

Application Type Renewal
Facility Type Municipal
Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. PA0036889
APS ID 5082
Authorization ID 1223121

Applicant and Facility Information

Applicant Name	<u>Reading Township Municipal Authority Adams County</u>	Facility Name	<u>Reading Township Adams County STP</u>
Applicant Address	<u>843 W. Middle Street Hanover, PA 17331-5011</u>	Facility Address	<u>1010 N. Browns Dam Road New Oxford, PA 17350-8705</u>
Applicant Contact	<u>Daryl Leas</u>	Facility Contact	<u>Daryl Leas</u>
Applicant Phone	<u>(717) 259-9998</u>	Facility Phone	<u>(717) 479-0843</u>
Client ID	<u>43791</u>	Site ID	<u>251152</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>Reading Township</u>
Connection Status	<u>No Limitations</u>	County	<u>Adams</u>
Date Application Received	<u>March 28, 2018</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>April 10, 2018</u>	If No, Reason	<u></u>
Purpose of Application	<u>NPDES permit renewal.</u>		

Summary of Review

The Reading Township Municipal Authority (RTMA) submitted a National Pollutant Discharge Elimination System (NPDES) Permit renewal application for discharge of treated sewage from the Reading Township STP located in Reading Township, Adams County. The permit was issued on September 4, 2013 and became effective on October 1, 2013. The permit expired on September 30, 2018 but the terms and conditions of the permit have been extended since that time.

The Reading Township STP serves the Reading Township area (i.e., a population of 1,394 people). The Water Quality Management (WQM) permit No. 0111402 was issued for upgrade of the treatment plant from an extended aeration plant (0.13 MGD design flow) to a Sequencing Batch Reactor (SBR) plant (0.33 MGD).

Changes from the previous permit: Unit of Fecal Coliform is changed from CFU/100 ml to No./100 ml.

Based on the following review, it is recommended that the permit be drafted and publish in the PA Bulletin for public comments for 30 days.

Approve	Deny	Signatures	Date
X		Hilary H. Le / Environmental Engineering Specialist	October 18, 2019
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E. / Clean Water Program Manager	

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>001</u>	Design Flow (MGD)	<u>0.33</u>
Latitude	<u>39° 55' 48.91"</u>	Longitude	<u>-77° 2' 21.45"</u>
Quad Name	<u>Hampton</u>	Quad Code	<u></u>
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>Conewago Creek (WWF)</u>	Stream Code	<u>08303</u>
NHD Com ID	<u>57471023</u>	RMI	<u>46.36 miles</u>
Drainage Area	<u>199 mi.²</u>	Yield (cfs/mi ²)	<u>0.07 cfs/mi.²</u>
Q ₇₋₁₀ Flow (cfs)	<u>14.1 cfs</u>	Q ₇₋₁₀ Basis	<u>USGS StreamStats</u>
Elevation (ft)	<u>423.26</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>7-F</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u></u>	Name	<u></u>
Nearest Downstream Public Water Supply Intake	<u>Wrightsville Borough Municipal Authority, York County</u>		
PWS Waters	<u>Susquehanna River</u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u>28.52 miles</u>	Distance from Outfall (mi)	<u>Approximate 59 miles</u>

Changes Since Last Permit Issuance:

Drainage Area

The discharge is to Conewago Creek at RMI 46.36 miles. A drainage area upstream of the discharge is estimated to be 199 mi.², according to USGS PA StreamStats available at <https://streamstats.usgs.gov/ss/>. The Q₇₋₁₀ is 14.1 cfs, then the low flow yield is 0.07 cfs/mi.².

Conewago Creek

Under 25 Pa. Code § 93.9o, the Conewago Creek is designated as Warm Water Fishes (WWF).

Potable Water Supply Intake

The nearest downstream public water supply intake is the Wrightsville Borough Municipal Authority, York County intake on the Susquehanna River, approximately 59 miles from the point of discharge. Given the nature and dilution, the discharge is not expected to significantly impact the water supply.

Treatment Facility Summary				
Treatment Facility Name: Reading Township STP				
WQM Permit No.		Issuance Date		
0198401		5/22/1998		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Sequencing Batch Reactor	Chlorine With Dechlorination	0.33
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.42	788	Not Overloaded		

Changes Since Last Permit Issuance:

As shown on the table above, the design flow of the plant is 0.330 MGD as consistent with the ACT 537 plan update for Reading Township. However, the plant was built and designed for 0.42 MGD as a total volume of the existing SBR tanks is 421,000 gallons.

Heliscreen/Bar Screen (1) → SBR Tanks (2) → Chlorine Contact Tanks (2) → De-chlorination → Discharge to Conewago Creek

Used Liquid Chlorine and Sodium Sulfate for disinfection, and aluminum Sulfate for remove phosphorus as needed.

Wastes are aerated in the existing digesters and are either removed by a contract sludge hauler or disposed in the existing reed beds.

Compliance History	
Summary of DMRs:	DMRs reported last 12 months from September 1, 2018 to August 31, 2019 are summarized in the Table below (Pages 5 & 6).
Summary of Inspections:	<p>7/16/2018: Mr. Bowen, DEP WQS, conducted a followed up on the overflow. The overflow at the manhole had been stopped.</p> <p>7/11/2018: Mr. Bowen, DEP WQS, conducted incidence inspection sewage overflow, odor, and a high pH in a small tributary to the Conewago Creek, this was a violation.</p> <p>11/21/2017: Mr. Bowen, DEP WQS, conducted compliance evaluation inspection. There were none violations identified during inspection. There some recommendations such as keep paper copies of monitoring record on-site, and need to calibrate daily D.O. probe.</p> <p>3/3/2016: Mr. Haines, DEP WQS, conducted compliance evaluation inspection. There were none violations identified during inspection. The effluent was clear. pH, D.O. and TRC test results were within permitted limits.</p>
Other Comments:	There are currently no open violations associated with the permittee or the facility.

Other Comments: DMRs for the past 12 months indicate one instance of non-compliance (one exceedance Fecal Coliform instantaneous maximum) (Pages 5 & 6). The facility appears to be operating satisfactorily.

The table below summarizes the influent/effluent testing results submitted along with the application.

<i>Influent Testing Results</i>			<i>Effluent Testing Results</i>		
Parameter	Min/Max Value	Average Value	Parameter	Min/Max Value	Average Value
BOD5 (mg/L)	398 mg/L	173 mg/L	pH (minimum)	6.8 S.U.	
BOD5 (lbs/day)	331 lbs/day	136 lbs/day	pH (maximum)	7.3 S.U.	
TSS (mg/L)	334 mg/L	200 mg/L	D.O (minimum)	5.8 mg/L	8.4 mg/L
TSS (lbs/day)	302 lbs/day	153 lbs/day	TRC	0.02 mg/L	0.02 mg/L
TN (mg/L)	19.8 mg/L	19.8 mg/L	Fecal Coliform	2,110/100mL	8.82/100mL
TN (lbs/day)	18.5 lbs/day	18.5 lbs/day	CBOD5	7 mg/L	3.1 mg/L
TP (mg/L)	2.5 mg/L	2.5 mg/L	TSS	4.0 mg/L	1.25 mg/L
TP (lbs/day)	2.3 lbs/day	2.3 lbs/day	NH3-N	1.7 mg/L	0.16 mg/L
NH3-N (mg/L)	16 mg/L	16 mg/L	TN	19.9 mg/L	12.2 mg/L
NH3-N (lbs/day)	14.9 lbs/day	14.9 lbs/day	TP	2.5 mg/L	1.1 mg/L
TDS (mg/L)	414 mg/L	414 mg/L	Temp	No Data	No Data
TDS (lbs/day)	386.7 lbs/day	386.7 lbs/day	TKN	1.7 mg/L	0.55 mg/L
TKN	19 mg/L	19 mg/L	NO2-N + NO3-N	19.4 mg/L	11.6 mg/L
NO2-N + NO3-N	0.8 mg/L	0.8 mg/L	TDS	334 mg/L	334 mg/L
			Oil and Grease	5.0 mg/L	5.0 mg/L
			Total Copper	0.01 mg/L	0.01 mg/L
			Total Lead	0.005 mg/L	0.005 mg/L
			Total Zinc	0.05 mg/L	0.05 mg/L

**NPDES Permit Fact Sheet
Reading Township Adams County STP**

NPDES Permit No. PA0036889

Compliance History

DMR Data for Outfall 001 (from September 1, 2018 to August 31, 2019)

Parameter	AUG-19	JUL-19	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18	SEP-18
Flow (MGD) Average Monthly	0.063	0.119	0.100	0.212	0.161	0.224	0.219	0.230	0.241	0.338	0.123	0.256
Flow (MGD) Daily Maximum	0.077	0.495	0.145	0.645	0.604	0.691	0.402	0.606	0.698	0.682	0.221	0.842
pH (S.U.) Minimum	7.0	6.9	6.8	7.1	7.2	7.1	7.2	7.1	7.2	7.3	7.2	7.3
pH (S.U.) Maximum	7.1	7.1	7.5	7.3	7.3	7.3	7.3	7.5	7.5	7.6	7.5	7.5
DO (mg/L) Minimum	7.2	6.1	6.0	8.0	8.0	8.2	8.4	8.4	8.1	7.8	7.6	7.2
TRC (mg/L) Average Monthly	0.22	0.20	0.21	0.20	0.20	0.19	0.20	0.17	0.19	0.18	0.20	0.20
TRC (mg/L) Instantaneous Maximum	0.23	0.23	0.26	0.023	0.23	0.23	0.24	0.21	0.28	0.24	0.26	0.26
CBOD5 (lbs/day) Average Monthly	< 2	< 3	< 3.0	< 4	< 4	< 4	< 6	< 6	< 4	< 8	< 3	< 7
CBOD5 (lbs/day) Weekly Average	< 2	< 4	< 3.0	< 7	< 7	< 5	10	< 8	< 5	< 13	< 4	< 9
CBOD5 (mg/L) Average Monthly	< 3	< 3	< 3.0	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
CBOD5 (mg/L) Weekly Average	< 3	3	4	3	< 3	< 3	3	3	3	< 3	3	3
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	112	96	87	156	159	151	178	189	136	210	101	141
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	128	135	102	227	248	175	335	302	176	250	120	216
BOD5 (mg/L) Raw Sewage Influent Average Monthly	219	129	112	132	128	104	95	122	100	81	112	74
TSS (lbs/day) Average Monthly	1	2	4	3	4	3	4	3	2	4	1	4
TSS (lbs/day) Raw Sewage Influent Average Monthly	123	106	81	209	526	686	298	478	336	157	127	125
TSS (lbs/day) Raw Sewage Influent Daily Maximum	141	177	116	397	1675	1311	563	1285	691	206	167	204
TSS (lbs/day) Weekly Average	2	3	7	5	7	5	7	5	3	6	2	6
TSS (mg/L) Average Monthly	2	3	4	2	4	2	2	2	2	1	1	2

NPDES Permit Fact Sheet
Reading Township Adams County STP

NPDES Permit No. PA0036889

TSS (mg/L) Raw Sewage Influent Average Monthly	241	148	102	181	297	437	157	280	226	62	137	72
TSS (mg/L) Weekly Average	4	4	7	3	5	3	3	3	2	2	2	2
Fecal Coliform (CFU/100 ml) Geometric Mean	< 1	< 82	20	< 6	< 5	171	31	50	< 19	< 22	15	191
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	< 2	1920	64	23	> 60	600	82	300	102	284	44	462
Nitrate-Nitrite (mg/L) Average Monthly	< 4.2	< 5.4	< 3.44	< 4.4	< 5.6	< 9.5	< 11.4	< 10.2	< 8.7	< 8.8	< 7.4	< 7.5
Nitrate-Nitrite (lbs) Total Monthly	< 66	< 155	< 82	< 207	< 219	< 428	< 596	< 481	< 360	< 739	< 217	< 442
Total Nitrogen (mg/L) Average Monthly	< 5.7	< 6.7	< 5.04	< 5.4	< 8	< 10	< 12.21	< 10.7	< 9.2	< 9.3	< 8.07	< 8.2
Total Nitrogen (lbs) Total Monthly	< 89	< 186	< 119	< 242	< 249	< 451	< 641	< 505	< 381	< 780	< 236	< 491
Total Nitrogen (lbs) Other Annual Final Effluent Total Annual												5094
Ammonia (lbs/day) Average Monthly	0.2	< 0.3	0.2	0.3	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.3	< 0.09	< 0.2
Ammonia (mg/L) Average Monthly	0.4	< 0.3	0.3	0.2	< 0.14	< 0.1	< 0.1	< 0.11	< 0.1	< 0.12	< 0.1	< 0.1
Ammonia (mg/L) Instantaneous Maximum	0.61	1.0	0.68	0.53	0.23	< 0.1	< 0.1	0.12	0.18	0.17	< 0.1	< 0.1
Ammonia (lbs) Total Monthly	6	< 8	7	8	< 5	< 5	< 5	< 5	< 5	< 10	< 3	< 7
Ammonia (lbs) Other Annual Final Effluent Total Annual												52
TKN (mg/L) Average Monthly	1.5	< 1.3	1.61	< 0.96	< 0.9	< 0.5	< 0.81	< 0.5	< 0.5	< 0.5	< 0.63	< 0.73
TKN (lbs) Total Monthly	23	< 31	37	< 34	< 30	< 23	< 45	< 25	< 21	< 42	< 19	< 49
Total Phosphorus (lbs/day) Average Monthly	1.4	1.7	1.3	1.0	2.0	1.4	1.8	1.0	0.9	2.0	1.1	1.8
Total Phosphorus (mg/L) Average Monthly	2.7	2.1	1.6	0.8	1.49	1.0	1.0	0.75	0.7	0.64	1.2	1.0
Total Phosphorus (mg/L) Instantaneous Maximum	2.9	3.0	1.9	1.3	2.6	1.4	1.1	0.99	1.0	0.79	1.3	1.4
Total Phosphorus (lbs) Total Monthly	42	53	38.0	30.7	49	43	51	35	29	53	34	55
Total Phosphorus (lbs) Other Annual Final Effluent Total Annual												372

Development of Effluent Limitations

Outfall No. 001
 Latitude 39° 55' 49.91"
 Wastewater Description: Sewage Effluent

Design Flow (MGD) 0.33
 Longitude -77° 2' 22.48"

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)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Water Quality-Based Limitations

Since the model WQM 7.0 was properly used and there have been no significant modifications to the facility, discharge or receiving waters, it is determined that existing CBOD₅ and NH₃-N limits are appropriate and no additional WQM modeling will be necessary to perform for this review. The results of the previous modeling effort are as follows:

Parameter	Discharge Concentration (mg/L)	Effluent Limitations (mg/L)		
		30-day Average	Maximum	Minimum
CBOD ₅	25	25	50	
NH ₃ -N	25	8.78	17.56	
Dissolved Oxygen	5.0			5

Then, the 25 mg/L monthly average & 50 mg/L instantaneous maximum limits of CBOD₅ in the existing permit will remain in the renewed permit.

The more stringent limit of NH₃-H is 7.0 mg/L monthly average in the existing permit will remain in the proposed permit.

Flow:

Flow monitoring remains unchanged and is recommended by the permit guidance, *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits (Chapter 6 Table 6-3, pg. 10. 362-0400-001)*. It is also required by 25 Pa. Code §§ 92a.27 and 92a.61.

pH:

The effluent discharge pH should remain above 6.0 and below 9.0 standard units according to 25 Pa. Code § 95.2(2).

Dissolved Oxygen (D.O.):

The existing permit contains a limit of 5.0 mg/L for D.O. DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001, 10/97) suggests that either the adopted minimum stream D.O. criteria for the receiving stream or the effluent level determined through water quality modeling be used for the limit. Since the WQM 7.0 model was run using a minimum D.O. of 5.0 mg/L, this limit will be continued in the renewed permit with a daily monitoring requirement per DEP guidance.

Total Residual Chlorine (TRC):

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
Total Residual Chlorine	0.50	Average Monthly	TRC_CALC spreadsheet
Total Residual Chlorine	1.6	IMAX	TRC_CALC spreadsheet
NH ₃ -N	7.0	Average Monthly	WQM 7.0

Based on the attached TRC Excel Spreadsheet calculator, which uses the equations and calculations from the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (ID No. 391-2000-015), the facility's discharge must meet a monthly average limit of 0.5 mg/L and an instantaneous maximum limit of 1.6 mg/L. However, a more stringent TRC 0.23 mg/L monthly average and 0.75 mg/L instantaneous maximum limits are included in the existing permit. Additionally, based on the DMRs from the past year, the facility has been consistently achieving these limits. Therefore, these limits will remain in the proposed permit. A daily grab sample is recommended by Table 6-3 of the permit guidance.

CBOD₅ / TSS:

The previous WQM 7.0 Modeling indicates that secondary treatment is adequate to protect the water quality of the stream. Therefore, CBOD₅ and TSS limits remain unchanged and are required by 25 Pa. Code § 92a.47(a)(1) and (2). The existing monitoring requirements for CBOD₅ and TSS are consistent with Table 6-3 of the permit guidance. The existing average monthly and weekly average mass loading limits for CBOD₅ and TSS will remain in the proposed permit and are based on the formula: design flow (MGD) x concentration limit (mg/L) x conversion factor (8.34).

Influent BOD₅ and TSS Monitoring:

Influent monitoring reporting requirements for TSS and BOD₅ will maintain in the proposed permit since this is a municipal sewage treatment plan (i.e., POTWs).

NH₃-N:

The more stringent existing water quality limit of 7.0 mg/L will remain in the proposed permit. Instead of monitoring requirements, limits will be applied for the winter season as recommended by the Department's guidance, *Implementation Guidance of Section 93.7 Ammonia Criteria (ID 391-2000-013)*. The winter effluent limit will be set at three-times the summer limits; therefore, the average monthly winter limit for NH₃-N will be 21 mg/L (7.0 mg/L x 3). For the same reason, the instantaneous maximum limit for the winter season will be 42 mg/L (14 mg/L x 3). The average monthly mass loading limits will be included in the permit and are based on the formula: design flow (MGD) x concentration limit (mg/L) x conversion factor (8.34). The existing monitoring requirement will remain in the proposed permit and is consistent with Table 6-3 of the permit guidance.

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 1,000/100 ml and 25 Pa. Code § 92a.47.(a)(5) requires a winter limit of 2,000/100 ml as a geometric mean and an instantaneous maximum not greater than 10,000/100 ml.

Total Phosphorus:

According to the Department guidance, *Implementation Guidance for Section 95.9 Phosphorus discharges to Free Flowing Streams (ID 391-2000-018)*, the technology limit of 2.0 mg/L should be applied if the discharger contributes 0.25% or more of the total point source phosphorus loading at the point of impact. Since the calculated total phosphorus load to the lower Susquehanna River is of 0.72% higher than 0.25% (0.33 MGD x 10 mg/L (without treatment) x 8.34 = 27.5 lbs/day; 27.5 lbs/day / 3,814 lbs/day x 100 = 0.72%). A concentration limit of 2.0 mg/L will remain in the proposed permit. The average monthly mass loading limits will be included in the permit and are based on the formula: design flow (MGD) x concentration limit (mg/L) x conversion factor (8.34). The existing mass load limit of 5.5 lbs/day will remain in the proposed permit.

Chesapeake Bay Requirement:

According to the Pennsylvania's Chesapeake Bay Tributary Strategy, this facility is categorized as a phase 4 facility, non-significant point source sewage discharges design annual average daily flow greater than or equal to 0.2 MGD but less than 0.4 MGD. The permittee has already performed two (2) year nutrient monitoring as required by the Strategy. However, the Department's new Supplement to Phase II Watershed Implementation Plan indicates that any renewed or amended permits for phase 4 facilities that do not increase in design flow will contain monitoring and reporting for Total Nitrogen and Total Phosphorus throughout the permit term at a frequency no less than monthly. Accordingly, monitoring requirements for nutrients will remain in the proposed permit.

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. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

303d Listed Streams

This discharge is not located on a 303d listed stream segment.

Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

Attachment is the previous modeling WQM7.0 data.



previous WQM 7.0
data reading Twp Ac

TRC Results

1 TRC EVALUATION					
2 Input appropriate values in A3:A9 and D3:D9					
3	14.1	= Q stream (cfs)	0.5	= CV Daily	
4	0.33	= Q discharge (MGD)	0.5	= CV Hourly	
5	30	= no. samples	1	= AFC_Partial Mix Factor	
6	0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor	
7	0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)	
8	0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)	
9	0	= % Factor of Safety (FOS)		= Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 8.830		1.3.2.iii WLA cfc = 8.601
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc = 3.290		5.1d LTA_cfc = 5.000
14					
15	Source	Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231		
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ
18			INST MAX LIMIT (mg/l) = 1.635		
19					
20					
21					
22	WLA afc	$(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...$			
23		$...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)$			
24	LTAMULT afc	$EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)$			
25	LTA_afc	wla_afc*LTAMULT_afc			
26					
27	WLA_cfc	$(.011/e(-k*CFC_tc)) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...$			
28		$...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)$			
29	LTAMULT_cfc	$EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)$			
30	LTA_cfc	wla_cfc*LTAMULT_cfc			
31					
32	AML MULT	$EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))$			
33	AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)			
34	INST MAX LIMIT	$1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)$			
35					

Existing Effluent Limitations and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.23	XXX	0.75	1/day	Grab
CBOD5	68	110	XXX	25	40	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids	82	123	XXX	30	45	60	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
NH3-N (5/1 to 10/31)	19	XXX	XXX	7.0	XXX	14	1/week	8-Hr Composite
NH3-N (11/1 to 4/30)	58	XXX	XXX	21	XXX	42	1/week	8-Hr Composite
Total Phosphorus	5.5	XXX	XXX	2.0	XXX	4.0	1/week	8-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab

Outfall 001, 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
	Monthly	Annual	Minimum	Average Monthly	Instant. Maximum		
Ammonia—N	Report	Report	XXX	Report	XXX	1/week	8-Hr Composite
Kjeldahl—N	Report	XXX	XXX	Report	XXX	1/week	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	1/week	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	1/week	8-Hr Composite

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 001, Effective Period: Permit Effective Date through Permit Expiration Date.

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	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.23	XXX	0.75	1/day	Grab
CBOD5	68	110 Wkly Avg	XXX	25	40	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	82	123 Wkly Avg	XXX	30	45	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
Ammonia May 1 - Oct 31	19	XXX	XXX	7.0	XXX	14	1/week	8-Hr Composite
Ammonia Nov 1 - Apr 30	58	XXX	XXX	21	XXX	42	1/week	8-Hr Composite
Total Phosphorus	5.5	XXX	XXX	2.0	XXX	4.0	1/week	8-Hr Composite

Compliance Sampling Location:

Other Comments:

Outfall 001, 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
	Monthly	Annual	Minimum	Average Monthly	Instant. Maximum		
Ammonia—N	Report	Report	XXX	Report	XXX	1/week	8-Hr Composite
Kjeldahl—N	Report	XXX	XXX	Report	XXX	1/week	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	1/week	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	1/week	8-Hr Composite

Compliance Sampling Location:

Other Comments:

Tools and References Used to Develop Permit	
<input type="checkbox"/>	WQM for Windows Model (see Attachment [redacted])
<input type="checkbox"/>	PENTOXSD for Windows Model (see Attachment [redacted])
<input checked="" type="checkbox"/>	TRC Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Toxics Screening Analysis Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input checked="" type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
<input checked="" type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 385-2000-011, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
<input checked="" type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
<input checked="" type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Design Stream Flows, 391-2000-023, 9/98.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
<input checked="" type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input type="checkbox"/>	SOP: [redacted]
<input type="checkbox"/>	Other: [redacted]