pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0039004**
Facility Type	**Municipal**	APS ID	**989284**
Major / Minor	**Major**	Authorization ID	**1266503**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Towamencin Municipal Authority**	Facility Name	**Towamencin Municipal Authority STP**
Applicant Address	2225 Kriebel Road	Facility Address	2225 Kriebel Road
	Lansdale, PA 19446-5019		Lansdale, PA 19446-5019
Applicant Contact	Brent M Wagner	Facility Contact	Brent M Wagner
Applicant Phone	(215) 855-8165	Facility Phone	(215) 855-8165
Client ID	322637	Site ID	451588
Ch 94 Load Status	Not Overloaded	Municipality	Towamencin Township
Connection Status	No Limitations	County	Montgomery
Date Application Received	March 1, 2019	EPA Waived?	No
Date Application Accepted	April 19, 2019	If No, Reason	Major Facility, Pretreatment

Purpose of Application: Permit Renewal.

Summary of Review

The PA Department of Environmental Protection (PADEP/Department) received an NPDES permit renewal application from Towamencin Municipal Authority (permittee) on March 1, 2019 for permittee's STP located in Towamencin Township, Montgomery County. This is a Major facility with design flow of 6.5 MGD. The treated effluent discharges through Outfall 003 into Towamencin Creek, TSF/MF. The existing permit expired on August 31, 2019. The terms and conditions were automatically extended since the renewal application was received at least 180 days prior to permit expiration date. Renewal NPDES permit applications under Clean Water program are not covered by PADEP's PDG per 021-2100-001.

This fact sheet is developed in accordance with 40 CFR §124.56

Changes in this renewal: Seasonal fecal coliform limits applied, Total Aluminum monitoring requirement removed, more stringent Total Copper limits applied, new limits for Total Selenium and Total Zinc applied, new limit with compliance schedule applied for Chlorodibromomethane, Chloroform, and Dichlorobromomethane, WETT limits replaced with annual monitoring.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Approve	Deny	Signatures	Date
√		Reza H. Chowdhury, E.I.T. / Environmental Engineering Specialist	December 6, 2019
		Pravin C. Patel, P.E. / Environmental Engineer Manager	

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	003	Design Flow (MGD)	6.5
Latitude	40º 13' 45"	Longitude	-75º 21' 38"
Quad Name	Lansdale	Quad Code	1743
Wastewater Description:	Sewage Effluent		
Receiving Waters	Towamencin Creek (TSF, MF)	Stream Code	01066
NHD Com ID	25979000	RMI	1.41
Drainage Area	10.0 mi^2	Yield (cfs/mi^2)	0.0434
Q_{7-10} Flow (cfs)	0.434	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	176.89	Slope (ft/ft)	
Watershed No.	3-E	Chapter 93 Class.	TSF, MF
Existing Use	**TSF**	Existing Use Qualifier	
Exceptions to Use	None	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	ALGAE, ALGAE, FLOW REGIME MODIFICATION, FLOW REGIME MODIFICATION		
Source(s) of Impairment	MUNICIPAL POINT SOURCE DISCHARGES, MUNICIPAL POINT SOURCE DISCHARGES, RURAL (RESIDENTIAL AREAS), RURAL (RESIDENTIAL AREAS)		
TMDL Status	Final 04/09/2005, withdrawn	Name	Skippack Creek Watershed TMDL

Background/Ambient Data		Data Source
pH (SU)	7.97	Data collected by DEP from April'19 to June'19
Temperature (°C)	20	Default per 391-2000-007
Hardness (mg/L)	121.63	Data collected by DEP from April'19 to June'19
Other:		

Nearest Downstream Public Water Supply Intake	Aqua PA Main System on Perkiomen Creek		
PWS Waters	Perkiomen Creek	Flow at Intake (cfs)	
PWS RMI	0.924	Distance from Outfall (mi)	11

Other Comments: Outfall 003 primary, gravity sanitary sewer outfall for treated effluent from Stage I & II plants.

Streamflow:

Streamflow will be correlated with the USGS's web-based GIS application (https://streamstats.usgs.gov/ss/) accessed on August 5, 2019. Q_{7-10} and Q_{30-10} values at Outfall 003 were found to be 0.434 cfs and 0.739 cfs respectively. The drainage area at Outfall 003 was found to be 10.0 mi^2 from StreamStats.

Q_{7-10} runoff rate = 0.434 cfs/ 10.0 mi^2 = 0.0434 cfs/mi^2
Q_{30-10}/Q_{7-10} = 0.739 cfs/0.434 cfs = 1.7
Default Q_{1-10}: Q_{7-10} of 0.64 from 391-2000-007 will be used in modeling, if needed.

PWS Intake:

The nearest downstream public water supply is Aqua PA Main System on Perkiomen Creek at RMI 0.924 which is approximately 11 miles downstream of the Outfall 003. Because of the distance, dilution with much larger stream, and effluent limits, the discharge is expected not to affect the intake. The distance is calculated as follows:

+ Outfall 003 RMI at Towamencin Creek (01066) ---------- 1.41 mi
+ RMI on Skippack Creek (01024) at confluence with 01066 ---------- 7.6 mi
+ RMI on Perkiomen Creek (01017) at confluence with 01024 ---------- 2.91 mi
- PWS RMI at 01017 ---------- 0.92 mi

Total 11.0 miles

Wastewater Characteristics:
A median pH of 7.16 from daily DMR during dry months July through September for the years 2014 to 2018 and a default temperature of 20^0C (per 391-2000-013) will be used for modeling, if needed. The application data indicated an average Total Hardness of 100 mg/l out of 12 samples.

Background data:
The nearby downstream Water Quality Network Station 21PA_WQX-WQN0116 is located on Arcola Road Bridge near Lower Providence Township, Montgomery County which is approximately 33 miles downstream of the outfall 003 and is not considered as representative. In absence of site-specific temperature data, a default temperature of 20°C (per 391-2000-007) will be used in modeling, if needed. PADEP has collected some samples from Towamencin Creek above and below the outfall 003 as a part of ongoing site-specific study within the duration of April 24, 2019 and June 12, 2019. The sampling results indicated an average upstream pH of 7.97 S.U. The permit application indicated an upstream hardness (upstream of outfall 003) to be 160 mg/l for the sampling period of September 2016 through December 2017.

303d Listed Streams:
The discharge from this facility is in Towamencin Creek in state watershed 3-E at RMI 1.41, which is attaining Fish Consumption use but is Aquatic Life use impaired due to water flow variability and excessive algal growth from municipal point source and small residential runoff. A TMDL has been developed for the watershed, nutrient portion of which was withdrawn.

Skippack Creek Total Maximum Daily Load (TMDL):
Skippack Creek is a 15.2-mile stream located in sub-sub-basin 03E, Montgomery County, PA. it is a tributary to Perkiomen Creek whose drainage basin is composed of urban, suburban, agricultural, and rural components. Skippack Creek begins within Souderton Borough limits and flows generally southwest to its confluence with Perkiomen Creek at RMI 3.0. The Skippack Creek TMDL was finalized in April 9, 2005 for Sediments and Nutrients. There were 11 active NPDES permitted point source discharges in the watershed including 7 STPs, 1 meat packing plant, 1 dairy farm, and 2 manufacturers. No reduction for sediment load from point sources were proposed in the final TMDL. The nutrient portion of the TMDL was withdrawn in summer of 2007. No WLA was assigned to this treatment plant. The effluent limitations in the permit will be applied in a way that the discharge from this facility will not add to the existing impairment of the receiving stream.

Antidegradation (93.4):
The effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. The receiving streams are designated as Trout Stocking (TSF) and Migratory Fishes (MF.)

Class A Wild Trout Fisheries:
No Class A Wild Trout Fisheries are impacted by this discharge. The secondary receiving stream, Skippack Creek, is a stocked trout water. The existing permit has a minimum DO limit of 6.0 mg/l as minimum to protect the stocked trout. This requirement will be carried over during this renewal.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001 and 002	Design Flow (MGD)	6.5
Latitude	40º 13' 46"	Longitude	-75º 21' 6"
Quad Name	Lansdale	Quad Code	1743
Wastewater Description:	Sewage Effluent		
Receiving Waters	Towamencin Creek (TSF)	Stream Code	01066
NHD Com ID	25978996	RMI	1.97

Other Comments: The Outfalls 001 and 002 are the permittee's secondary discharge points which discharge only during high flow events.

Stormwater Outfalls:
The renewal application indicated that there are four stormwater outfalls associated with this WWTP. The details are below:

Outfall	Latitude			Longitude			Receiving Stream	Designated use	Drainage Area (sft)
004	40	13	47	-75	21	3	Towamencin Creek	TSF, MF	91,781
005	40	13	46	-75	21	4	Towamencin Creek	TSF, MF	9,104
006	40	13	08	-75	21	8	Towamencin Creek	TSF, MF	31,625
007	40	13	47	-75	21	10	Towamencin Creek	TSF, MF	70,393

The current permit has listed stormwater parameters in Part A of the permit. The part C of the current permit indicated that Outfall 005 has been determined to be representative of stormwater outfalls 004, 006, and 007. This condition will be carried over in this renewal. The permittee routinely trains employees on housekeeping & spill prevention practices and conducts periodic visual inspections of chemical containments and pumping equipment as ongoing BMP implementation.

Treatment Facility Summary

Treatment Facility Name: Towamencin STP

WQM Permit No.	Issuance Date
4619403	07/01/2019
4602408 A-2	09/19/2018
4616402 A-1	03/19/2018
4616402	08/16/2016
4615414	05/31/2015
4602408 A-1	03/23/2015
4612408	02/13/2013

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with Ammonia and Phosphorus Tertiary	Trickling Filter With Settling, Activated Sludge with Solids Removal	Gas Chlorine	6.5

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
7.3	16263	Not Overloaded		Land Application

Changes Since Last Permit Issuance: In 2019, a new WQM permit was issued to authorize installation of new rag compactor in biosolids process. The September 2018 WQM permit amendment authorized addition of Polyaluminum Chloride (PACL 300) to remove Phosphorus. The PAC system was installed after a pilot study between January 30, 2017 through November 30, 2017. The PACL 300 was added to the effluent trough of the Aeration Tank nos. 5 and 6 in stage 1 of the treatment train. Two flow paced 1,400 gallons above ground tanks were installed for this purpose. In October 7, 2015, the TMA was separated from Upper Gwynedd Towamencin Municipal Authority.

Treatment Plant Description

Towamencin Municipal Authority WWTP is a 6.5 MGD Major Sewer Facility (MASF2) located in Towamencin Township, Montgomery County which discharges treated sewage through outfall 001, 002, and 003 into Towamencin Creek in watershed 3-E. The plant has two treatment trains namely Stage 1 and Stage 2 that essentially comingles prior to discharge. The stage 1 provides secondary treatment through trickling filters, and stage 2 provides tertiary treatment through activated sludge system. The flow is split at the influent box and combines again in the effluent box. Outfall 003 is the primary processed wastewater gravity outfall that runs approximately 0.5 miles downstream of the treatment plant. The process wastewater outfalls 001 and 002 discharge during high flow/wet weather events along with Outfall 003 and discharge by the aid of effluent pumps. The existing permit requires reporting for Outfalls 001 and 002 when discharging. As stated at the top of this page, there are four stormwater outfalls (004 to 007) with Outfall 005 as representative.

The facility receives flows mostly from Towamencin Township and Upper Gwynedd Township and small contributions from few other townships as listed in the next page.

Municipalities served	Flow contribution (%)	Type of Sewer System		Population
		Separate (%)	Combined (%)	
Towamencin Township	72.06	100	0	18,355
Upper Gwynedd Township	27.94	100	0	15,975
Lansdale Borough	<1	100	0	16,521
Hatfield Township	<1	100	0	17,557
Worcester Township	<1	100	0	10,486
Lower Salford Township	<1	100	0	14,959

Per the renewal application, there are several Categorical/non-categorical and Significant Industrial Users (SIUs) contributing to the treatment plant. They are listed in the following table:

Industry Name	Categorical industry?	Applicable pretreatment standard	SIU?	Subpart Letter	Subpart title	Wastewater flow (GPD)			
						Process	NCCW	Sanitary	Total
Merck & Co.	Yes	40 CFR Part 439	Yes	B	Extraction Products	47,510	0	17,490	65,000
				D	Mixing/Compounding & Formulation				
				E	Research				
Accupac, Inc.	Yes	40 CFR Part 439	Yes	C	Chemical Synthesis Products	62,320	0	0	62,320
				D	Mixing/Compounding & Formulation				
Lehigh Valley Dairies, Inc.	No	40 CFR Part 405	Yes	A	Receiving Station	160,320	0	0	160,320
				B	Fluid Products				
				C	Cultured Products				
Clemens Food Group (Hatfield Quality Meats)	No	40 CFR Part 432	Yes	B	Complex Slaughterhouses	649,660	0	31,140	680,800
				D	High-Processing Packinghouse				
				F	Meat Cutters				
				G	Sausage & Luncheon Meats Processors				
				H	Ham Processors				

All the SIUs have industrial user permit issued by TMA. Clemens Food Group is under a five-year consent order to reduce TDS, which shall be completed by September 2022. TMA is implementing an approved pretreatment program administrated by EPA and most recent approval of local limits by EPA was on April 12, 2017.

Per DEP's recent visit to the site on February 27, 2018, the treatment facility consists of the following units:

- Four Muffin Monsters
- Two raw influent wells
- Eight Rotostrainers
- Eight pre-aeration tanks
- Eight aeration tanks
- Four trickling filters
- Eight final clarifiers
- Thirteen chlorine contact tanks
- Three aerated sludge holding tanks
- Two sludge centrifuges

Junction Box at the head of the treatment plant receives flows from influent sewers where the influent sample is collected. The flow is sent to influent box which sends flows to two raw influent wells through a set of two muffin monsters in each side. The flow from two wells follow the following flow paths:

For Stage 1 (2.17 MGD): wet well → (pumped) flow meter → series of four Rotostrainers in parallel → Pre-aeration tanks → aeration tanks → (PACL 300 added) Distribution Box → intermediate settling tanks → recirculation pump station → (pumped) primary trickling filter → secondary trickling filter → Final settling tanks → NaOCl addition → Chlorine Contact Tanks → either pumped to Outfall 002 during high flow event or goes to effluent discharge box and discharged through Outfall 001 or 003

For Stage 2 (4.33 MGD): wet well → (pumped) flow meter → series of four Rotostrainers in parallel → Pre-aeration tanks → flow meters → Aeration tanks → Intermediate settling tanks → recirculation pump station → (pumped) primary trickling filter → secondary trickling filter → $FeCl_3$ and alum addition → flocculation mixer → flocculation tanks → final settling tanks → NaOCl addition → chlorine contact tanks → Junction box → Flow meter → $NaHSO_3$ addition → Effluent box → either pumped through 001 or gravity discharge through 003.

The process flow diagrams for liquid and solids handling are attached in the appendix.

The following chemicals are used at the plant as wastewater treatment chemicals:

Chemical name	Purpose	Maximum use rate	Units	Treatment Phase
Ferric Chloride	Charge neutralization of suspended solids	160	GPD	Stage 2
Polyaluminum Chloride (PACL)	Phosphorus removal	10	GPD	Stage 1
Sodium Acrylate & Acrylamide	Polymer used as suspended solids binder in solution	16	Lbs./day	Stage 2
Sodium Hypochlorite	Effluent disinfection	350	GPD	Stages 1 & 2
Sodium Bisulfite	Dechlorination	70	GPD	Stages 1 & 2

Biosolids Management:
Secondary waste sludges and screenings are blended in a sludge day tank. The blended sludges are processed through two centrifuges and are then lime stabilized for pathogen and vector attraction reduction. Ultimate disposal is primarily via land application with landfill disposal as an alternative. End product is a Class B biosolids. The WQM permit 4619403 (issued July 1, 2019) authorized installation of a rag compactor to replace the existing ejector pots to handle rags more efficiently while keeping one ejector pot as backup for the rag compactor. The facility produced 1,007 dry tons of sewage sludge/biosolids in previous year that included 22.86 dry tons of sludge from Lower Salford Township WWTP. TMA holds a beneficial use permit PAG080008 and land application sites are located in Berks, Chester, Lebanon, Lehigh, Lancaster, Montgomery, and Northampton counties. Landfill disposal is applied when filter cake is insufficiently stabilized or land application is not permitted. No landfill disposal utilized in 2017.

Compliance History

DMR Data for Outfall 001 (from July 1, 2018 to June 30, 2019)

Parameter	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18	SEP-18	AUG-18	JUL-18
Flow (MGD) Average Monthly				GG		GG	GG	GG		GG	GG	
Flow (MGD) Daily Maximum				GG		GG	GG	GG		GG	GG	
pH (S.U.) Instantaneous Minimum				6.60		6.91	7.28	7.11		6.98	6.64	
pH (S.U.) IMAX				8.13		7.89	7.97	8.08		7.98	7.97	
DO (mg/L) Minimum				7.21		9.48	9.24	8.46		7.79	7.61	
TRC (mg/L) Average Monthly				< 0.0014		< 0.014	< 0.014	< 0.014		< 0.014	0.000	
TRC (mg/L) IMAX				< 0.0014		< 0.014	< 0.014	< 0.014		< 0.014	0.001	
CBOD5 (lbs/day) Average Monthly				227		201	70	142		121	81	
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly				4259		2882	3297	3113	GG	3913	2951	
CBOD5 (lbs/day) Weekly Average				522		467	91	263		165	130	
CBOD5 (mg/L) Average Monthly				4		4	2.1	3		3	2	
CBOD5 (mg/L) Raw Sewage Influent Average Monthly				127		81	99	81	GG	95	94	
CBOD5 (mg/L) Weekly Average				7		8	2	4		5	2	
BOD5 (lbs/day) Raw Sewage Influent Average Monthly				5055		4207	4438	4236	GG	6979	3591	
BOD5 (mg/L) Raw Sewage Influent Average Monthly				150		129	136	114	GG	144	113	
TSS (lbs/day) Average Monthly				438		248	< 214	258		131	84	

TSS (lbs/day) Raw Sewage Influent Average Monthly				4501		3798	4194	4507	GG	4994	4750	
TSS (lbs/day) Weekly Average				1103		542	446	421		185	142	
TSS (mg/L) Average Monthly				7		5	< 6	5		3	2	
TSS (mg/L) Raw Sewage Influent Average Monthly				133		110	126	113	GG	132	153	
TSS (mg/L) Weekly Average				14		11	12	7		4	4	
Total Dissolved Solids (mg/L) Average Monthly				1754		1341	1440	1315		1412	1741	
Total Dissolved Solids (mg/L) Daily Maximum				1884		1503	1759	1771		1911	2322	
Osmotic Pressure (mOs/kg) Average Monthly				49		37	19	34		15	38	
Osmotic Pressure (mOs/kg) Daily Maximum				49		37	19	34		15	38	
Fecal Coliform (CFU/100 ml) Geometric Mean				10		77	53	11		5	3	
Fecal Coliform (CFU/100 ml) IMAX				210		830	800	82		3800	21	
Ammonia (lbs/day) Average Monthly				54		44	< 26	36		16	6	
Ammonia (mg/L) Average Monthly				0.87		0.85	< 0.48	0.60		0.25	0.12	
Total Phosphorus (lbs/day) Average Monthly				11		14	9	9		14	14	
Total Phosphorus (mg/L) Average Monthly				0.33		0.38	0.26	0.23		0.37	0.45	
Total Aluminum (lbs/day) Average Monthly				1.51		1.79	1.82	2.11		3.17	1.31	

Total Aluminum (lbs/day) Daily Maximum				1.93		2.13	2.22	2.85		6.20	2.34	
Total Aluminum (mg/L) Average Monthly				0.045		0.054	0.056	0.055		0.068	0.038	
Total Aluminum (mg/L) Daily Maximum				0.060		0.070	0.080	0.070		0.100	0.060	
Total Copper (lbs/day) Average Monthly				0.30		0.62	0.26	0.34		0.41	0.38	
Total Copper (lbs/day) Daily Maximum				0.53		1.63	0.32	0.45		0.52	0.46	
Total Copper (mg/L) Average Monthly				0.008		0.016	0.008	0.007		0.011	0.011	
Total Copper (mg/L) Daily Maximum				0.010		0.040	0.009	0.007		0.012	0.013	
Total Iron (lbs/day) Average Monthly				45.3		35.3	28.9	26.3		21.4	16.1	
Total Iron (lbs/day) Daily Maximum				48.7		42.1	33.2	32.3		35.3	18.0	
Total Iron (mg/L) Average Monthly				1.34		1.07	0.89	0.67		0.48	0.15	
Total Iron (mg/L) Daily Maximum				1.45		1.20	1.10	0.79		0.57	0.63	
Sulfate (lbs/day) Average Monthly				1342		1370	1236	1259		1451	1446	
Sulfate (lbs/day) Daily Maximum				1393		1490	1458	1474		1859	1641	
Sulfate (mg/L) Average Monthly				40		41	38	33		35	45	
Sulfate (mg/L) Daily Maximum				43		47	43	38		46	53	
Chloride (lbs/day) Average Monthly				31140		23323	25031	28862		31943	30094	
Chloride (lbs/day) Daily Maximum				34600		27042	27753	37568		38419	36397	
Chloride (mg/L) Average Monthly				920		706	772	762		803	962	
Chloride (mg/L) Daily Maximum				1000		920	1000	1100		1200	1300	
Bromide (lbs/day) Average Monthly				68		67	< 66	78		88	65	
Bromide (lbs/day) Daily Maximum				74		76	< 78	95		124	78	

Bromide (mg/L) Average Monthly				2		2	< 2	2		2	2	
Bromide (mg/L) Daily Maximum				2		2	2	2		2	2	
Chronic WET - Ceriodaphnia Survival (TUc) Daily Maximum	GG			GG								
Chronic WET - Ceriodaphnia Reproduction (TUc) Daily Maximum	GG			GG								
Chronic WET - Pimephales Survival (TUc) Daily Maximum	GG			GG								
Chronic WET - Pimephales Growth (TUc) Daily Maximum	GG			GG								

DMR Data for Outfall 002 (from July 1, 2018 to June 30, 2019)

Parameter	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18	SEP-18	AUG-18	JUL-18
Flow (MGD) Average Monthly				GG		GG	GG	GG		GG	GG	
Flow (MGD) Daily Maximum				GG		GG	GG	GG		GG	GG	
pH (S.U.) Instantaneous Minimum				6.60		6.91	7.28	7.11		6.98	6.64	
pH (S.U.) IMAX				8.13		7.89	7.94	8.08		7.98	7.97	
DO (mg/L) Minimum				7.21		9.48	9.24	8.46		7.79	7.61	
TRC (mg/L) Average Monthly				< 0.014		< 0.014	< 0.014	< 0.014		< 0.014	0.000	
TRC (mg/L) IMAX				< 0.014		< 0.014	< 0.014	< 0.014		< 0.014	0.001	
CBOD5 (lbs/day) Average Monthly				227		201	70	142		121	81	
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly				4259		2882	3297	3113	GG	3913	2951	

CBOD5 (lbs/day) Weekly Average				522		467	91	263		165	130	
CBOD5 (mg/L) Average Monthly				4		4	2	3		3	2	
CBOD5 (mg/L) Raw Sewage Influent Average Monthly				127		81	99	81	GG	95	94	
CBOD5 (mg/L) Weekly Average				7		8	2	4		5	2	
BOD5 (lbs/day) Raw Sewage Influent Average Monthly				5055		4207	4438	4236	GG	6979	3591	
BOD5 (mg/L) Raw Sewage Influent Average Monthly				150		129	136	114	GG	144	113	
TSS (lbs/day) Average Monthly				438		248	214	258		131	84	
TSS (lbs/day) Raw Sewage Influent Average Monthly				4501		3798	4194	4507	GG	4994	4750	
TSS (lbs/day) Weekly Average				1103		542	446	421		185	142	
TSS (mg/L) Average Monthly				7		5	6	5		3	2	
TSS (mg/L) Raw Sewage Influent Average Monthly				133		110	126	113	GG	132	153	
TSS (mg/L) Weekly Average				14		11	12	7		4	4	
Total Dissolved Solids (mg/L) Average Monthly				1754		1341	1440	1315		1412	1741	
Total Dissolved Solids (mg/L) Daily Maximum				1884		1503	1759	1771		1911	2322	
Osmotic Pressure (mOs/kg) Average Monthly				49		37	19	34		15	38	
Osmotic Pressure (mOs/kg) Daily Maximum				49		37	19	34		15	38	
Fecal Coliform (CFU/100 ml) Geometric Mean				10		77	53	11		5	3	

Fecal Coliform (CFU/100 ml) IMAX				210		830	800	82		3800	21	
Ammonia (lbs/day) Average Monthly				54		44	26	36		16	6	
Ammonia (mg/L) Average Monthly				0.87		0.85	0.48	0.60		0.25	0.12	
Total Phosphorus (lbs/day) Average Monthly				11		14	9	9		14	14	
Total Phosphorus (mg/L) Average Monthly				0.33		0.38	0.26	0.23		0.37	0.45	
Total Aluminum (lbs/day) Average Monthly				1.51		1.79	1.82	2.11		3.17	1.31	
Total Aluminum (lbs/day) Daily Maximum				1.93		2.13	2.22	2.85		6.20	2.34	
Total Aluminum (mg/L) Average Monthly				0.045		0.054	0.056	0.055		0.068	0.038	
Total Aluminum (mg/L) Daily Maximum				0.060		0.070	0.08	0.070		0.100	0.060	
Total Copper (lbs/day) Average Monthly				0.30		0.62	0.26	0.34		0.41	0.38	
Total Copper (lbs/day) Daily Maximum				0.53		1.63	0.32	0.45		0.52	0.46	
Total Copper (mg/L) Average Monthly				0.008		0.016	0.008	0.007		0.011	0.011	
Total Copper (mg/L) Daily Maximum				0.010		0.040	0.009	0.007		0.012	0.013	
Total Iron (lbs/day) Average Monthly				45.3		35.3	28.9	26.3		21.4	16.1	
Total Iron (lbs/day) Daily Maximum				48.7		42.1	33.2	32.3		35.3	18.0	
Total Iron (mg/L) Average Monthly				1.34		1.07	0.89	0.67		0.48	0.51	
Total Iron (mg/L) Daily Maximum				1.45		1.20	1.10	0.79		0.57	0.63	
Sulfate (lbs/day) Average Monthly				1342		1370	1236	1259		1451	1446	
Sulfate (lbs/day) Daily Maximum				1393		1490	1458	1474		1859	1641	

Sulfate (mg/L) Average Monthly				40		41	38	33		35	45	
Sulfate (mg/L) Daily Maximum				43		47	43	38		46	53	
Chloride (lbs/day) Average Monthly				31140		23323	25031	28862		31943	30094	
Chloride (lbs/day) Daily Maximum				34600		27042	27753	37568		38419	36397	
Chloride (mg/L) Average Monthly				920		706	772	762		803	962	
Chloride (mg/L) Daily Maximum				1000		920	1000	1100		1200	1300	
Bromide (lbs/day) Average Monthly				68		67	66	78		88	65	
Bromide (lbs/day) Daily Maximum				74		76	78	95		124	78	
Bromide (mg/L) Average Monthly				2		2	2	2		2	2	
Bromide (mg/L) Daily Maximum				2		2	2	2		2	2	
Chronic WET - Ceriodaphnia Survival (TUc) Daily Maximum	GG			GG								
Chronic WET - Ceriodaphnia Reproduction (TUc) Daily Maximum	GG			GG								
Chronic WET - Pimephales Survival (TUc) Daily Maximum	GG			GG								
Chronic WET - Pimephales Growth (TUc) Daily Maximum	GG			GG								

DMR Data for Outfall 003 (from July 1, 2018 to June 30, 2019)

Parameter	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18	SEP-18	AUG-18	JUL-18
Flow (MGD) Average Monthly	3.695	4.358	3.610	4.935	4.416	4.805	4.699	5.592	3.657	5.077	4.163	3.664
Flow (MGD) Daily Maximum	6.636	9.015	5.591	11.219	6.876	12.089	10.581	10.25	4.949	9.994	11.566	5.676

pH (S.U.) Instantaneous Minimum	7.29	6.87	6.98	6.60	6.68	6.91	7.28	7.11	6.87	6.98	6.64	6.85
pH (S.U.) IMAX	8.52	7.86	7.94	8.13	8.05	7.89	7.97	8.08	7.78	7.98	7.97	7.78
DO (mg/L) Minimum	7.70	7.73	6.71	7.21	10.03	9.48	9.24	8.46	8.10	7.79	7.61	7.35
TRC (mg/L) Average Monthly	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	0.000	0.000
TRC (mg/L) Instantaneous Maximum	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	0.001	0.000
CBOD5 (lbs/day) Average Monthly	66	81	64	227	78	201	70	142	74	121	81	65
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly	2825	3074	3212	4259	3225	2882	3297	3113	2807	3913	2951	3326
CBOD5 (lbs/day) Weekly Average	84	110	76	522	91	467	91	263	118	165	130	80
CBOD5 (mg/L) Average Monthly	2	2	2	4	2	4	2	3	2	3	2	2
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	89	88	106	127	88	81	99	81	92	95	94	112
CBOD5 (mg/L) Weekly Average	2	2	3	7	2	8	2	4	3	5	2	3
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	3201	5782	3423	5055	4333	4207	4438	4236	3036	6979	3591	4441
BOD5 (mg/L) Raw Sewage Influent Average Monthly	100	148	115	150	115	129	136	114	104	144	113	144
TSS (lbs/day) Average Monthly	123	229	200	438	281	248	214	258	53	131	84	140
TSS (lbs/day) Raw Sewage Influent Average Monthly	3675	4563	5694	4501	4627	3798	4194	4507	3996	4994	4750	4845
TSS (lbs/day) Weekly Average	163	458	273	1103	504	542	446	421	126	185	142	182
TSS (mg/L) Average Monthly	4	6	7	7	7	5	6	5	2	3	2	5
TSS (mg/L) Raw Sewage Influent Average Monthly	113	133	188	133	126	110	126	113	133	132	153	162

TSS (mg/L) Weekly Average	5	13	9	14	13	11	12	7	4	4	4	5
Total Dissolved Solids (mg/L) Average Monthly	1899	1583	1911	1754	1720	1341	1440	1315	1671	1412	1741	1727
Total Dissolved Solids (mg/L) Daily Maximum	2098	2052	2270	1884	1913	1503	1759	1771	1875	1911	2322	1962
Osmotic Pressure (mOs/kg) Average Monthly	32	19	30	49	32	37	19	34	28	15	38	30
Osmotic Pressure (mOs/kg) Daily Maximum	32	19	30	49	32	37	19	34	28	15	38	30
Fecal Coliform (CFU/100 ml) Geometric Mean	4	7	5	10	23	77	53	11	6	5	3	5
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	58	62	39	210	290	830	800	82	40	3800	21	52
Ammonia (lbs/day) Average Monthly	3	9	4	54	19	44	26	36	3	16	6	4
Ammonia (mg/L) Average Monthly	0.10	0.19	0.12	0.87	0.43	0.85	0.48	0.60	0.1	0.25	0.12	0.12
Total Phosphorus (lbs/day) Average Monthly	7	10	17	11	12	14	9	9	8	14	14	11
Total Phosphorus (mg/L) Average Monthly	0.21	0.30	0.55	0.33	0.30	0.38	0.26	0.23	0.27	0.37	0.45	0.38
Total Aluminum (lbs/day) Average Monthly	1.40	1.51	1.08	1.51	2.08	1.79	1.82	2.11	1.83	3.17	1.31	1.34
Total Aluminum (lbs/day) Daily Maximum	2.21	3.55	1.88	1.93	4.01	2.13	2.22	2.85	4.68	6.20	2.34	1.92
Total Aluminum (mg/L) Average Monthly	0.043	0.038	0.038	0.045	0.048	0.054	0.056	0.055	0.058	0.068	0.038	0.044
Total Aluminum (mg/L) Daily Maximum	0.070	0.08	0.07	0.060	0.070	0.070	0.080	0.070	0.130	0.1	0.060	0.060
Total Copper (lbs/day) Average Monthly	0.36	0.37	0.29	0.30	0.26	0.62	0.26	0.34	0.35	0.41	0.38	0.38

Total Copper (lbs/day) Daily Maximum	0.50	0.53	0.33	0.53	0.29	1.63	0.32	0.45	0.46	0.52	0.46	0.43
Total Copper (mg/L) Average Monthly	0.011	0.008	0.009	0.008	0.008	0.016	0.008	0.007	0.011	0.011	0.011	0.012
Total Copper (mg/L) Daily Maximum	0.013	0.011	0.011	0.010	0.010	0.040	0.009	0.007	0.012	0.012	0.013	0.014
Total Iron (lbs/day) Average Monthly	25.3	37.4	35.4	45.3	48.8	35.3	28.9	26.3	15.4	21.4	16.1	21.7
Total Iron (lbs/day) Daily Maximum	38.7	49.8	42.7	48.7	62.5	42.1	33.2	32.3	17.3	35.3	18.0	27.0
Total Iron (mg/L) Average Monthly	0.75	1.00	1.22	1.34	1.22	1.07	0.89	0.67	0.52	0.48	0.51	0.70
Total Iron (mg/L) Daily Maximum	0.90	1.10	1.50	1.45	1.48	1.20	1.10	0.79	0.62	0.57	0.63	0.87
Sulfate (lbs/day) Average Monthly	1520	1598	1265	1342	1476	1370	1236	1259	1015	1451	1446	1394
Sulfate (lbs/day) Daily Maximum	1937	1755	1413	1393	1892	1490	1458	1474	1151	1859	1641	1485
Sulfate (mg/L) Average Monthly	45	44	43	40	37	41	38	33	34	35	45	46
Sulfate (mg/L) Daily Maximum	53	50	48	43	42	47	43	38	37	46	53	52
Chloride (lbs/day) Average Monthly	33150	28432	29522	31140	40971	23323	25031	28862	30633	31943	30094	29715
Chloride (lbs/day) Daily Maximum	36019	33788	33788	34600	56772	27042	27753	37568	32881	38419	36397	35283
Chloride (mg/L) Average Monthly	1016	795	1012	920	976	706	772	762	1024	803	962	982
Chloride (mg/L) Daily Maximum	1200	1100	1200	1000	1200	920	1000	1100	1100	1200	1300	1200
Bromide (lbs/day) Average Monthly	70	75	59	68	82	67	66	78	61	88	65	62
Bromide (lbs/day) Daily Maximum	111	94	65	74	115	76	78	95	72	124	78	76
Bromide (mg/L) Average Monthly	2	2	2	2	2	2	2	2	2	2	2	2
Bromide (mg/L) Daily Maximum	2	2	2	2	2	2	2	2	2	2	2	2
Chronic WET - Ceriodaphnia Survival (TUc) Daily Maximum	1.04			GG			1.04			GG		

Chronic WET - Ceriodaphnia Reproduction (TUc) Daily Maximum	1.04			GG			1.04			GG		
Chronic WET - Pimephales Survival (TUc) Daily Maximum	1.04			GG			1.04			GG		
Chronic WET - Pimephales Growth (TUc) Daily Maximum	1.04			GG			1.04			GG		

DMR Data for Outfall 004 (from July 1, 2018 to June 30, 2019)

No discharge from Outfall 004

DMR Data for Outfall 005 (from July 1, 2018 to June 30, 2019)

Parameter	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18	SEP-18	AUG-18	JUL-18
pH (S.U.) Annual Average							7.77					
pH (S.U.) IMAX							7.77					
CBOD5 (mg/L) Annual Average							6					
CBOD5 (mg/L) IMAX							6					
COD (mg/L) Annual Average							40					
COD (mg/L) IMAX							40					
TSS (mg/L) Annual Average							32					
TSS (mg/L) IMAX							32					
Oil and Grease (mg/L) Annual Average							< 5					
Oil and Grease (mg/L) IMAX							< 5					
Fecal Coliform (CFU/100 ml) Annual Average							5700					

Fecal Coliform (CFU/100 ml) IMAX							5700					
TKN (mg/L) Annual Average							1.14					
TKN (mg/L) IMAX							1.14					
Total Phosphorus (mg/L) Annual Average							0.20					
Total Phosphorus (mg/L) IMAX							0.20					
Dissolved Iron (mg/L) Annual Average							< 0.02					
Dissolved Iron (mg/L) IMAX							< 0.02					

DMR Data for Outfall 006 (from July 1, 2018 to June 30, 2019)

No discharge from Outfall 006

DMR Data for Outfall 007 (from July 1, 2018 to June 30, 2019)

No discharge from Outfall 007

Compliance History

Effluent Violations for Outfall 001, from: August 1, 2018 To: June 30, 2019

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	11/30/18	IMAX	2600	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	09/30/18	IMAX	3800	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	12/31/18	IMAX	2200	CFU/100 ml	1000	CFU/100 ml
Total Copper	01/31/19	Daily Max	0.040	mg/L	0.032	mg/L

Effluent Violations for Outfall 002, from: August 1, 2018 To: June 30, 2019

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	11/30/18	IMAX	2600	CFU/100 ml	1000	CFU/100 ml

Fecal Coliform	09/30/18	IMAX	3800	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	12/31/18	IMAX	2200	CFU/100 ml	1000	CFU/100 ml
Total Copper	01/31/19	Daily Max	0.040	mg/L	0.032	mg/L

Effluent Violations for Outfall 003, from: August 1, 2018 To: June 30, 2019

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	11/30/18	IMAX	2600	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	09/30/18	IMAX	3800	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	12/31/18	IMAX	2200	CFU/100 ml	1000	CFU/100 ml
Total Copper	01/31/19	Daily Max	0.040	mg/L	0.032	mg/L

Summary of Inspections: September, November and December 2018 Fecal Coliform IMAX violation were due to high peak flow of 19.36 MGD, 12.93 MGD, and 6.85 MGD respectively. Total Copper daily maximum exceedance was for unknown reason.

Summary of Inspection:

March 12, 2019: CEI conducted. No violations were identified during inspection. The treatment plant appeared well maintained and dept good housekeeping practices.

June 14, 2018: CEI conducted for biosolids land application. Pollutants, vector attraction reduction and pathogen reduction requirements were all met. No violations were noted during the inspection or review of the 2017 annual report.

February 27, 2018: CEI conducted. No violations were identified during the inspection. Recommendation was made to clean the weirs more frequently during heavy algae growth. The plant appeared to maintain good housekeeping practices.

July 27, 2017: CEI conducted. No violations were observed during the inspection. Some recommendations were made including keeping the thermometers within certification dates, keeping the waste oil tank in double walled or secondary containment, cover influent sample line to prevent rapid growth of organism etc. The operator informed the inspector on August 7, 2017 that all new thermometers were put in samplers, the sampler line was replaced covered, and a new double walled waste oil tank was installed to replace the old one.

January 19, 2016: Incidental inspection was conducted to respond to a fish kill. Violations noted including unpermitted discharge of sewage, failure to properly notify the Department, and a potential violation related to unrepresentative sampling. The potential cause of fish kill may be high residual chlorine discharge caused from frozen bisulfite line. The bisulfite line was heat taped and the operator was planning to insulate the line. The inspector noticed 9 dead fishes and foam downstream of the outfall. An NOV was issued on January 26, 2016 for this incident. A Consent Assessment of Civil Penalty (CACP) was issued on June 20, 2016 for this incident.

No on-site samples were taken from 2016 till March 2019.

Existing Effluent Limitations and Monitoring Requirements

The table below summarizes effluent limitations and monitoring requirements specified in the existing final NPDES permit that was in effect between September 1, 2014 to August 31, 2019.

For Outfall 001, 002, and 003:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	6.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.014	XXX	0.047	1/day	Grab
CBOD5 Influent	Report	XXX	XXX	Report	XXX	XXX	3/week	24-Hr Composite
CBOD5 May 1 - Oct 31	540	815 Wkly Avg	XXX	10	15 Wkly Avg	20	3/week	24-Hr Composite
CBOD5 Nov 1 - Apr 30	1,085	1,625 Wkly Avg	XXX	20	30 Wkly Avg	40	3/week	24-Hr Composite
BOD5 Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Suspended Solids Influent	Report	XXX	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Total Suspended Solids	1,625	2,440 Wkly Avg	XXX	30	45 Wkly Avg	60	3/week	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Osmotic Pressure (mOs/kg)	XXX	XXX	XXX	Report	XXX	52	1/month	Grab
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1,000 (*)	3/week	Grab
Ammonia-Nitrogen May 1 - Oct 31	54	XXX	XXX	1.0	XXX	2.0	3/week	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	108	XXX	XXX	2.0	XXX	4.0	3/week	24-Hr Composite
Total Phosphorus Apr 1 - Oct 31	51	XXX	XXX	1.0	XXX	2.0	3/week	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total Phosphorus Nov 1 - Mar 31	102	XXX	XXX	2.0	XXX	4.0	3/week	24-Hr Composite
Total Aluminum	Report	Report	XXX	Report	Report	XXX	See Permit (**)	24-Hr Composite
Total Copper	1.14	1.73	XXX	0.021	0.032	0.042	1/week	24-Hr Composite
Total Iron	84.5	132	XXX	1.56	2.44	3.12	1/week	24-Hr Composite
Sulfate	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
Chloride	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
Bromide	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
Chronic Toxicity - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	XXX	1.04	XXX	See Permit	See Permit
Chronic Toxicity - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	XXX	1.04	XXX	See Permit	See Permit
Chronic Toxicity - Pimephales Survival (TUc)	XXX	XXX	XXX	XXX	1.04	XXX	See Permit	See Permit
Chronic Toxicity - Pimephales Growth (TUc)	XXX	XXX	XXX	XXX	1.04	XXX	See Permit	See Permit

For Outfall 004, 005, 006, and 007:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly		Minimum	Annual Average		Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
CBOD5	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Chemical Oxygen Demand	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Dissolved Iron	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab

Development of Effluent Limitations

Outfall No. 003 **Design Flow (MGD)** 6.5
Latitude 40º 13' 45.00" **Longitude** -75º 21' 38"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	1,000 / 100 ml	10% rule	-	DRBC
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
Total Dissolved Solids	1,000	Average Monthly	-	DRBC

Comments: These standards apply, subject to Water Quality Analysis and BPJ where applicable.

Water Quality-Based Limitations

WQM 7.0:
The following data were used in the attached computer model (WQM 7.0) of the stream:

- Discharge pH 7.16 (median July-Sep, 2014-2018, DMR data)
- Discharge Temperature 20°C (Default per 391-2000-013)
- Discharge Hardness 100 mg/l (Application data)
- Stream pH 7.97 (PADEP samples, April 24, 2019-June 12, 2019)
- Stream Temperature 20°C (Default per 391-2000-007)
- Stream Hardness 160 mg/l (Application data between Sep'16 – Dec'17)

The following three nodes were used in modeling:

Node 1: At Outfall 003 on Towamencin Creek (01066) at RMI 1.41
Elevation: 176.89 ft (USGS TNM 2.0 viewer, 08/05/2019)
Drainage Area: 10.0 mi^2 (StreamStat Version 3.0, 08/05/2019)
River Mile Index: 1.41 (PA DEP eMapPA)
Low Flow Yield: 0.0434 cfs/mi^2
Discharge Flow: 6.5 MGD

Node 2: At confluence with Skippack Creek (01024)
Elevation: 154.3 ft (USGS TNM 2.0 viewer, 08/05/2019)
Drainage Area: 11.1 mi^2 (StreamStat Version 3.0, 08/05/2019)
River Mile Index: 0.0 (PA DEP eMapPA)
Low Flow Yield: 0.0434 cfs/mi^2
Discharge Flow: 0.0 MGD

Ammonia (NH_3-N), Carbonaceous Biochemical Oxygen Demand (CBOD5), & Dissolved Oxygen (DO):
WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate effluent limits for $CBOD_5$, NH_3-N and DO. The model simulates two basic processes. In the NH_3-N module, the model simulates the mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria. The model was utilized for this permit renewal by using Q_{7-10} and current background water quality levels of the stream.

NH_3-N:
WQM 7.0 suggested NH_3-N limit of 1.0 mg/l as monthly average and 2.0 mg/l as IMAX limit during summer to protect water quality standards. These values are the same as existing permitted limits. Recent DMR data show that the plant is meeting the permit limits. The average monthly mass loading is calculated to be 54 lbs./day. The existing winter season limits of 2.0 mg/l as average monthly and 4.0 mg/l as IMAX limit will be carried over in this renewal. Winter average monthly mass limit was calculated as 108 lbs./day, which is the same as in the existing permit and will remain unchanged.

$CBOD_5$:
The WQM 7.0 model suggests a monthly average $CBOD_5$ limit of 10 mg/l. The average monthly and average weekly mass loadings were calculated as 542.1 lbs/day and 813.15 lbs/day respectively. These values are rounded down to 540 lbs/day and 810 lbs/day, respectively (1). The current permit has weekly average mass loading limit of 815 lbs./day, which is corrected by this updated limit of 810 lbs./day. The current permit has seasonal limit for $CBOD_5$ with a multiplier of 2.0 which will be carried over in this renewal. Seasonal limit for $CBOD_5$ is allowed in PADEP's guidance (2). The mass limit for winter season is calculated to be 1084.2 lbs./day as monthly average and 1626.3 lbs./day as weekly average which are rounded down to 1080 lbs./day and 1625 lbs./day, respectively (1). Minimum monitoring frequency will remain the same as 3/week, 24-hr composite sampling.

Dissolved Oxygen (DO):
A minimum of 6.0 mg/L for D.O. is an existing effluent limit and is supported by the output from WQM 7.0 modeling. The existing limit will remain unchanged in the draft permit.

Toxics:
Based on the monitoring data (maximum concentrations) reported on the application, PADEP utilizes Toxics Screening Analysis and PENTOXSD to (1) evaluate reasonable potential for toxic pollutants to cause or contribute to an excursion above the water quality standards and (2) develop WQBELs for those such toxic pollutants (i.e., 40 CFR § 122.44(d)(1)(i)). It is noteworthy that some of these pollutants that may be reported as "non-detect", but still exceeded the criteria, were determined to be candidates for modeling because the method detection levels used to analyze those pollutants were higher than target QLs and/or the most stringent Chapter 93 criteria. The model then recommended the most stringent WQBELs for these pollutants (see Table 1).

Following PENTOXSD modeling, the most stringent WQBELs for each pollutant listed on Table 1 were then entered into Toxic Screening Analysis. As shown on Table 2, the analysis then recommends an appropriate action for each pollutant in the permit (i.e., No Limits/Monitoring, Establish Limits, or Monitor) based on the following logic specified in DEP's Standard Operating Procedure (SOP) (3):

a. Establish average monthly and IMAX limits in the draft permit where the maximum reported concentration exceeds 50% of the WQBEL.

b. For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.

c. For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10% - 50% of the WQBEL.

d. Application managers may, on a site- and pollutant-specific basis, deviate from these guidelines where there is specific rationale that is documented in the fact sheet.

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(1) 362-0400-001 /10/1/97 /Chapter 5/Page 9
(2) Determining Water-Quality Based Effluent Limits, 391-2000-003, December 9, 1997
(3) Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers (BCW-PMP-037)

Table 1. PENTOXSD ver. 2.0d					
	Effluent Limit, *µg/L*	**Governing Criterion**	**Max. Daily Limit, *µg/L***	**Most Stringent**	
Pollutant				**WQBEL, *µg/L***	**WQBEL Criterion**
Total Copper	9.36	AFC	14.603	9.36	AFC
Total Iron	1564.741	CFC	2441.247	1564.741	CFC
Total Selenium	5.204	CFC	8.12	5.204	CFC
Total Zinc	80.113	AFC	124.988	80.112	AFC
Chlorodibromomethane	0.542	CRL	0.846	0.542	CRL
Chloroform	7.731	CRL	12.061	7.731	CRL
Dichlorobromomethane	0.746	CRL	1.164	9.36	CRL
1,3-Dichloropropylene	0.461	CRL	0.719	0.461	CRL

AFC: Acute Fish Criteria; *CFC:* Chronic Fish Criteria; *CRL:* Cancer Risk Level

Table 2. Toxic Screening Analysis Recommendation				
Pollutant	**Reported Value, *µg/L***	**Target QL, *µg/L***	**Most Stringent WQBEL, *µg/L***	**Screening Recommendation**
Total Copper	16	4	9.36	Establish Limits
Total Iron	1240	20	1564.741	Establish Limits
Total Selenium	6	5	5.204	Establish Limits
Total Zinc	64	5	80.112	Value less than Most stringent criterion
Chlorodibromomethane	<8.4	0.5	0.542	Establish Limits
Chloroform	17.1	0.5	7.731	Establish Limits
Dichlorobromomethane	15.3	0.5	9.36	Establish Limits

Each of the parameters are discussed below:

Total Copper: Total Copper is an existing parameter in the current permit. The Average Monthly limit (AML) is 0.021 mg/l which was based on site specific Biotic Ligand Model (BLM) study conducted in 2011. A new BLM study was conducted and the final report was submitted to PADEP on April 24 2018 which recommended site-specific total copper criteria of 32 µg/l (CMC) and 20 µg/l (CCC). Copper limits were developed based on the 2018 BLM recommended criteria using the PENTOXSD model. The model suggested AML of 20.86 µg/l (rounded down to 20 µg/l), Maximum Daily Limit (MDL) of 32.55 µg/l (rounded down to 32 µg/l). The calculated IMAX limit of 41.72 µg/l (rounded down to 41 µg/l) is calculated by multiplying the average monthly value by a factor of 2. The average monthly and daily maximum mass limits are calculated to be 1.13 lbs./day and 1.73 lbs./day, respectively. The concentration and mass based AMLs are a little more stringent compared to existing limits.

Total Iron: Total Iron is an existing parameter in the current permit. The AML and MDL suggested by PENTOXSD is 1.56 mg/l and 2.44 mg/l, respectively, which are the same as current limits. The existing limits will be carried over in this renewal. The existing minimum monitoring frequency of 1/week will be carried over as well.

Total Selenium: The permittee submitted seven effluent results, out of which four were non-detect at QL 1 µg/l. The maximum concentration value of 6 µg/l was entered into the model. Since this is a naturally occurring substance[1] and no background information available, a background concentration of 0 µg/l is assumed. The model suggested an AML of 5.02 µg/l and MDL of 8.12 µg/l. IMAX limit is 10.04 µg/l, which are rounded down to 5 µg/l, 8 µg/l, and 10 µg/l, respectively. Average monthly and Daily Maximum mass-based limits were calculated to be 0.27 lbs./day and 0.44 lbs./day, respectively. A pre-draft permit survey form was sent to the permittee on September 16, 2019, per DEP's SOP[2]. The survey form was returned on October 29, 2019 which indicated the permittee will meet the limit for Total Selenium from the permit effective date. Therefore, the new limitation will be applied from permit effective date.

1. Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022
2. Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers, BCW-PMT-037

Total Zinc: Total Zinc was detected in all seven sample results provided to the DEP. The maximum concentration value of 64 µg/l was entered into the model. The model suggested an AML of 80.112 µg/l. This value, however, is lower than water quality criteria. Therefore, per previously mentioned SOP, the stream has zero assimilative capacity available for this pollutant of concern and AML will be set equal to the most stringent applicable water quality criterion of 120 µg/l. Since the governing criterion is AFC, the MDL and IMAX are set equal to the criterion of 120 µg/l. Per the returned pre-draft permit survey, the permittee indicated that they will meet the limit from permit effective date.

Chlorodibromomethane: The maximum of all three detected sample results was entered into the model. The model suggested 0.542 µg/l as AML and 0.846 µg/l as MDL. These values are rounded down to 0.5 µg/l and 0.8 µg/l, respectively. It is a Disinfection-by-products (DBP) such as Trihalomethanes (THMs) which may be formed when chlorine (or bromine) used as a disinfectant which react with Natural Organic Materials (NOM). Since the facility uses chlorine as disinfectant, the formation of DBPs are likely. Per the returned pre-draft permit survey, the permittee is uncertain of whether or not they will meet the proposed limits. Therefore, it is recommended that a compliance schedule will be provided for 3 years from permit effective date along with a Phase 1 TRE requirement. The final limit will be applied after the interim period.

Chloroform: The maximum of all three detected sample results was entered into the model. The model suggested 7.731 µg/l as AML and 12.061 µg/l as MDL. These values are rounded down to 7.7 µg/l and 12.0 µg/l, respectively. Chloroform may be formed from chlorination of wastewater, drinking water, or swimming pool water. Per the returned pre-draft permit survey, the permittee is uncertain of whether or not they will meet the proposed limits. Therefore, it is recommended that a compliance schedule will be provided for 3 years from permit effective date along with a Phase 1 TRE requirement. The final limit will be applied after the interim period.

Dichlorobromomethane: The maximum of three detected sample results was entered into the model. The model suggested 0.746 µg/l as AML and 1.164 µg/l as MDL. These values are rounded down to 0.7 µg/l and 1.1 µg/l, respectively. Like Chlorodibromomethane, this is also a DBP produced from the use of chlorine as disinfection. Per the returned pre-draft permit survey, the permittee is uncertain of whether or not they will meet the proposed limits. Therefore, it is recommended that a compliance schedule will be provided for 3 years from permit effective date along with a Phase 1 TRE requirement. The final limit will be applied after the interim period.

Total Aluminum: The existing permit has monitoring for Total Aluminum only when the TMA uses Alum or other aluminum salts in the treatment process. Polyaluminum Chloride (PACL) is used in the treatment process to aid for removal of phosphorus. Even with the maximum reported value out of 60 samples didn't identify Total Aluminum as pollutant of concern. Therefore, it is recommended that monitoring requirement for Total Aluminum be removed from this permit.

Osmotic Pressure: The existing permit has osmotic pressure limit of 52 mOs/kg as IMAX. A site-specific criteria (SSC) study by the Department above the TMA discharge point in 2019 indicated an instream osmotic pressure of 8.86 mOs/kg. The PENTOXSD model was utilized. The model output indicated AML of 51.776 mOs/kg. The current permit has IMAX limit of 52 mOs/kg, which is recommended to change as AML and reporting requirement for Daily Maximum. The permittee is discharging at 30.25 mOs/kg as average monthly for the period of July 2018 to June 2019.

Whole Effluent Toxicity Testing (WETT):

The permittee submitted seven (7) WET Test results during the submission of the renewal application and one (1) through eDMR system. The tests were performed on February, April, July, December of 2015, July of 2016, August of 2017, October of 2018, and June 2019. The first five (5) tests were performed by Eurofins QC. Since all WET tests performed by Eurofins QC from at least 2012 are invalid, the Department didn't accept first five (5) test results. Since only three (3) valid test results were available now, the permittee was requested to perform another WET test. The new WET test was initiated on November 5, 2019 and the test results were submitted to the eDMR system on December 4, 2019. All four valid WET test results showed "Pass" for all end points. The dilution series is updated. The TIWCc was calculated to be 96% to evaluate the test results for a stream flow of 0.434 cfs, discharge flow of 6.5 MGD, and PMFc of 1. The WET tests are discussed in detail on pages 31-32 of this report.

Additional Considerations

Fecal Coliform:

The recent coliform guidance in 25 Pa. code § 92a.47.(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean and an instantaneous maximum not greater than 1,000/100ml and § 92a.47.(a)(5) requires a winter limit of 2,000/100ml as a geometric mean and an instantaneous maximum not greater than 10,000/100ml. Delaware River Basin Commission's (DRBC's) Water Quality Regulations at Section 4.30.4.A requires that during winter season from

October through April, the instantaneous maximum concentration of fecal coliform organisms shall not be greater than 1,000 per 100 milliliters in more than 10 percent of the samples tested. Therefore, the summer limit is governed by DEP's regulation while winter limit is governed by DRBC's regulation.

pH:
The TBEL for pH is above 6.0 and below 9.0 S.U. (40 CFR §133.102(c) and Pa Code 25 § 95.2(1)) which are existing limits and will be carried over.

Total Suspended Solids (TSS):
There is no water quality criterion for TSS. The existing limits of 30 mg/L average monthly, 45 mg/l average weekly, and 60 mg/L instantaneous maximum will remain in the permit based on the minimum level of effluent quality attainable by secondary treatment, 25 Pa. Code § 92a.47 and 40CFR 133.102(b). The mass based average monthly and weekly average limits are calculated to be 1626.3 lbs./day and 2439.45 lbs./day respectively, which are rounded down to 1625 lbs./day and 2435 lbs./day, respectively (362-0400-001). The average monthly mass loading is the same as existing permit, but the weekly average mass limit is 5 lbs./day less than existing permit.

Total Residual Chlorine (TRC):
The attached computer printout utilizes the equation and calculations as presented in the Department's 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID#391-2000-015) for developing chlorine limitations. The attached printout indicates that a water quality limit of 0.015 mg/l would be needed to prevent toxicity concerns at the discharge point for Outfall 003. The Instantaneous Maximum (IMAX) limit is 0.049 mg/l. The existing permit has AML limit of 0.014 mg/l and IMAX limit of 0.047which are a little more stringent and will be carried over due to anti-backsliding policy. DMR data from July 2018 to June 2019 indicates that the plant is discharging below 0.014 mg/l as AML and IMAX year-round. The minimum monitoring frequency is 1/day.

Flow and Influent BOD_5, $CBOD_5$, and TSS Monitoring Requirement:
The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii). Influent BOD_5 and TSS monitoring requirements are established in the permit per the requirements set in Pa Code 25 Chapter 94. To show compliance with percentage removal efficiency of $CBOD_5$, reporting for influent $CBOD_5$ is established in the permit.

Total Dissolved Solids (TDS):
TDS and its associated solids including Bromide, Chloride, and Sulfate have become statewide pollutants of concern. The requirement to monitor these pollutants must be considered under the criteria specified in 25 Pa. Code § 95.10 and the following January 23, 2014 DEP Central Office Directive:

> *For point source discharges and upon issuance or reissuance of an individual NPDES permit:*
>
> *-Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.*
>
> *- Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.*
>
> *-Where the concentration of 1,4-dioxane (CAS 123-91-1) in a discharge exceeds 10 µg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for 1,4-dioxane. Discharges of 0.1 MGD or less should monitor and report for 1,4-dioxane if the concentration of 1,4-dioxane in the discharge exceeds 100 µg/L.*

The sample result shows that effluent contains an average TDS concentration of 2,108 mg/L and maximum load of 79,597 lbs./day, which are above the threshold. Therefore, the existing monitoring requirements for TDS, Sulfate, Chloride, and Bromide will be continued in this renewal. The Delaware River Basin Commission's (DRBC's) Docket No. D-2002-029 CP-3 also has monitoring requirement for TDS.

Best Professional Judgement (BPJ):

Total Phosphorus:

The receiving stream is impaired for nutrients and the nutrient portion of the approved TMDL was withdrawn. In absence of an approved nutrient TMDL, Pa Code 25 chapter 96.5 is applied. The existing permit has seasonal Total Phosphorus limit of 1.0 mg/l for summer and 2.0 mg/l for winter. The mass-based limits are calculated to be 54.21 lbs./day for summer and 108.42 lbs./day for winter. These values are rounded down to 54 lbs./day and 108 lbs./day, respectively. The mass-based limits are a little less stringent compared to existing limit which was may be due to miscalculation in the previous permit, which qualifies for anti-backsliding exception as listed in 402(o)(2).

Monitoring Frequency and Sample Types:

Otherwise specified above, the monitoring frequency and sample type of compliance monitoring for existing parameters are recommended by DEP's SOP and Permit Writers Manual and/or on a case-by-case basis using best professional judgment (BPJ).

Request to eliminate eDMR submission/sampling requirements for Outfall 001 and Outfall 002:

The permittee requested removal of eDMR report submission requirements for wet weather outfalls 001 and 002. Irrespective of the flow conditions, treated effluent from the TMA Stage I & II Plants is uniformly blended in the Effluent Junction Box prior to final discharge. The effluent sample is drawn from the box and is therefore a common, representative composite sample of the treated effluent from the TMA Stage I & II Plants. The flows through all three outfalls are recorded automatically. Currently, TMA collects one sample from the box and reports duplicate results for all three outfalls during wet weather flow condition. Permitting section along with the assigned inspector visited the site for this renewal and it seemed unnecessary to keep the current practice of reporting duplicate numbers. Therefore, it was decided that eDMR reporting requirements for Outfall 001 and 002 be removed.

Anti-Backsliding

The proposed limits are at least as stringent as are in existing permit, unless otherwise stated; therefore, anti-backsliding is not applicable.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 6.5
Latitude 40º 13' 46.00" **Longitude** -75º 21' 6.00"
Wastewater Description: Sewage Effluent

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 6.5
Latitude 40º 13' 46.00" **Longitude** -75º 21' 6.00"
Wastewater Description: Sewage Effluent

Other comments: These outfalls discharge treated effluent during high wet weather flow. The effluent is sampled in a common junction box for both treatment trains that discharge through any/all final effluent outfalls. As discussed in page 29 of this report, eDMR reporting requirements are removed for these outfalls.

Development of Effluent Limitations

Outfall No. 004 **Design Flow (MGD)** 0
Latitude 40º 13' 47" **Longitude** -75º 21' 3"
Wastewater Description: Stormwater

Development of Effluent Limitations

Outfall No. 005 **Design Flow (MGD)** 0
Latitude 40º 13' 46" **Longitude** -75º 21' 4"
Wastewater Description: Stormwater

Development of Effluent Limitations

Outfall No. 006 **Design Flow (MGD)** 0
Latitude 40º 13' 45.60" **Longitude** -75º 21' 8"
Wastewater Description: Stormwater

Development of Effluent Limitations

Outfall No. 007 **Design Flow (MGD)** 0
Latitude 40º 13' 47" **Longitude** -75º 21' 10.00"
Wastewater Description: Stormwater

Other Comments: Outfalls 004, 005, 006, and 007 are stormwater only outfalls. Outfall 005 has been determined to be representative of outfalls 004, 006, and 007. The existing permit has the following limitations/monitoring requirements:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly		Minimum	Annual Average		Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
CBOD5	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly		Minimum	Annual Average		Instant. Maximum		
Chemical Oxygen Demand	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Dissolved Iron	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab

These effluent limitations will be carried over in this renewal.

Whole Effluent Toxicity (WET)

For Outfall 003, ☐ **Acute** ☒ **Chronic** WET Testing was completed:

☐ For the permit renewal application (4 tests).
☐ Quarterly throughout the permit term.
☐ Quarterly throughout the permit term and a TIE/TRE was conducted.
☒ Other: **Quarterly on 1st year, then annually**

The dilution series used for the tests was: 100%, 96%, 72%, 48%, and 24%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 96%.

Summary of Four Most Recent Test Results

(NOTE – Enter results into one table, depending on which data analysis method was used).

TST Data Analysis

(NOTE – In lieu of recording information below, the application manager may attach the DEP WET Analysis Spreadsheet).

Test Date	*Ceriodaphnia* Results (Pass/Fail)		*Pimephales* Results (Pass/Fail)	
	Survival	Reproduction	Survival	Growth
8/29/2017	Pass	Pass	Pass	Pass
10/9/2018	Pass	Pass	Pass	Pass
6/11/2019	Pass	Pass	Pass	Pass
11/12/2019	Pass	Pass	Pass	Pass

***** *A "passing" result is that in which the replicate data for the TIWC is not statistically significant from the control condition. This is exhibited when the calculated t value ("T-Test Result") is greater than the critical t value. A "failing" result is exhibited when the calculated t value ("T-Test Result") is less than the critical t value.*

Is there reasonable potential for an excursion above water quality standards based on the results of these tests? (*NOTE – In general, reasonable potential is determined anytime there is at least one test failure in the previous four tests).*

☐ **YES** ☒ **NO**

Comments: None

Evaluation of Test Type, IWC and Dilution Series for Renewed Permit

Acute Partial Mix Factor (PMFa): **1** Chronic Partial Mix Factor (PMFc): **1**

1. Determine IWC – Acute (IWCa):

$(Q_d \times 1.547) / ((Q_{7\text{-}10} \times PMFa) + (Q_d \times 1.547))$

[(6.5 MGD x 1.547) / ((0.434 cfs x 1) + (6.5 MGD x 1.547))] x 100 = **95.86%**

Is IWCa < 1%? ☐ **YES** ☒ **NO** **(YES - Acute Tests Required OR NO - Chronic Tests Required)**

If the discharge is to the tidal portion of the Delaware River, indicate how the type of test was determined:

N/A

Type of Test for Permit Renewal: **Chronic**

2a. Determine Target IWCa (If Acute Tests Required)

TIWCa = IWCa / 0.3 = **%**

2b. Determine Target IWCc (If Chronic Tests Required)

$(Q_d \times 1.547) / (Q_{7\text{-}10} \times PMFc) + (Q_d \times 1.547)$

[(6.5 MGD x 1.547) / ((0.434 cfs x 1) + (6.5 MGD x 1.547))] x 100 = **95.86%**

3. Determine Dilution Series

(NOTE – check Attachment C of WET SOP for dilution series based on TIWCa or TIWCc, whichever applies).

Dilution Series = 100%, 96%, 72%, 48%, and 24%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

Will WET limits be established in the permit? ☐ YES ☒ NO

If WET limits will be established, identify the species and the limit values for the permit (TU).

N/A

If WET limits will not be established, but reasonable potential was determined, indicate the rationale for not establishing WET limits:

N/A

Appendix

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 003, Effective Period: Permit Effective Date through End of Interim Period 1.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Chlorodibromomethane	XXX	XXX	XXX	Report	Report	XXX	1/week	Grab
Dichlorobromomethane	XXX	XXX	XXX	Report	Report	XXX	1/week	Grab
Chloroform	XXX	XXX	XXX	Report	Report	XXX	1/week	Grab

Compliance Sampling Location: At discharge from facility

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 003, Effective Period: End of Interim Period 1 through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Chlorodibromomethane	XXX	XXX	XXX	0.0005	0.0008	XXX	1/week	Grab
Dichlorobromomethane	XXX	XXX	XXX	0.0007	0.0011	XXX	1/week	Grab
Chloroform	XXX	XXX	XXX	0.0077	0.012	XXX	1/week	Grab

Compliance Sampling Location: At discharge from facility

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 003, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	6.0 Daily Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.014	XXX	0.047	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - Apr 30	1080	1625 Wkly Avg	XXX	20.0	30.0 Wkly Avg	40	3/week	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) May 1 - Oct 31	540	810 Wkly Avg	XXX	10.0	15.0 Wkly Avg	20	3/week	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Total Suspended Solids	1625	2435 Wkly Avg	XXX	30.0	45.0 Wkly Avg	60	3/week	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Osmotic Pressure (mOs/kg)	XXX	XXX	XXX	52.0	Report	XXX	1/month	Grab

Outfall 003, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	200 Geo Mean	1000 90%SAMPLES	XXX	3/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	3/week	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	108	XXX	XXX	2.0	XXX	4	3/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	54	XXX	XXX	1.0	XXX	2	3/week	24-Hr Composite
Total Phosphorus Nov 1 - Mar 31	108	XXX	XXX	2.0	XXX	4	3/week	24-Hr Composite
Total Phosphorus Apr 1 - Oct 31	54	XXX	XXX	1.0	XXX	2	3/week	24-Hr Composite
Copper, Total	1.13	1.73	XXX	0.02	0.032	0.041	1/week	24-Hr Composite
Iron, Total	84.5	132	XXX	1.56	2.44	3.12	1/week	24-Hr Composite
Selenium, Total	0.27	0.44	XXX	0.005	0.008	0.01	1/week	24-Hr Composite
Sulfate, Total	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
Zinc, Total	6.5	6.5	XXX	0.12	0.12	0.12	1/week	24-Hr Composite
Chloride	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
Bromide	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
Toxicity, Chronic - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	24-Hr Composite
Toxicity, Chronic - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	24-Hr Composite
Toxicity, Chronic - Pimephales Survival (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	24-Hr Composite
Toxicity, Chronic - Pimephales Growth (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	24-Hr Composite

Compliance Sampling Location: At discharge from facility

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 005, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Annual Average	Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab
Iron, Dissolved	XXX	XXX	XXX	Report	XXX	Report	Upon Request	Grab

Compliance Sampling Location: At discharge from facility

Other Comments: Outfall 005 is representative of outfalls 004, 005, 006, and 007

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Toxics Screening Analysis Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☒	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☒	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other: