher@dem.ri.gov

9/21/2021
Date

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

ATTACHMENTS

ATTACHMENT A – Average Effluent Characteristics 2016-2020

DESCRIPTION OF DISCHARGE: Treated industrial wastewater.
DISCHARGE: 001A – Lagoon Discharge

AVERAGE EFFLUENT CHARACTERISTICS AT POINT OF DISCHARGE:

PARAMETER	**AVERAGE[1]**	**MAXIMUM[2]**
FLOW (MGD)	0.32 MGD	0.51 MGD
BOD_5	53.54 lbs/day [3]	371.00 lbs/day [4]
COD	1149.49 lbs/day [3]	2219.00 lbs/day [4]
TSS	175.96 lbs/day [3]	729.00 lbs/day [4]
Sulfide	0.16 lbs/day [3]	1.84 lbs/day [4]
pH	5.6 S.U.(Minimum) [5]	6.9 S.U.(Maximum) [6]
Chromium (Total)	0.48 lbs/day [3]	1.57 lbs/day [4]
Phenols	0.17 lbs/day [3]	0.71 lbs/day [4]
Copper	139.68 μg/l	254.00 μg/l
Lead	0.67 μg/l	1.29 μg/l
Cadmium	0.00 μg/l	0.00 μg/l
Silver	0.00 μg/l	0.00 μg/l
Chlorine	30.79 µg/l	59.83 µg/l
Nickel	10.16 μg/l	11.84 μg/l
Aluminum[7]	850.27 μg/l	871.93 μg/l
Zinc	44.16 μg/l	46.68 μg/l
Nitrogen, Nitrate	32.85 mg/l	34.85 mg/l
Nitrogen, Nitrite	0.40 mg/l	0.53 mg/l
Nitrogen, Total	65.49 mg/l	67.34 mg/l
Nitrogen, Total Kjeldahl	32.62 mg/l	33.72 mg/l
Nitrogen, Ammonia		
(May-Oct)	9.57 mg/l	16.01 mg/l
(Nov-Apr)	16.23 mg/l	21.96 mg/l
Phosphorus	13.75 mg/l	13.98 mg/l

[1]Data represents the mean of the monthly average data from January 2016 – November 2020.
[2]Data represents the mean of the daily maximum data from January 2016 – November 2020.
[3]Values represent the mean of the monthly average values for outfalls 001A to 001G
[4]Values represent the maximum of the daily maximum values for outfalls 001A to 001G
[5]Values represent the minimum value for outfalls 001A to 001G
[6]Values represent the maximum value for outfalls 001A to 001G
[7]Values from 2017-2020. Kenyon used a coagulant containing aluminum in their treatment process in 2016.

Whole Effluent Toxicity Testing Results (percent effluent)

	Species: Ceriodaphnia Dubia	Species: Pimephales Promelas
Monitoring Quarter	**LC_{50} Result**	**LC_{50} Result**
03/31/2016	=47 %	=31 %
06/30/2016	=100 %	=70.7 %
09/30/2016	=100 %	=79.4 %
12/31/2016	=100 %	=100 %
03/31/2017	=16 %	=100 %
06/30/2017	=100 %	=100 %
09/30/2017	=61.6 %	=100 %
12/31/2017	=6.25 %	=100 %
03/31/2018	=70.7 %	=100 %
06/30/2018	=69.4 %	=100 %
09/30/2018	=36.6 %	=88.6 %
12/31/2018	=40.6 %	=100 %
03/31/2019	=29.7 %	=35.2 %
06/30/2019	=63.7 %	=100 %
09/30/2019	=23.3 %	=36 %
12/31/2019	=36.6 %	=79.5 %
03/31/2020	=68.3 %	=100 %
06/30/2020	=71.1 %	=100 %
09/30/2020	=40.6 %	=100 %

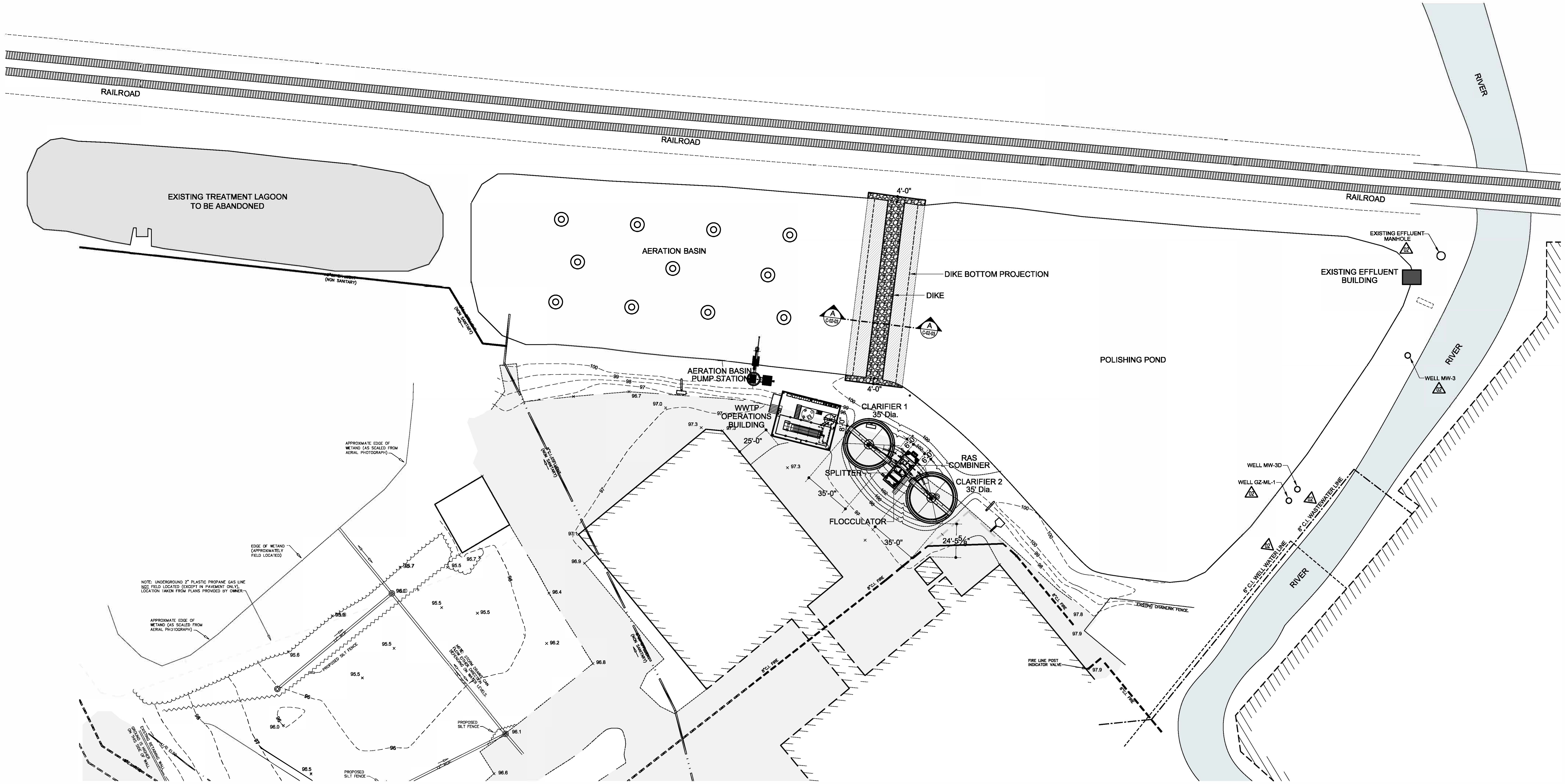
DISCHARGE: **002A – Non Contact Cooling Water**

AVERAGE EFFLUENT CHARACTERISTICS AT POINT OF DISCHARGE:

PARAMETER	**AVERAGE[1]**	**MAXIMUM[2]**
FLOW (MGD)	0.047 (30DA AVG MGD)	
pH	5.8 S.U.(Minimum)	6.9 S.U.(Maximum)
Temperature (Intake)	62.7 deg F	75.2 deg F
Temperature	63.6 deg F	79.5 deg F

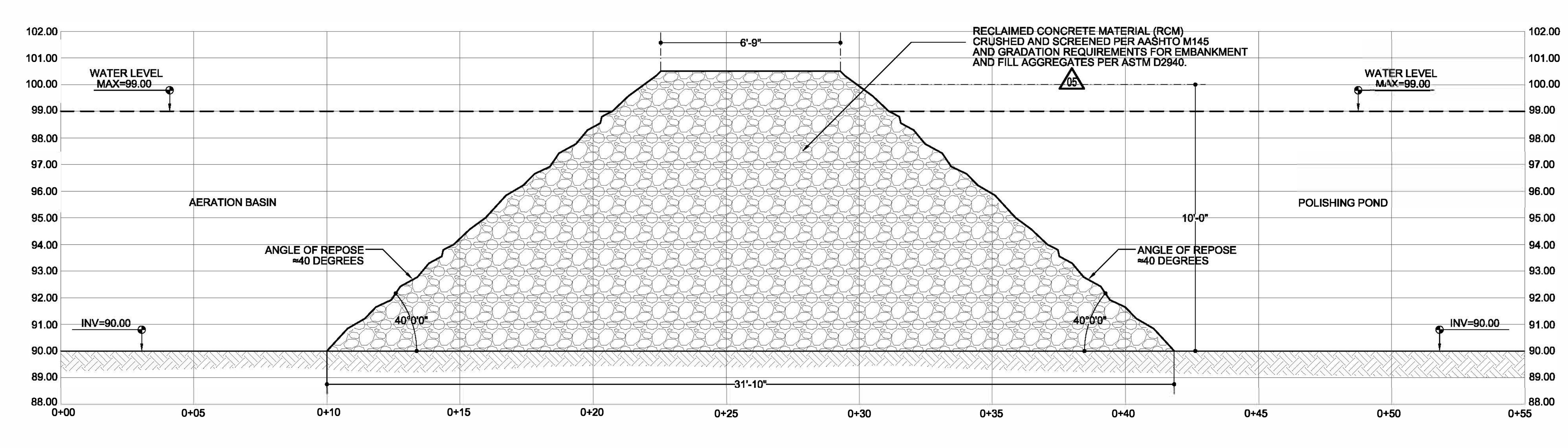
[1]Data represents the mean of the monthly average data from January 2016 – November 2020.
[2]Data represents the mean of the daily maximum data from January 2016 – November 2020.

ATTACHMENT B
Site Plan and Wastewater Treatment Process Flow Diagram



0' 40' 80' 120' 160' 200'

KENYON INDUSTRIES
SITE PLAN FINAL GRADE
SCALE: 1"=40'



A
C-02-03
SECTION A
DIKE DETAIL
SCALE : 1"=4'-0"

AT&E
Applied Technology
and Engineering, P.C.
545 Panorama Rd. Earlysville, Va 22936
Phone: (434)-978-1422 Fax: (434)-249-6443

NO.	REVISIONS	BY	DATE
5	RECLAIMED CONCRETE MATERIAL (RCM) NOTE ADDED.	OZ	04-22-15
4	GENERAL REVISION	OZ	03-01-15
3	FINAL GRADE REVISED.	OZ	10-01-13
2	EXISTING WATER LINES AND WELLS LOCATED ON SITE PLAN.	OZ	5-16-13
1	ADDED SCALE BAR.	OZ	4-29-13

REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS

WILLIAM G. O'NEAL
No. 9926
REGISTERED
PROFESSIONAL ENGINEER
CIVIL 06-14-14

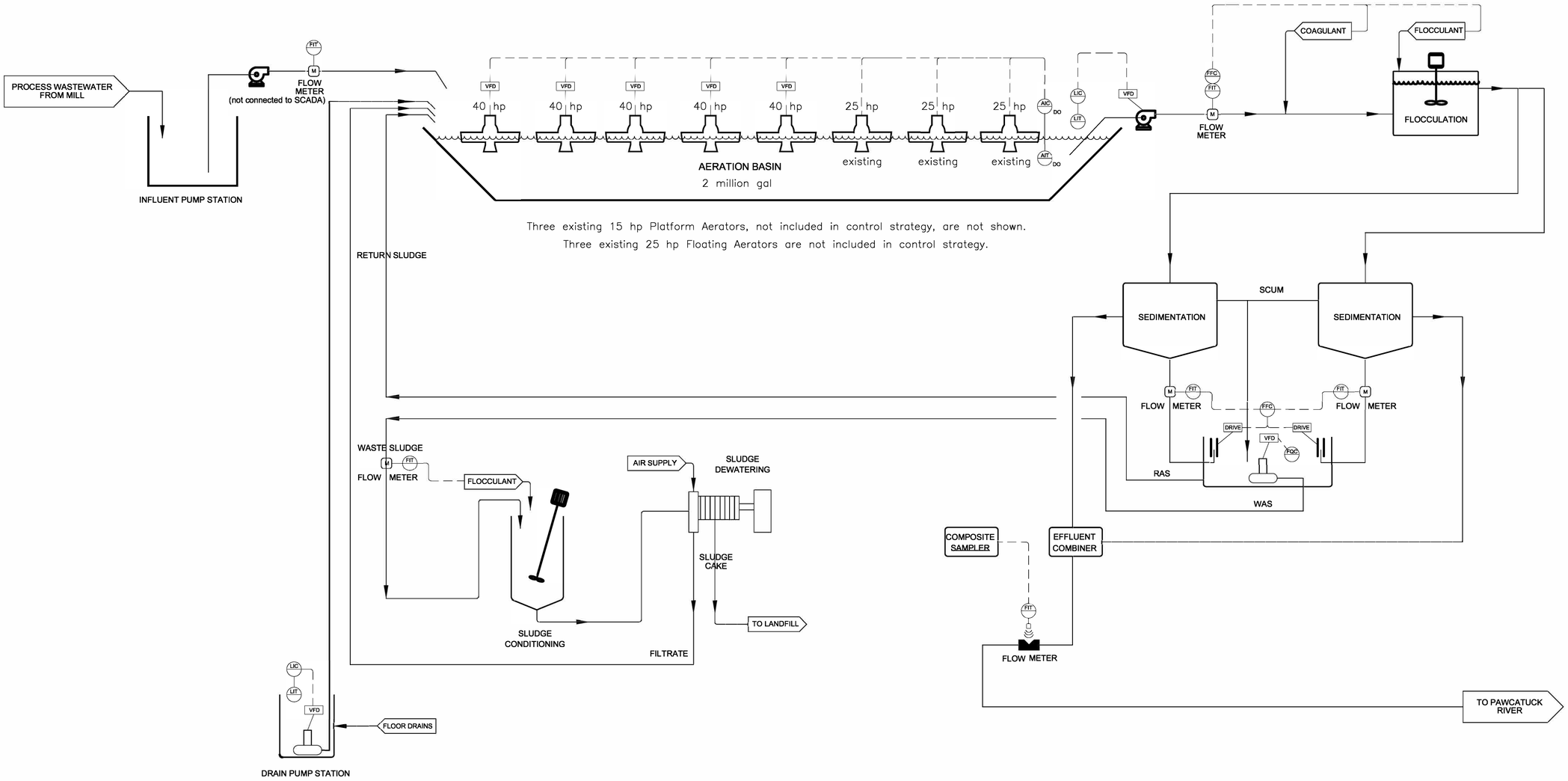
Kenyon Industries
Wastewater Treatment Plant Upgrade
Kenyon, Rhode Island

SITE PLAN FINAL GRADE
AND DIKE DETAILS

DESIGNED BY WGO	DATE 05-19-12
DRAWN BY OZ	DATE 05-19-12
SCALE 1"=40'	DRAWING
	PLOT

PROJECT

C-02-03
SHEET NO.



NO.	REVISIONS	BY	DATE
4	REVISED AERATOR DRIVES AND NOTE.	GRH	12-6-13
3	DELETED INFLUENT SAMPLER.	GRH	10-11-13
2	RECONFIGURED SCUM AND SLUDGE PIPING.	GRH	09-10-13
1	ADDED TWO AERATORS, DELETED RAS PUMPS, ADDED VALVES.	GRH	04-29-13

REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS

Applied Technology and Engineering, P.C.
545 Panorama Rd. Earlysville, Va 22936
Phone: (434)-978-1422 Fax: (434)-249-6443

WILLIAM G. ONEAL No. 9926 REGISTERED PROFESSIONAL ENGINEER CIVIL 8/12/13

Kenyon Industries Wastewater Treatment Plant Upgrade Kenyon, Rhode Island

PROCESS FLOW AND CONTROL DIAGRAM

DESIGNED BY WGO	DATE 1-29-13
DRAWN BY GRH	DATE 1-29-13
SCALE NTS	DRAWING
	PLOT

PROJECT

I-01-01

SHEET NO.

ATTACHMENT C
Summary of Applicable Water Quality Based Limits

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY SPECIFIC DATA INPUT SHEET

NOTE: LIMITS BASED ON RI WATER QUALITY CRITERIA 250-RICR-150-05-1 effective 08/19/2018

FACILITY NAME: **Kenyon WWTF**

RIPDES PERMIT #: **RI0000191**

	DISSOLVED BACKGROUND DATA (ug/L)	ACUTE METAL TRANSLATOR	CHRONIC METAL TRANSLATOR
ALUMINUM	NA	NA	NA
ARSENIC	NA	1	1
CADMIUM	NA	0.982200908	0.947200908
CHROMIUM III	NA	0.316	0.86
CHROMIUM VI	NA	0.982	0.962
COPPER	NA	0.96	0.96
LEAD	NA	0.924043201	0.924043201
MERCURY	NA	0.85	0.85
NICKEL	NA	0.998	0.997
SELENIUM	NA	NA	NA
SILVER	NA	0.85	NA
ZINC	NA	0.978	0.986
AMMONIA (as N)	NA		

USE NA WHEN NO DATA IS AVAILABLE

NOTE 1: METAL TRANSLATORS FROM RI WATER QUALITY REGS 250-RICR-150-05-1 §1.26(J)(8).

pH =	**6.6** S.U.
HARDNESS =	**40.1** (mg/L as CaCO3)

FLOW DATA		
DESIGN FLOW =	**0.490**	MGD
=	0.758	CFS
7Q10 FLOW =	**7.928**	CFS
7Q10 (JUNE-OCT) =	**7.928**	CFS
7Q10 (NOV-MAY) =	**16.142**	CFS
30Q5 FLOW =	**54.104**	CFS
HARMONIC FLOW =	**54.104**	CFS

DILUTION FACTORS	
ACUTE =	**11.457**
CHRONIC =	**11.457**
(MAY-OCT) =	**11.457**
(NOV-APR) =	**22.289**
30Q5 FLOW =	**72.359**
HARMONIC FLOW =	**72.359**

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Kenyon WWTF RIPDES PERMIT #: RI0000191

Month	Upper 90th% Temp	Upper 90th% pH	Acute Criteria [1] mg/L as N	Chronic Criteria [2] mg/L as N
May	26	6.6	46.8	3.13
Jun	26	6.6	46.8	3.13
Jul	26	6.6	46.8	3.13
Aug	26	6.6	46.8	3.13
Sep	26	6.6	46.8	3.13
Oct	26	6.6	46.8	3.13
Nov	15	6.6	46.8	6.27
Dec	15	6.6	46.8	6.27
Jan	15	6.6	46.8	6.27
Feb	15	6.6	46.8	6.27
Mar	15	6.6	46.8	6.27
Apr	15	6.6	46.8	6.27

NOTE 1: Criteria based on 250-RICR-150-05-1 §1.26(L)(1)(a) Acute Criteria as Total Ammonia Nitrogen (mg N/L) with Salmonids absent

NOTE 2: Criteria based on 250-RICR-150-05-1 §1.26(L)(1)(b) Chronic Criteria for Fish Early Life Stages Present, (mg N/L)

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Kenyon WWTF RIPDES PERMIT #: RI0000191

NOTE: METALS CRITERIA ARE EXPRESSED AS DISSOLVED, METALS LIMITS ARE EXPRESSED AS TOTAL

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	FRESHWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	FRESHWATER 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	NA	450	4124.437433	10	640	91.65416517
ARSENIC (limits are total recoverable)	7440382	NA	340	3116.241616	150	1.4	81.04247142
ASBESTOS	1332214	NA		No Criteria			No Criteria
BERYLLIUM	7440417	NA	7.5	68.74062388	0.17		1.558120808
CADMIUM (limits are total recoverable)	7440439	NA	0.828162445	7.728005221	0.130321703		1.261034146
CHROMIUM III (limits are total recoverable)	16065831	NA	269.7340953	7823.497887	35.08686406		373.9368877
CHROMIUM VI (limits are total recoverable)	18540299	NA	16	149.3346887	11		104.80206
COPPER (limits are total recoverable)	7440508	NA	5.685376841	54.28004876	4.104558236		39.18748526
CYANIDE	57125	NA	22	201.6391634	5.2	140	47.66016589
LEAD (limits are total recoverable)	7439921	NA	23.59601006	234.044534	0.919502636		9.120379485
MERCURY (limits are total recoverable)	7439976	NA	1.4	15.09598015	0.77	0.15	8.30278908
NICKEL (limits are total recoverable)	7440020	NA	216.2716069	1986.191742	24.02109856	4600	220.8258511
SELENIUM (limits are total recoverable)	7782492	NA	20	183.3083303	5	4200	45.82708259
SILVER (limits are total recoverable)	7440224	NA	0.717440449	7.736047697	NA		No Criteria
THALLIUM	7440280	NA	46	421.6091598	1	0.47	9.165416517
ZINC (limits are total recoverable)	7440666	NA	54.05982006	506.6265519	54.50202718	26000	506.6265519
VOLATILE ORGANIC COMPOUNDS							
ACROLEIN	107028	NA	2.9	26.5797079	0.06	290	0.549924991
ACRYLONITRILE	107131	NA	378	3464.527444	8.4	2.5	76.98949875
BENZENE	71432	NA	265	2428.835377	5.9	510	54.07595745
BROMOFORM	75252	NA	1465	13427.3352	33	1400	302.4587451
CARBON TETRACHLORIDE	56235	NA	1365	12510.79355	30	16	274.9624955
CHLOROBENZENE	108907	NA	795	7286.506131	18	1600	164.9774973
CHLORODIBROMOMETHANE	124481	NA		No Criteria		130	7525.372346
CHLOROFORM	67663	NA	1445	13244.02687	32	4700	293.2933286
DICHLOROBROMOMETHANE	75274	NA		No Criteria		170	9840.871529
1,2DICHLOROETHANE	107062	NA	5900	54075.95745	131	370	1200.669564
1,1DICHLOROETHYLENE	75354	NA	580	5315.94158	13	7100	119.1504147
1,2DICHLOROPROPANE	78875	NA	2625	24059.21836	58	150	531.594158
1,3DICHLOROPROPYLENE	542756	NA		No Criteria		21	1215.637071
ETHYLBENZENE	100414	NA	1600	14664.66643	36	2100	329.9549946
BROMOMETHANE (methyl bromide)	74839	NA		No Criteria		1500	86831.21937
CHLOROMETHANE (methyl chloride)	74873	NA		No Criteria			No Criteria
METHYLENE CHLORIDE	75092	NA	9650	88446.26939	214	5900	1961.399135
1,1,2,2TETRACHLOROETHANE	79345	NA	466	4271.084097	10	40	91.65416517
TETRACHLOROETHYLENE	127184	NA	240	2199.699964	5.3	33	48.57670754
TOLUENE	108883	NA	635	5820.039489	14	15000	128.3158312
1,2TRANSDICHLOROETHYLENE	156605	NA		No Criteria		10000	578874.7958
1,1,1TRICHLOROETHANE	71556	NA		No Criteria			No Criteria
1,1,2TRICHLOROETHANE	79005	NA	900	8248.874866	20	160	183.3083303
TRICHLOROETHYLENE	79016	NA	1950	17872.56221	43	300	394.1129102
VINYL CHLORIDE	75014	NA		No Criteria		2.4	138.929951
ACID ORGANIC COMPOUNDS							
2CHLOROPHENOL	95578	NA	129	1182.338731	2.9	150	26.5797079
2,4DICHLOROPHENOL	120832	NA	101	925.7070683	2.2	290	20.16391634

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Kenyon WWTF RIPDES PERMIT #: RI0000191

NOTE: METALS CRITERIA ARE EXPRESSED AS DISSOLVED, METALS LIMITS ARE EXPRESSED AS TOTAL

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	FRESHWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	FRESHWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
2,4DIMETHYLPHENOL	105679	NA	106	971.5341508	2.4	850	21.99699964
4,6DINITRO2METHYL PHENOL	534521	NA		No Criteria		280	16208.49428
2,4DINITROPHENOL	51285	NA	31	284.127912	0.69	5300	6.324137397
4NITROPHENOL	88755	NA		No Criteria			No Criteria
PENTACHLOROPHENOL	87865	NA	0.051175468	0.46904448	0.039262124	30	0.359853716
PHENOL	108952	NA	251	2300.519546	5.6	1700000	51.3263325
2,4,6TRICHLOROPHENOL	88062	NA	16	146.6466643	0.36	24	3.299549946
ACENAPHTHENE	83329	NA	85	779.060404	1.9	990	17.41429138
ANTHRACENE	120127	NA		No Criteria		40000	2315499.183
BENZIDINE	92875	NA		No Criteria		0.002	0.115774959
POLYCYCLIC AROMATIC HYDROCARBONS		NA		No Criteria		0.18	10.41974632
BIS(2CHLOROETHYL)ETHER	111444	NA		No Criteria		5.3	306.8036418
BIS(2CHLOROISOPROPYL)ETHER	108601	NA		No Criteria		65000	3762686.173
BIS(2ETHYLHEXYL)PHTHALATE	117817	NA	555	5086.806167	12	22	109.9849982
BUTYL BENZYL PHTHALATE	85687	NA	85	779.060404	1.9	1900	17.41429138
2CHLORONAPHTHALENE	91587	NA		No Criteria		1600	92619.96733
1,2DICHLOROBENZENE	95501	NA	79	724.0679049	1.8	1300	16.49774973
1,3DICHLOROBENZENE	541731	NA	390	3574.512442	8.7	960	79.7391237
1,4DICHLOROBENZENE	106467	NA	56	513.263325	1.2	190	10.99849982
3,3DICHLOROBENZIDENE	91941	NA		No Criteria		0.28	16.20849428
DIETHYL PHTHALATE	84662	NA	2605	23875.91003	58	44000	531.594158
DIMETHYL PHTHALATE	131113	NA	1650	15122.93725	37	1100000	339.1204111
DI-n-BUTYL PHTHALATE	84742	NA		No Criteria		4500	260493.6581
2,4DINITROTOLUENE	121142	NA	1550	14206.3956	34	34	311.6241616
1,2DIPHENYLHYDRAZINE	122667	NA	14	128.3158312	0.31	2	2.84127912
FLUORANTHENE	206440	NA	199	1823.917887	4.4	140	40.32783268
FLUORENE	86737	NA		No Criteria		5300	306803.6418
HEXACHLOROBENZENE	118741	NA		No Criteria		0.0029	0.167873691
HEXACHLOROBUTADIENE	87683	NA		No Criteria		180	10419.74632
HEXACHLOROCYCLOPENTADIENE	77474	NA	0.35	3.207895781	0.008	1100	0.073323332
HEXACHLOROETHANE	67721	NA	49	449.1054094	1.1	33	10.08195817
ISOPHORONE	78591	NA	5850	53617.68663	130	9600	1191.504147
NAPHTHALENE	91203	NA	115	1054.022899	2.6		23.83008295
NITROBENZENE	98953	NA	1350	12373.3123	30	690	274.9624955
N-NITROSODIMETHYLAMINE	62759	NA		No Criteria		30	1736.624387
N-NITROSODI-N-PROPYLAMINE	621647	NA		No Criteria		5.1	295.2261459
N-NITROSODIPHENYLAMINE	86306	NA	293	2685.46704	6.5	60	59.57520736
PYRENE	129000	NA		No Criteria		4000	231549.9183
1,2,4trichlorobenzene	120821	NA	75	687.4062388	1.7	70	15.58120808
ALDRIN	309002	NA	3	27.49624955		0.0005	0.02894374
Alpha BHC	319846	NA		No Criteria		0.049	2.8364865
Beta BHC	319857	NA		No Criteria		0.17	9.840871529
Gamma BHC (Lindane)	58899	NA	0.95	8.707145692		1.8	104.1974632
CHLORDANE	57749	NA	2.4	21.99699964	0.0043	0.0081	0.039411291
4,4DDT	50293	NA	1.1	10.08195817	0.001	0.0022	0.009165417

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Kenyon WWTF RIPDES PERMIT #: RI0000191

NOTE: METALS CRITERIA ARE EXPRESSED AS DISSOLVED, METALS LIMITS ARE EXPRESSED AS TOTAL

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	FRESHWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	FRESHWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
4,4DDE	72559	NA		No Criteria		0.0022	0.127352455
4,4DDD	72548	NA		No Criteria		0.0031	0.179451187
DIELDRIN	60571	NA	0.24	2.199699964	0.056	0.00054	0.031259239
ENDOSULFAN (alpha)	959988	NA	0.22	2.016391634	0.056	89	0.513263325
ENDOSULFAN (beta)	33213659	NA	0.22	2.016391634	0.056	89	0.513263325
ENDOSULFAN (sulfate)	1031078	NA		No Criteria		89	5151.985683
ENDRIN	72208	NA	0.086	0.78822582	0.036	0.06	0.329954995
ENDRIN ALDEHYDE	7421934	NA		No Criteria		0.3	17.36624387
HEPTACHLOR	76448	NA	0.52	4.766016589	0.0038	0.00079	0.034828583
HEPTACHLOR EPOXIDE	1024573	NA	0.52	4.766016589	0.0038	0.00039	0.022576117
POLYCHLORINATED BIPHENYLS3	1336363	NA		No Criteria	0.014	0.00064	0.037047987
2,3,7,8TCDD (Dioxin)	1746016	NA		No Criteria		0.000000051	2.95226E-06
TOXAPHENE	8001352	NA	0.73	6.690754058	0.0002	0.0028	0.001833083
TRIBUTYLTIN		NA	0.46	4.216091598	0.072		0.659909989
NON PRIORITY POLLUTANTS:							
OTHER SUBSTANCES							
ALUMINUM (limits are total recoverable)	7429905	NA	750	6874.062388	87		797.391237
AMMONIA as N(winter/summer)	7664417	NA	46.8 | 46.8	834515.1322 | 428941.493	6.27 | 3.13		111803.6299 | 28687.7537
4BROMOPHENYL PHENYL ETHER		NA	18	164.9774973	0.4		3.666166607
CHLORIDE	16887006	NA	860000	7882258.205	230000		2108045.799
CHLORINE	7782505	NA	19	217.6786423	11		126.0244771
4CHLORO2METHYLPHENOL		NA	15	137.4812478	0.32		2.932933286
1CHLORONAPHTHALENE		NA	80	733.2333214	1.8		16.49774973
4CHLOROPHENOL	106489	NA	192	1759.759971	4.3		39.41129102
2,4DICHLORO6METHYLPHENOL		NA	22	201.6391634	0.48		4.399399928
1,1DICHLOROPROPANE		NA	1150	10540.22899	26		238.3008295
1,3DICHLOROPROPANE	142289	NA	303	2777.121205	6.7		61.40829067
2,3DINITROTOLUENE		NA	17	155.8120808	0.37		3.391204111
2,4DINITRO6METHYL PHENOL		NA	12	109.9849982	0.26		2.383008295
IRON	7439896	NA		No Criteria	1000		9165.416517
pentachlorobenzene	608935	NA	13	119.1504147	0.28		2.566316625
PENTACHLOROETHANE		NA	362	3317.880779	8		73.32333214
1,2,3,5tetrachlorobenzene		NA	321	2942.098702	7.1		65.07445727
1,1,1,2TETRACHLOROETHANE	630206	NA	980	8982.108187	22		201.6391634
2,3,4,6TETRACHLOROPHENOL	58902	NA	7	64.15791562	0.16		1.466466643
2,3,5,6TETRACHLOROPHENOL		NA	8.5	77.9060404	0.19		1.741429138
2,4,5TRICHLOROPHENOL	95954	NA	23	210.8045799	0.51		4.674362424
2,4,6TRINITROPHENOL	88062	NA	4235	38815.53895	94		861.5491526
XYLENE	1330207	NA	133	1219.000397	3		27.49624955

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Kenyon WWTF RIPDES PERMIT #: RI0000191

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
PRIORITY POLLUTANTS:			
TOXIC METALS AND CYANIDE			
ANTIMONY	7440360	4124.44	91.65
ARSENIC, TOTAL	7440382	3116.24	81.04
ASBESTOS	1332214	No Criteria	0.00000
BERYLLIUM	7440417	68.74	1.56
CADMIUM, TOTAL	7440439	7.73	1.26103
CHROMIUM III, TOTAL	16065831	7823.50	373.94
CHROMIUM VI, TOTAL	18540299	149.33	104.80
COPPER, TOTAL	7440508	54.28	39.19
CYANIDE	57125	201.64	47.66
LEAD, TOTAL	7439921	234.04	9.12
MERCURY, TOTAL	7439976	15.10	8.30
NICKEL, TOTAL	7440020	1986.19	220.83
SELENIUM, TOTAL	7782492	183.31	45.83
SILVER, TOTAL	7440224	7.74	No Criteria
THALLIUM	7440280	421.61	9.17
ZINC, TOTAL	7440666	506.63	506.63
VOLATILE ORGANIC COMPOUNDS			
ACROLEIN	107028	26.58	0.54992
ACRYLONITRILE	107131	3464.53	76.99
BENZENE	71432	2428.84	54.08
BROMOFORM	75252	13427.34	302.46
CARBON TETRACHLORIDE	56235	12510.79	274.96
CHLOROBENZENE	108907	7286.51	164.98
CHLORODIBROMOMETHANE	124481	No Criteria	7525.37
CHLOROFORM	67663	13244.03	293.29
DICHLOROBROMOMETHANE	75274	No Criteria	9840.87
1,2DICHLOROETHANE	107062	54075.96	1200.67
1,1DICHLOROETHYLENE	75354	5315.94	119.15
1,2DICHLOROPROPANE	78875	24059.22	531.59
1,3DICHLOROPROPYLENE	542756	No Criteria	1215.64
ETHYLBENZENE	100414	14664.67	329.95
BROMOMETHANE (methyl bromide)	74839	No Criteria	86831.22
CHLOROMETHANE (methyl chloride)	74873	No Criteria	0.00000
METHYLENE CHLORIDE	75092	88446.27	1961.40
1,1,2,2TETRACHLOROETHANE	79345	4271.08	91.65
FLUORENE	86737	No Criteria	306803.64
HEXACHLOROBENZENE	118741	No Criteria	0.16787
TETRACHLOROETHYLENE	127184	2199.70	48.58
TOLUENE	108883	5820.04	128.32
1,2TRANSDICHLOROETHYLENE	156605	No Criteria	578874.80
1,1,1TRICHLOROETHANE	71556	No Criteria	0.00000
1,1,2TRICHLOROETHANE	79005	8248.87	183.31
TRICHLOROETHYLENE	79016	17872.56	394.11
VINYL CHLORIDE	75014	No Criteria	138.93
ACID ORGANIC COMPOUNDS			
2CHLOROPHENOL	95578	1182.34	26.58
2,4DICHLOROPHENOL	120832	925.71	20.16
2,4DIMETHYLPHENOL	105679	971.53	22.00
4,6DINITRO2METHYL PHENOL	534521	No Criteria	16208.49
2,4DINITROPHENOL	51285	284.13	6.32
4NITROPHENOL	88755	No Criteria	0.00000
PENTACHLOROPHENOL	87865	0.47	0.35985
PHENOL	108952	2300.52	51.33
2,4,6TRICHLOROPHENOL	88062	146.65	3.30
BASE NEUTRAL COMPUNDS			
ACENAPHTHENE	83329	779.06	17.41
ANTHRACENE	120127	No Criteria	2315499.18
BENZIDINE	92875	No Criteria	0.11577
PAHs		No Criteria	10.42
BIS(2CHLOROETHYL)ETHER	111444	No Criteria	306.80
BIS(2CHLOROISOPROPYL)ETHER	108601	No Criteria	3762686.17
BIS(2ETHYLHEXYL)PHTHALATE	117817	5086.81	109.98
BUTYL BENZYL PHTHALATE	85687	779.06	17.41
2CHLORONAPHTHALENE	91587	No Criteria	92619.97
1,2DICHLOROBENZENE	95501	724.07	16.50
1,3DICHLOROBENZENE	541731	3574.51	79.74
1,4DICHLOROBENZENE	106467	513.26	11.00
3,3DICHLOROBENZIDENE	91941	No Criteria	16.21
DIETHYL PHTHALATE	84662	23875.91	531.59
DIMETHYL PHTHALATE	131113	15122.94	339.12
DI-n-BUTYL PHTHALATE	84742	No Criteria	260493.66
2,4DINITROTOLUENE	121142	14206.40	311.62
1,2DIPHENYLHYDRAZINE	122667	128.32	2.84
FLUORANTHENE	206440	1823.92	40.33
NON PRIORITY POLLUTANTS:			
OTHER SUBSTANCES			

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Kenyon WWTF RIPDES PERMIT #: RI0000191

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
HEXACHLOROBUTADIENE	87683	No Criteria	10419.75
HEXACHLOROCYCLOPENTADIENE	77474	3.21	0.07332
HEXACHLOROETHANE	67721	449.11	10.08
ISOPHORONE	78591	53617.69	1191.50
NAPHTHALENE	91203	1054.02	23.83
NITROBENZENE	98953	12373.31	274.96
N-NITROSODIMETHYLAMINE	62759	No Criteria	1736.62
N-NITROSODI-N-PROPYLAMINE	621647	No Criteria	295.23
N-NITROSODIPHENYLAMINE	86306	2685.47	59.58
PYRENE	129000	No Criteria	231549.92
1,2,4trichlorobenzene	120821	687.41	15.58
PESTICIDES/PCBs			
ALDRIN	309002	27.50	0.02894
Alpha BHC	319846	No Criteria	2.84
Beta BHC	319857	No Criteria	9.84
Gamma BHC (Lindane)	58899	8.71	8.71
CHLORDANE	57749	22.00	0.03941
4,4DDT	50293	10.08	0.00917
4,4DDE	72559	No Criteria	0.12735
4,4DDD	72548	No Criteria	0.17945
DIELDRIN	60571	2.20	0.03126
ENDOSULFAN (alpha)	959988	2.02	0.51326
ENDOSULFAN (beta)	33213659	2.02	0.51326
ENDOSULFAN (sulfate)	1031078	No Criteria	5151.99
ENDRIN	72208	0.79	0.33
ENDRIN ALDEHYDE	7421934	No Criteria	17.37
HEPTACHLOR	76448	4.77	0.03
HEPTACHLOR EPOXIDE	1024573	4.77	0.02
POLYCHLORINATED BIPHENYLS3	1336363	No Criteria	0.04
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.00
TOXAPHENE	8001352	6.69	0.00
TRIBUTYLTIN		4.22	0.66

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
ALUMINUM, TOTAL	7429905	6874.06	797.39
AMMONIA (as N), WINTER (NOV-API	7664417	834515.13	111803.63
AMMONIA (as N), SUMMER (MAY-OC	7664417	428941.49	28687.75
4BROMOPHENYL PHENYL ETHER		164.98	3.67
CHLORIDE	16887006	7882258.20	2108045.80
CHLORINE	7782505	217.68	126.02
4CHLORO2METHYLPHENOL		137.48	2.93
1CHLORONAPHTHALENE		733.23	16.50
4CHLOROPHENOL	106489	1759.76	39.41
2,4DICHLORO6METHYLPHENOL		201.64	4.40
1,1DICHLOROPROPANE		10540.23	238.30
1,3DICHLOROPROPANE	142289	2777.12	61.41
2,3DINITROTOLUENE		155.81	3.39
2,4DINITRO6METHYL PHENOL		109.98	2.38
IRON	7439896	No Criteria	9165.42
pentachlorobenzene	608935	119.15	2.57
PENTACHLOROETHANE		3317.88	73.32
1,2,3,5tetrachlorobenzene		2942.10	65.07
1,1,1,2TETRACHLOROETHANE	630206	8982.11	201.64
2,3,4,6TETRACHLOROPHENOL	58902	64.16	1.47
2,3,5,6TETRACHLOROPHENOL		77.91	1.74
2,4,5TRICHLOROPHENOL	95954	210.80	4.67
2,4,6TRINITROPHENOL	88062	38815.54	861.55
XYLENE	1330207	1219.00	27.50

ATTACHMENT D
Comparison of Allowable Limits with Discharge Monitoring Report Data, Permit Application Data, and Annual Priority Pollutant Scan Data

Facility Name: ***Kenyon Industries***
RIPDES Permit #: ***RI0000191***
Outfall #: ***001A***

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L) Based on WQ Criteria		Priority Pollutant Scan Data (ug/l) 2016-2020		Permit Application Data (ug/L) 5/21/2015		Ave. DMR Data Effluent (ug/L) 2016-2020		Potential WQ Based Permit Limits (ug/L)		Reasonable Potential (Yes/No)
		Daily Max	Monthly Ave	Max	Ave	Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	
PRIORITY POLLUTANTS:												
TOXIC METALS AND CYANIDE												
ANTIMONY	7440360	4124	91.7	18	11.8							No
ARSENIC, TOTAL	7440382	3116	81.0									No
ASBESTOS	1332214	No Criteria	0									No
BERYLLIUM	7440417	68.7	1.56									No
CADMIUM, TOTAL	7440439	7.73	1.26					0	0			No
CHROMIUM III, TOTAL	16065831	7823	373.9					141.43	128.29	7823.50	373.94	No
CHROMIUM VI, TOTAL	18540299	149.3	104.8					141.43	128.29	149.33	104.80	No
COPPER, TOTAL	7440508	54.3	39.2	220	178.4			165.45	139.68	54.28	39.19	YES
CYANIDE	57125	201.6	47.7									No
LEAD, TOTAL	7439921	234.0	9.12					1.29	0.67			No
MERCURY, TOTAL	7439976	15.1	8.3									No
NICKEL, TOTAL	7440020	1986	220.8	9	6.2			11.84	10.15			No
SELENIUM, TOTAL	7782492	183.3	45.8									No
SILVER, TOTAL	7440224	7.7	No Criteria					0	0			No
THALLIUM	7440280	421.6	9.2									No
ZINC, TOTAL	7440666	506.6	506.6	73	44			46.68	44.16			No
VOLATILE ORGANIC COMPOUNDS												
ACROLEIN	107028	26.58	0.550									No
ACRYLONITRILE	107131	3464.53	77.0									No
BENZENE	71432	2428.84	54.1									No
BROMOFORM	75252	13427.34	302.5									No
CARBON TETRACHLORIDE	56235	12510.79	275.0									No
CHLOROBENZENE	108907	7286.51	165.0			0.67						No
CHLORODIBROMOMETHANE	124481	No Criteria	7525.4									No
CHLOROFORM	67663	13244.03	293.3									No
DICHLOROBROMOMETHANE	75274	No Criteria	9840.9									No
1,2DICHLOROETHANE	107062	54075.96	1200.7									No
1,1DICHLOROETHYLENE	75354	5315.94	119.2									No
1,2DICHLOROPROPANE	78875	24059.22	531.6									No
1,3DICHLOROPROPYLENE	542756	No Criteria	1215.6									No
ETHYLBENZENE	100414	14664.67	330.0									No
BROMOMETHANE (methyl bromide)	74839	No Criteria	86831.2									No
CHLOROMETHANE (methyl chloride)	74873	No Criteria	0.000000000									No
METHYLENE CHLORIDE	75092	88446.27	1961									No
1,1,2,2TETRACHLOROETHANE	79345	4271.08	91.7									No
FLUORENE	86737	No Criteria	306804									No
HEXACHLOROBENZENE	118741	No Criteria	0.168									No
HEXACHLOROBUTADIENE	87683	No Criteria	10419.7									No
HEXACHLOROCYCLOPENTADIENE	77474	3.21	0.073									No
HEXACHLOROETHANE	67721	449.11	10.1									No
ISOPHORONE	78591	53617.69	1191.5									No
NAPHTHALENE	91203	1054.02	23.8									No
NITROBENZENE	98953	12373.31	275.0									No
N-NITROSODIMETHYLAMINE	62759	No Criteria	1736.6									No
N-NITROSODI-N-PROPYLAMINE	621647	No Criteria	295.2									No
N-NITROSODIPHENYLAMINE	86306	2685.47	59.58									No
PYRENE	129000	No Criteria	231550									No
1,2,4trichlorobenzene	120821	687.41	15.58									No
PESTICIDES/PCBs												
ALDRIN	309002	27.50	0.0289									No
Alpha BHC	319846	No Criteria	2.84									No
Beta BHC	319857	No Criteria	9.84									No
Gamma BHC (Lindane)	58899	8.71	8.71									No
CHLORDANE	57749	22.00	0.039									No
4,4DDT	50293	10.08	0.009									No
4,4DDE	72559	No Criteria	0.127									No
4,4DDD	72548	No Criteria	0.179									No
DIELDRIN	60571	2.20	0.031									No
ENDOSULFAN (alpha)	959988	2.02	0.513									No
ENDOSULFAN (beta)	33213659	2.02	0.513									No
ENDOSULFAN (sulfate)	1031078	No Criteria	5151.99									No
ENDRIN	72208	0.79	0.33									No
ENDRIN ALDEHYDE	7421934	No Criteria	17.37									No
HEPTACHLOR	76448	4.77	0.0348286									No
HEPTACHLOR EPOXIDE	1024573	4.77	0.0225761									No
POLYCHLORINATED BIPHENYLS	1336363	No Criteria	0.0370480									No
PCB-1242	53469219											No
PCB-1254	11097691											No
PCB-1221	11104282											No
PCB-1232	11141165											No
PCB-1248	12672296											No
PCB-1260	11096825											No
PCB-1016	12674112											No
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.00000295									No
TOXAPHENE	8001352	6.69	0.001833									No
TRIBUTYLTIN	688733	4.22	0.66									No
TETRACHLOROETHYLENE	127184	2199.70	48.58									No
TOLUENE	108883	5820.04	128.32									No
1,2TRANSDICHLOROETHYLENE	156605	No Criteria	578874.80									No
1,1,1TRICHLOROETHANE	71556	No Criteria	0.00									No
1,1,2TRICHLOROETHANE	79005	8248.87	183.31									No
TRICHLOROETHYLENE	79016	17872.56	394.11									No
VINYL CHLORIDE	75014	No Criteria	138.93									No
ACID ORGANIC COMPOUNDS												
2CHLOROPHENOL	95578	1182.34	26.58									No
2,4DICHLOROPHENOL	120832	925.71	20.16									No
2,4DIMETHYLPHENOL	105679	971.53	22.00									No
4,6DINITRO2METHYL PHENOL	534521	No Criteria	16208.49									No
2,4DINITROPHENOL	51285	284.13	6.32									No

Facility Name: ***Kenyon Industries***
RIPDES Permit #: ***RI0000191***
Outfall #: ***001A***

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L) Based on WQ Criteria		Priority Pollutant Scan Data (ug/l) 2016-2020		Permit Application Data (ug/L) 5/21/2015		Ave. DMR Data Effluent (ug/L) 2016-2020		Potential WQ Based Permit Limits (ug/L)		Reasonable Potential (Yes/No)
		Daily Max	Monthly Ave	Max	Ave	Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	
4NITROPHENOL	88755	No Criteria	0.00									No
PENTACHLOROPHENOL	87865	0.47	0.36									No
PHENOL	108952	2300.52	51.33		48					2300.52	51.33	YES
2,4,6TRICHLOROPHENOL	88062	146.65	3.30									No
BASE NEUTRAL COMPUNDS												
ACENAPHTHENE	83329	779	17.41									No
ANTHRACENE	120127	No Criteria	2315499.18									No
BENZIDINE	92875	No Criteria	0.12									No
PAHs		No Criteria	10.42									No
BIS(2CHLOROETHYL)ETHER	111444	No Criteria	306.80									No
BIS(2CHLOROISOPROPYL)ETHER	108601	No Criteria	3762686.17									No
BIS(2ETHYLHEXYL)PHTHALATE	117817	5087	109.98	42	14.65							No
BUTYL BENZYL PHTHALATE	85687	779.06	17.41									No
2CHLORONAPHTHALENE	91587	No Criteria	92619.97									No
1,2DICHLOROBENZENE	95501	724.07	16.50									No
1,3DICHLOROBENZENE	541731	3575	79.74									No
1,4DICHLOROBENZENE	106467	513.26	11.00									No
3,3DICHLOROBENZIDENE	91941	No Criteria	16.21									No
DIETHYL PHTHALATE	84662	23875.9	531.6									No
DIMETHYL PHTHALATE	131113	15122.9	339.1									No
DI-n-BUTYL PHTHALATE	84742	No Criteria	260493.66									No
2,4DINITROTOLUENE	121142	14206.40	311.62									No
1,2DIPHENYLHYDRAZINE	122667	128.32	2.84									No
FLUORANTHENE	206440	1823.92	40.33									No
NON PRIORITY POLLUTANTS: OTHER SUBSTANCES												
ALUMINUM, TOTAL	7429905	6874	797	597	379.25			3751.47	2408.79	6874	797	YES
AMMONIA (as N), WINTER (NOV-APR)	7664417	834515	111804					21960	16220	834515	111804	YES
AMMONIA (as N), SUMMER (MAY-OCT)	7664417	428941	28688					16010	9570	428941	28688	YES
4BROMOPHENYL PHENYL ETHER		164.98	3.67									No
CHLORIDE	16887006	7882258	2108046									No
CHLORINE	7782505	217.68	126.02			420	84	59.83	30.79	217.68	126.02	No
4CHLORO2METHYLPHENOL		137.48	2.93									No
1CHLORONAPHTHALENE		733.23	16.50									No
4CHLOROPHENOL	106489	1759.76	39.41									No
2,4DICHLORO6METHYLPHENOL		201.64	4.40									No
1,1DICHLOROPROPANE		10540	238.30									No
1,3DICHLOROPROPANE	142289	2777.12	61.41									No
2,3DINITROTOLUENE		155.81	3.39									No
2,4DINITRO6METHYL PHENOL		109.98	2.38									No
IRON	7439896	No Criteria	9165			390						No
pentachlorobenzene	608935	119.15	2.57									No
PENTACHLOROETHANE		3317.88	73.32									No
1,2,3,5tetrachlorobenzene		2942.10	65.07									No
1,1,1,2TETRACHLOROETHANE	630206	8982.11	201.64									No
2,3,4,6TETRACHLOROPHENOL	58902	64.16	1.47									No
2,3,5,6TETRACHLOROPHENOL		77.91	1.74									No
2,4,5TRICHLOROPHENOL	95954	210.80	4.67									No
2,4,6TRINITROPHENOL	88062	38815.54	861.55									No
XYLENE	1330207	1219.00	27.50									No
NON WQ BASED PARAMETERS												
BOD5	---							89570	53540			---
COD								1282680	1149490			---
TSS	---							222920	175960			---
pH (min, max)	---							6.82	7.57			---
Flow (mgd)	---											---
Temperature (Winter) °C	---											---
Temperature (Summer) °C	---											---
Fecal Coliform (MPN/100ml)	---											---
Enterococci (CFU/100ml)	---											---
TKN	---							33.72	32.62			---
Nitrate + Nitrite	---											---
Nitrogen, Nitrate	---							34.85	32.85			---
Nitrogen, Nitrite	---							0.53	0.4			---
Nitrogen, Total	---							67.34	65.49			---
Phosphorus, Total	---							13.98	13.75			---
Phosphorous, Orthophosphate	---											---
Oil and Grease, SGT	---					2200						---
Cobalt	---					0.016						---
Sulfides	---											---

ATTACHMENT E
Ammonia Antidegradation Calculations

Facility : Kenyon Industries
Parameter : AMMONIA (Nov-Apr)

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

Chronic Metals Translator	:	N/A	
Previous monthly average limit (Total)	:	145000	ug/L
Historical discharge concentration (Total)	:	16000	ug/L
Waterbody background concentration (Dissolved)	:	0	ug/L
Facility chronic dilution factor	:	22.289	x
Chronic criteria (Dissolved)	:	6270	ug/L
Remaining Assimilative Capacity to be Allocated	:	0	%

Note: 0% of the remaining assimilative capacity was allocated because Kenyon has historically discharged ammonia at levels well below the permit limit.

Determine existing water quality:

$$Cp = \frac{(DF - 1)*Cb + 1*(Cd*MT)}{DF} = 6505.451119 \text{ ug/L}$$

DF = Chronic Dilution Factor Cb = Background Data (Dissolved)
Cd = Maximum of Historical Data or Previous Monthly Limit
MT = Metals Translator (Use RI Conversion Factor if Site-Specific is Unavailable)

Since the resulting instream concentration is greater than the chronic criteria, the water body is not attaining and the chronic criteria should be used to develop permit limits.

Calculation of the new chronic permit limit:

Crac = Ccriteria - Cp = Waterbody Not Attaining ug/L

Proposed Limit =	(Cp + %*Crac)*DF - (DF-1)*Cb =	Waterbody Not Attaining	ug/L	Dissolved
Proposed Limit =	(Proposed Dissolved Limit/MT) =	Waterbody Not Attaining	ug/L	Total

Traditional Limit = XXX ug/L

The Remaning Assimilative Capacity (Crac) is less than or equal to zero.
Therefore, use the antidegradation permit limit.

Chronic limit = 0 ug/L

Calculation of the new acute permit limit:

Acute Limit = XXX ug/L

Final Limits:

MONTHLY AVERAGE PERMIT LIMIT : 0 ug/L

Facility : Kenyon Industries
Parameter : AMMONIA (May-Oct)

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

Chronic Metals Translator	:	N/A	
Previous monthly average limit (Total)	:	68400	ug/L
Historical discharge concentration (Total)	:	9573	ug/L
Waterbody background concentration (Dissolved)	:	0	ug/L
Facility chronic dilution factor	:	11.457	x
Chronic criteria (Dissolved)	:	3130	ug/L
Remaining Assimilative Capacity to be Allocated	:	0	%

Note: 0% of the remaining assimilative capacity was allocated because Kenyon has historically discharged ammonia at levels well below the permit limit.

Determine existing water quality:

$$Cp = \frac{(DF - 1)*Cb + 1*(Cd*MT)}{DF} = 5970.149254 \text{ ug/L}$$

DF = Chronic Dilution Factor Cb = Background Data (Dissolved)
Cd = Maximum of Historical Data or Previous Monthly Limit
MT = Metals Translator (Use RI Conversion Factor if Site-Specific is Unavailable)

Since the resulting instream concentration is greater than the chronic criteria, the water body is not attaining and the chronic criteria should be used to develop permit limits.

Calculation of the new chronic permit limit:

Crac = Ccriteria - Cp = Waterbody Not Attaining ug/L

Proposed Limit =	(Cp + %*Crac)*DF - (DF-1)*Cb =	Waterbody Not Attaining	ug/L	Dissolved
Proposed Limit =	(Proposed Dissolved Limit/MT) =	Waterbody Not Attaining	ug/L	Total

Traditional Limit = XXX ug/L

The Remaning Assimilative Capacity (Crac) is less than or equal to zero.
Therefore, use the antidegradation permit limit.

Chronic limit = 0 ug/L

Calculation of the new acute permit limit:

Acute Limit = XXX ug/L

Final Limits:

MONTHLY AVERAGE PERMIT LIMIT : 0 ug/L

ATTACHMENT F
Non-Contact Cooling Water Calculations

Outfall 002A

Flow:

Receiving Water – Pawcatuck River 7Q10 @ Kenyon = 7.928 cfs = 5.124 MGD
Outfall 002A – Daily Maximum Limit = 0.12 MGD

Temperature:

Outfall 002A – Temperature Limit = 80°F
Instream Temperature – Summer = 78.8°F
Instream Temperature – Winter = 36°F

Water Quality Limits:

Net Instream Temperature change = 4.0°F
Max Instream Temperature = 83°F

Heat Balance (Assuming constant Density and Heat Capacity):

$$Q_{max}(T_{limit}) + Q_{7Q10}(T_{initial}) = (Q_{max} + Q_{7Q10})(T_{initial} + \Delta T)$$

Where:
Q_{max} = Daily Maximum Limit at Outfall 002A
Q7Q10 = Low Flow for Pawcatuck River
T_{limit} = Proposed Permit Limit for Temperature
$T_{initial}$ = Instream Ambient Temperature
ΔT = Net Change in Temperature

Case 1 – Summer Months

(0.12 MGD)(80°F) + (5.124 MGD)(78.8°F) = (0.12 MGD + 5.124 MGD)(78.8°F + ΔT)

ΔT = 0.027°F ≤ 4°F – Proposed Limit Meets Water Quality Regulations.
$T_{final} = T_{initial} + \Delta T$ = 78.83°F < 83°F – Proposed Limit Meets Water Quality Regulations

Case 2 – Winter Months

(0.12 MGD)(80°F) + (5.124 MGD)(36°F) = (0.12 MGD + 5.124 MGD)(36°F + ΔT)

ΔT = 0.4 ≤ 4°F – Proposed Limit Meets Water Quality Regulations
$T_{final} = T_{initial} + \Delta T$ = 36.43°F < 83°F – Proposed Limit Meets Water Quality Regulations

ATTACHMENT G
2016-2020 Priority Pollutant Scan Data

Kenyon Industries - 2016 to 2020 Priority Pollutant Scan Results				
Pollutant	Date	Concentration (µg/L)	Max	Average
Chromium	10/5/2016	78	167	130.4
Chromium	10/13/2017	140		
Chromium	9/11/2018	161		
Chromium	10/3/2019	167		
Chromium	9/21/2020	106		
Copper	10/5/2016	160	220	178.4
Copper	10/13/2017	176		
Copper	9/11/2018	220		
Copper	10/3/2019	215		
Copper	9/21/2020	121		
Nickel	10/5/2016	9	9	6.2
Nickel	10/13/2017	4		
Nickel	9/11/2018	5		
Nickel	10/3/2019	7		
Nickel	9/21/2020	6		
Antimony	10/5/2016	18	18	11.8
Antimony	10/13/2017	14		
Antimony	9/11/2018	9		
Antimony	10/3/2019	12		
Antimony	9/21/2020	6		
Zinc	10/5/2016	73	73	44
Zinc	10/13/2017	34		
Zinc	9/11/2018	35		
Zinc	10/3/2019	48		
Zinc	9/21/2020	30		
Bis(2-ethylhexyl)phthalate	10/5/2016	42	42	14.65
Bis(2-ethylhexyl)phthalate	10/13/2017	6.1		
Bis(2-ethylhexyl)phthalate	9/11/2018	4.8		
Bis(2-ethylhexyl)phthalate	10/3/2019	5.7		
Aluminum	10/13/2017	597	597	379.25
Aluminum	9/11/2018	281		
Aluminum	10/3/2019	343		
Aluminum	9/21/2020	296		
Phenol	9/11/2018	48	48	48

ATTACHMENT H
Analytical Data for Water Under Greige Room Floor

Kenyon Groundwater/Floodwater Bypass Data

	Analysis of Water Collecting Under Greige Room Floor					Analysis of Water During Flooding							
Analyte	Sampling Dates					Sampling Dates	11/16/18-	1/2/19-	1/21/19-	4/29/19-	12/11/19-		
	6/13-6/14,2013	3/31-4/1,2014	1/21-1/22,2015		Avg.	3/2/18-3/19/18	12/7/18	1/10/19	2/4/19	5/2/19	12/20/19		Avg.
Silver	0	0	0.001	mg/L	0.000333							mg/L	
Aluminum	0.213		0.243	mg/L	0.228							mg/L	
Cadmium	0	0	0	mg/L	0							mg/L	
Chromium	0.001	0	0.104	mg/L	0.035	0.011	0.01	0.012	0.022	0.002	0.007	mg/L	0.010667
Copper	0.017	0.019	0.15	mg/L	0.062	0.0207	0.0303	0.025	0.045	0.004	0.0201	mg/L	0.024183
Nickel	0.004	0.004	0.008	mg/L	0.005333							mg/L	
Lead	0.002	0.002	0.008	mg/L	0.004							mg/L	
Zinc	0.023	0	2.23	mg/L	0.751							mg/L	
COD	55	32	1540	mg/L	542.3333	35	91	122	235	59	152	mg/L	115.6667
BOD			34.9	mg/L	34.9	21	19.2	64.9	39.2	11		mg/L	31.06
Ammonia, as N	0.16	0.25	1.2	mg/L	0.536667	0.47	2.25	3.42	3.84	0.56	12.5	mg/L	3.84
Nitrite, as N	0	0.01	0.29	mg/L	0.1							mg/L	
Nitrate, as N	0	0.16	0	mg/L	0.053333							mg/L	
Sulfide	0	0	0.11	mg/L	0.036667							mg/L	
TKN	1.38	0.93	29.6	mg/L	10.63667							mg/L	
Phosphorus	0.31	0.15	10.6	mg/L	3.686667							mg/L	
TSS	0	0	94	mg/L	31.33333	0	5	0	13	0	8.7	mg/L	4.45
Phenolics	0	0	0	mg/L	0							mg/L	
1,1,1-Trichloroethane	0		0	µg/L	0								
1,1,2,2-Tetrachloroethane	0		0	µg/L	0								
1,1,2-Trichloroethance	0		0	µg/L	0								
1,1-Dichloroethane	1.2		0	µg/L	0.6								
1,1-Dichloroethene	0		0	µg/L	0								
1,2-Dichlorobenzene	0		0	µg/L	0								
1,2-Dichloroethane	0		0	µg/L	0								
1,2-Dichloropropane	0		0	µg/L	0								
1,3-Dichlorobenzene	0		0	µg/L	0								
1,4-Dichlorobenzene	0		0	µg/L	0								
2-Chloroethyl Vinyl Ether	0		0	µg/L	0								
Acrolein	0		0	µg/L	0								
Acrylonitrile			0	µg/L	0								
Benzene	0		0	µg/L	0								
Bromodichloromethane	0		0	µg/L	0								
Bromoform	0		0	µg/L	0								
Carbon Tetrachloride	0		0	µg/L	0								
Chlorobenzene	0		0	µg/L	0								
Chloroethane	0		0	µg/L	0								
Chloroform	0		0	µg/L	0								
Chloromethane	0		0	µg/L	0								
cis-1,2-Dichloroethene	0		0	µg/L	0								
cis-1,3-Dichloroethene	0		0	µg/L	0								
Dibromochloromethane	0		0	µg/L	0								
Ethylbenzene	0		0	µg/L	0								
m&p-Xylene	0		0	µg/L	0								
Methyl t-Butyl Ether	0		0	µg/L	0								
Methylene Chloride	0		0	µg/L	0								
o-Xylene	0		0	µg/L	0								
Tetrachloroethene	0		0	µg/L	0								
Toluene	0		0	µg/L	0								
trans-1,2-Dichloroethene	0		0	µg/L	0								
trans-1,3-Dichloropropene	0		0	µg/L	0								
Trichloroethene	0		0	µg/L	0								
Trichlorofluoromethane	0		0	µg/L	0								
Vinyl Chloride	0		0	µg/L	0								