pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0023264**
Facility Type	**Municipal**	APS ID	**11616**
Major / Minor	**Minor**	Authorization ID	**1329903**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Twin Borough Sanitary Authority**	Facility Name	**Twin Borough STP**
Applicant Address	PO Box 118 17 River Drive	Facility Address	17 River Drive
	Mifflin, PA 17058-0118		Mifflin, PA 17058
Applicant Contact	Rich Zimmerman	Facility Contact	Rich Zimmerman
Applicant Phone	(717) 436-9729	Facility Phone	(717) 436-9729
Client ID	80081	Site ID	253423
Ch 94 Load Status	Not Overloaded	Municipality	Milford Township
Connection Status	No Limitations	County	Juniata
Date Application Received	September 29, 2020	EPA Waived?	No
Date Application Accepted	October 19, 2020	If No, Reason	Significant CB Discharge

Purpose of Application: NPDES RENEWAL.

Summary of Review

The Twin Boroughs Sanitary Authority has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit for the Twin Boroughs STP. The permit was last reissued to the Twin Boroughs Sanitary Authority on April 20, 2016 and became effective on May 1, 2016. The permit expired on April 30, 2021 but the terms and conditions of the permit have been administratively extended since that time.

Based on the review outlined in this fact sheet, it is recommended that the permit be drafted, and a notice of the draft permit be published in the *Pennsylvania Bulletin* for public comments for 30 days. A file review of documents associated with the discharge or permittee may be available at the PA DEP southcentral regional office (SCRO), 909 Elmerton Avenue, Harrisburg, PA 17110. To make an appointment for file reviews, contact the SCRO file review coordinator at 717.705.4700.

Sludge use and disposal description and location(s): Transport to one of Capital Region Water (Dauphin County), Kelly Township Sewer Authority (Union County) or Kline's Services (Lancaster County)

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
x		*Aaron Baar* Aaron Baar / Permits Section	December 5, 2021
x		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	December 10, 2021

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.9
Latitude	40º 33' 47.76"	Longitude	-77º 24' 8.07"
Quad Name	Mifflintown	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Juniata River (WWF, MF)	Stream Code	11414
NHD Com ID	66205651	RMI	33.94
Drainage Area	2840 mi^2	Yield (cfs/mi^2)	0.1183
Q_{7-10} Flow (cfs)	336	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	411.94	Slope (ft/ft)	
Watershed No.	12-A	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status			
Nearest Downstream Public Water Supply Intake	Duncannon Borough Municipal Authority		
PWS Waters	Juniata River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	34

Changes Since Last Permit Issuance: None

Drainage Area

The discharge is to the Juniata River at RMI 33.94. A drainage area upstream of the discharge point is determined to be 2840 sq.mi. according to USGS PA StreamStats available at https://streamstats.usgs.gov/ss/.

Stream Flow

According to StreamStats, the Juniata River watershed has a Q_{7-10} of 336 cfs and a drainage area of 2840 mi^2, which results in a LFY of 0.1183 cfs/mi^2.

Juniata River

The Juniata River is classified as a WWF,MF waterway. 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.

Public Water Supply Intake

The nearest downstream public water supply intake is the Duncannon Borough Municipal Authority intake located on the Juniata River. Considering the distance and nature of the discharge, the discharge is not expected to significantly affect the water supply.

Class A Wild Trout Streams

The receiving stream is not a Class A Wild Trout stream.

Treatment Facility Summary

Treatment Facility Name: Twin Boroughs STP

WQM Permit No.	Issuance Date
3497402	11/23/2011

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Sequencing Batch Reactor	Ultraviolet	0.9

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
1.5	3000	Not Overloaded		

Changes Since Last Permit Issuance: None

The Twin Boroughs Sanitary Authority owns and operates the Twin Boroughs sanitary wastewater treatment facility located in Mifflin Borough, Juniata County. The facility serves Mifflin Borough, Mifflintown Borough and portions of Milford Township, Walker Township and Fermanagh Township. All wastes are residential in nature, and all sewer systems are 100% separated. Having an annual average design flow of 0.900 MGD and a hydraulic design capacity of 1.500 MGD, this facility consists of a headworks (grinder and grit removal), influent pumping station, two SBR tanks, UV disinfection unit, one aerobic digestor and the outfall (Outfall 001). Alum is introduced to the SBRs to facilitate phosphorus precipitation. Liquid sludge is hauled offsite for treatment at other treatment plants.

Compliance History	
Summary of DMRs:	A summary of past DMR data is presented on the next page.
Summary of Inspections:	Since the last NPDES permit renewal, there are no records in the Department's File Room that the facility has been inspected.

Other Comments: A records review revealed that there are no Clean Water open violations associated with this permitee as of December 5, 2021.

Compliance History

DMR Data for Outfall 001 (from November 1, 2020 to October 31, 2021)

Parameter	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20
Flow (MGD) Average Monthly	0.546	1.036	0.415	0.419	0.413	0.416	0.468	0.614	0.436	0.447	0.563	0.366
Flow (MGD) Daily Maximum	1.045	3.431	0.630	0.648	0.602	0.610	0.829	1.623	0.819	0.727	2.809	0.639
pH (S.U.) Minimum	7.1	7.2	7.2	7.3	7.2	7.3	7.0	7.3	7.3	7.3	7.3	7.4
pH (S.U.) Maximum	7.8	7.7	7.8	7.8	7.6	7.8	7.9	7.8	7.8	7.8	8.0	7.9
DO (mg/L) Minimum	6.6	6.5	8.1	6.1	7.2	8.3	6.3	7.8	8.9	9.2	8.4	9.2
CBOD5 (lbs/day) Average Monthly	< 11.0	< 31.7	< 10.8	9.5	9.9	13.2	12.2	< 17.0	15.3	7.8	< 8.73	< 8.53
CBOD5 (lbs/day) Weekly Average	13.1	< 57.2	13.5	14.1	12.8	18.8	14.2	32.2	25.3	9.2	11.5	< 10.7
CBOD5 (mg/L) Average Monthly	< 2.42	< 3.1	< 2.9	3.1	3.10	3.65	3.30	< 3.35	3.8	< 2.28	< 2.64	< 2.53
CBOD5 (mg/L) Weekly Average	3.40	4.90	3.5	4.80	4.00	5.11	3.70	4.30	4.50	3.10	3.90	3.40
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	826	853	448	590	573	747	587	850	559	550	552	525
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	970	1138	601	658	733	902	809	1192	653	623	689	709
BOD5 (mg/L) Raw Sewage Influent Average Monthly	177	109	123	189	180	197	159	181	1.56	161	178	153
TSS (lbs/day) Average Monthly	< 32.7	< 66.9	< 28.5	< 16.3	< 15.9	< 20.7	20.2	< 27.7	< 19.4	< 17.5	< 17.0	< 19.6
TSS (lbs/day) Raw Sewage Influent Average Monthly	631	517	425	411	418	460	424	581	474	473	449	343

TSS (lbs/day) Raw Sewage Influent Daily Maximum	700	830	514	477	477	519	503	735	512	540	594	464
TSS (lbs/day) Weekly Average	48.1	183.6	62.4	21.6	< 16.2	< 25.4	23.1	52.5	< 28.1	< 22.0	< 26.6	32.0
TSS (mg/L) Average Monthly	< 6.8	< 9.6	< 7.0	< 5.20	< 5.00	< 5.50	< 5.40	< 5.50	< 5.00	< 5.00	< 5.00	< 5.5
TSS (mg/L) Raw Sewage Influent Average Monthly	137	58	114	132	132	121	118	127	130	126	142	100
TSS (mg/L) Weekly Average	9.0	18.0	13.00	6.00	< 5.00	6.00	6.00	7.00	< 5.00	5.00	< 5.00	6.00
Fecal Coliform (CFU/100 ml) Geometric Mean	< 2	< 8.46	3	< 2.00	< 2	< 5.05	5.37	< 6.8	21	< 1.32	< 4	< 3.47
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	7.0	2420	14.0	13.0	9	13	20	29	36	3	20	49
UV Intensity (mW/cm²) Minimum	63	63	63.0	63	63	63	63	63	63	63	63	63
Nitrate-Nitrite (mg/L) Average Monthly	< 4.38	< 3.49	< 2.30	< 2	< 2.38	< 3	< 1.97	< 3.4	< 7.9	< 4.9	< 6.6	< 5.2
Nitrate-Nitrite (lbs) Total Monthly	< 486	< 913	229.40	< 203	< 235	< 317	< 214	< 606	< 729	< 531	< 657	< 474
Total Nitrogen (mg/L) Average Monthly	< 5.59	< 4.99	< 3.59	< 3.6	< 3.59	< 4.4	< 3.52	< 4.9	< 9.4	< 6.3	< 7.8	< 6.5
Total Nitrogen (lbs) Effluent Net Total Monthly	< 637	< 1315	< 358.67	< 358	< 354	460	< 395	< 860	861	< 694	< 788	< 589
Total Nitrogen (lbs) Total Monthly	< 637	< 1315	< 358.67	< 358	< 354	< 460	< 395	< 860	< 861	< 694	< 788	< 589
Total Nitrogen (lbs) Effluent Net Total Annual		< 7374										
Total Nitrogen (lbs) Total Annual		< 7374										
Ammonia (lbs/day) Average Monthly	< 0.9	< 2	< 0.44	< 0.5	0.9	< 0.8						
Ammonia (lbs/day) Daily Maximum	2.2	3.7	0.65	0.9	1.9	1.5	3.9	< 28	0.7	1.0	1.0	< 1.8
Ammonia (mg/L) Average Monthly	< 0.23	< 0.24	< 0.14	< 0.14	0.26	< 0.25	0.37	< 0.2	< 0.14	< 0.15	< 0.13	< 0.16

Ammonia (lbs) Total Monthly	< 28	< 61	13.64	< 14	26	< 25	41	< 28	< 12	< 16	< 14	< 15
Ammonia (lbs) Total Annual		< 281										
TKN (mg/L) Average Monthly	< 1.2	< 1.5	< 1.29	1.6	< 1.2	< 1.3	< 1.5	< 1.5	< 1.4	1.5	< 1.3	< 1.2
TKN (lbs) Total Monthly	< 151	< 402	< 129.27	156	< 119	< 142	< 181	< 254	< 132	163	< 131	< 115
Total Phosphorus (mg/L) Average Monthly	1.03	1.19	2.56	2	1.9	< 4.4	1.82	1.44	2.2	< 1.3	1.57	1.7
Total Phosphorus (lbs) Effluent Net Total Monthly	125	270	260.40	194	188	154	217	202	189	142	142	161
Total Phosphorus (lbs) Total Monthly	125	270	260.40	194	188	154	217	202	189	142	142	161
Total Phosphorus (lbs) Effluent Net Total Annual		2185										
Total Phosphorus (lbs) Total Annual		2313										

Compliance History

Effluent Violations for Outfall 001, from: December 1, 2020 To: October 31, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	09/30/21	IMAX	2420	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	09/30/21	IMAX	2420	CFU/100 ml	1000	CFU/100 ml

Summary of Inspections: Fecal coliform exceedances in September 2021, January 2019 and July 2018. pH excursion in December 2016.

Other Comments: Excursions appear to related to wet weather events.

Existing Permit Limits

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2)	Required
	Average Monthly	Weekly Average	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum	Measurement Frequency	Sample Type
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
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
CBOD5	185	280	XXX	25.0	40.0	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	225	335	XXX	30.0	45.0	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
UV Intensity (mW/cm^2)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Nitrate-Nitrite (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/week	Calculation
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs) Effluent Net	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	XXX	Report Daily Max	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Ammonia May 1 - Oct 31	185	Report Daily Max	XXX	25.0	XXX	XXX	2/week	8-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs) Effluent Net	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs) Effluent Net	XXX	16438 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Ammonia (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs) Effluent Net	XXX	2192 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: Outfall 001

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .9
Latitude 40º 33' 48.07" **Longitude** -77º 24' 10.46"
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)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: These standards apply, subject to water quality analysis and BPJ where applicable.

Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen (DO)

WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's guidance 391-2000-007 provides the technical methods contained in WQM 7.0 for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges.

The model was utilized, and the model output indicated that existing limits for ammonia are identical to those specified in the model. Therefore, the existing limits are deemed to be still appropriate. The existing D.O. limit of 5 mg/L is also considered still appropriate.

The monitoring frequency and sample type for CBOD5, DO and ammonia are proposed to remain unchanged.

Toxics

There are no industrial contributions to this facility. DEP's NPDES permit application for minor sewages (less than 1.0 MGD) does not require sampling for heavy metals including Total Copper, Total Lead, and Total Zinc.

Best Professional Judgment (BPJ) Limitations

Total Phosphorus & Total Nitrogen

The reviewer notes that the existing permit limits and monitoring requirements for Total Phosphorus and Total Nitrogen are consistent with Department guidance and in conformity with other Chesapeake Bay Phase 2 permits issued in the region.

Ultraviolet Disinfection

The existing UV system is equipped with an intensity sensor; therefore, UV intensity is proposed to be continued as the monitoring parameter for the UV system.

Additional Considerations

Annual Fee

The following clause has been added to Part A of the proposed permit in conformity with 25 Pa. Code § 92a.62.

D. Annual Fee (25 Pa. Code § 92a.62)

Permittees shall pay an annual fee in accordance with 25 Pa. Code § 92a.62. As of the effective date of this permit, the facility covered by the permit is classified in the **Minor Sewage Facility >=0.05 and <1 MGD** fee category, which has an annual fee of **$1,000.**

Invoices for annual fees will be mailed to permittees approximately three months prior to the due date. In the event that an invoice is not received, the permittee is nonetheless responsible for payment. Permittees may contact the DEP at 717-787-6744 with questions related to annual fees. The fee identified above is subject to change if DEP publishes changes to 25 Pa. Code § 92a.62.

Payment for annual fees shall be remitted to DEP at the address below or through DEP's electronic payment system (www.depgreenport.state.pa.us/NPDESpay) by the due date specified on the invoice. Checks, if used for payment, should be made payable to the Commonwealth of Pennsylvania.

PA Department of Environmental Protection
Bureau of Clean Water
Re: Chapter 92a Annual Fee
P.O. Box 8466
Harrisburg, PA 17105-8466

Flow Monitoring

The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii).

Chesapeake Bay TMDL

The Department formulated a strategy in April 2007, to comply with the EPA's and Chesapeake Bay Foundation's requirements to reduce point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP) to the Bay. In the Strategy, sewage dischargers have been prioritized by Central Office based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers received annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. Phase 4 (0.2 -0.4mgd) and Phase 5 (below 0.2mdg) facilities were required to monitor and report TN and TP during permit renewal at a monitoring frequency following Table 6-3 of DEP's Technical Guidance for Development and Specification of effluent Limitations (No. 362-0400-001).

EPA published the Chesapeake Bay Total Maximum Daily Load (TMDL) in December of 2010. Despite extensive restoration efforts during the past 25 years, the TMDL was prompted by insufficient progress and continued poor water quality in the Chesapeake Bay and its tidal tributaries.

In order to address the TMDL, Pennsylvania developed, in addition to the Bay Strategy, a Chesapeake Watershed Implementation Plan (WIP) Phase 1 in January 2011, Phase 2 in March 2012 and Phase 3 in December 2019. In accordance with the Phase 3 WIP, re-issuing permits for significant dischargers follow the same phased approach formulated in the original Bay strategy, whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewal.

The Phase 3 WIP categorizes this facility as a phase 2 significant sewage facility and provides the following table:

NPDES Permit No.	Facility	Latest Permit Issuance Date	Permit Expiration Date	Cap Load Compliance Start Date	TN Cap Load (lbs/yr)	TP Cap Load (lbs/yr)
PA0023264	Twin Boroughs Sanitary Authority	4/20/2016	4/30/2021	10/1/2012	16,438	2,192

Monitoring Frequency and Sample Type

The facility currently is required to collect 1/week grab effluent samples for CBOD5, TSS, and fecal parameters; 2/week for TN and TP related parameters. This monitoring frequency is consistent with Table 6-3 of DEP's technical guidance no. 362-0400-001 and will remain unchanged in this permit.

Antidegradation Requirements

All effluent limitations and monitoring requirements have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected.

Anti-backsliding Requirement

All effluent limits proposed in this fact sheet are as stringent as effluent limits specified in the existing permit renewal. This approach is in accordance with 40 CFR §122.44(l(1).

Mass Loading Limitations

All effluent mass loading limits are based on the formula: design flow x concentration limit x conversion factor of 8.34.

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	Weekly Average	Instantaneous 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
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
CBOD5	185	280	XXX	25.0	40.0	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	225	335	XXX	30.0	45.0	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
UV Intensity (mW/cm^2)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Nitrate-Nitrite (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/week	Calculation
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

Outfall 001, Continued (from 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	Weekly Average	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Nitrogen (lbs) Effluent Net	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	XXX	Report Daily Max	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Ammonia May 1 - Oct 31	185	Report Daily Max	XXX	25.0	XXX	XXX	2/week	8-Hr Composite
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs) Effluent Net	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

Compliance Sampling Location: Outfall 001

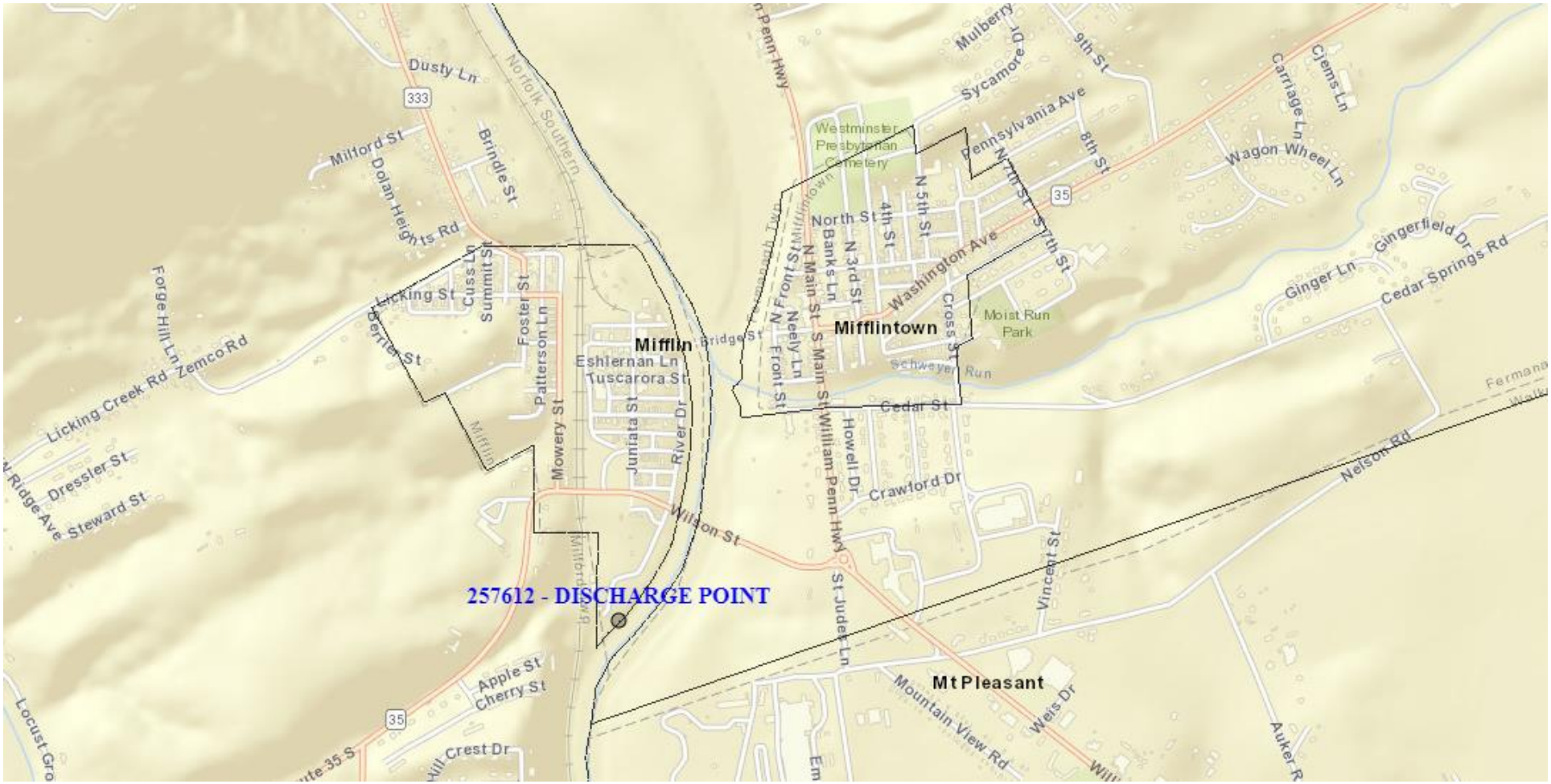
Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

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
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Total Nitrogen (lbs) Effluent Net	XXX	16438 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Ammonia (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs) Effluent Net	XXX	2192 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: Outfall 001


257612 - DISCHARGE POINT
Mifflin
Mifflintown
Mt Pleasant
Dusty Ln
Milford St
Dolan Heights Rd
Brindle St
Norfolk Southern
Licking St
Cuss Ln
Summit St
Foster St
Patterson Ln
Berrier St
Forge Hill Ln
Zemco Rd
Licking Creek Rd
Dressler St
Steward St
Ridge Ave
Mowery St
Juniata St
River Dr
Eshlernan Ln
Tuscarora St
Bridge St
Wilson St
Apple St
Cherry St
Locust Gro
Hill Crest Dr
Penn Hwy
Westminster Presbyterian Cemetery
Mulberry
Sycamore Dr
9th St
Pennsylvania Ave
8th St
Carriage Ln
Clems Ln
Wagon Wheel Ln
North St
4th St
N 5th St
N 3rd St
N Front St
N Main St
S Main St
Neely Ln
N Banks Ln
Washington Ave
7th St
Cross St
Moist Run Park
Schweyer Run
Cedar St
Howell Dr
William Penn Hwy
Crawford Dr
St Judes Ln
Vincent St
Mountain View Rd
Weis Dr
Nelson Rd
Ginger Ln
Gingerfield Dr
Cedar Springs Rd
Fermana
333
35

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:

Model Results

Twin Boroughs STP, NPDES Permit No. PA0023264, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | All | Inputs | Results | Limits

Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments

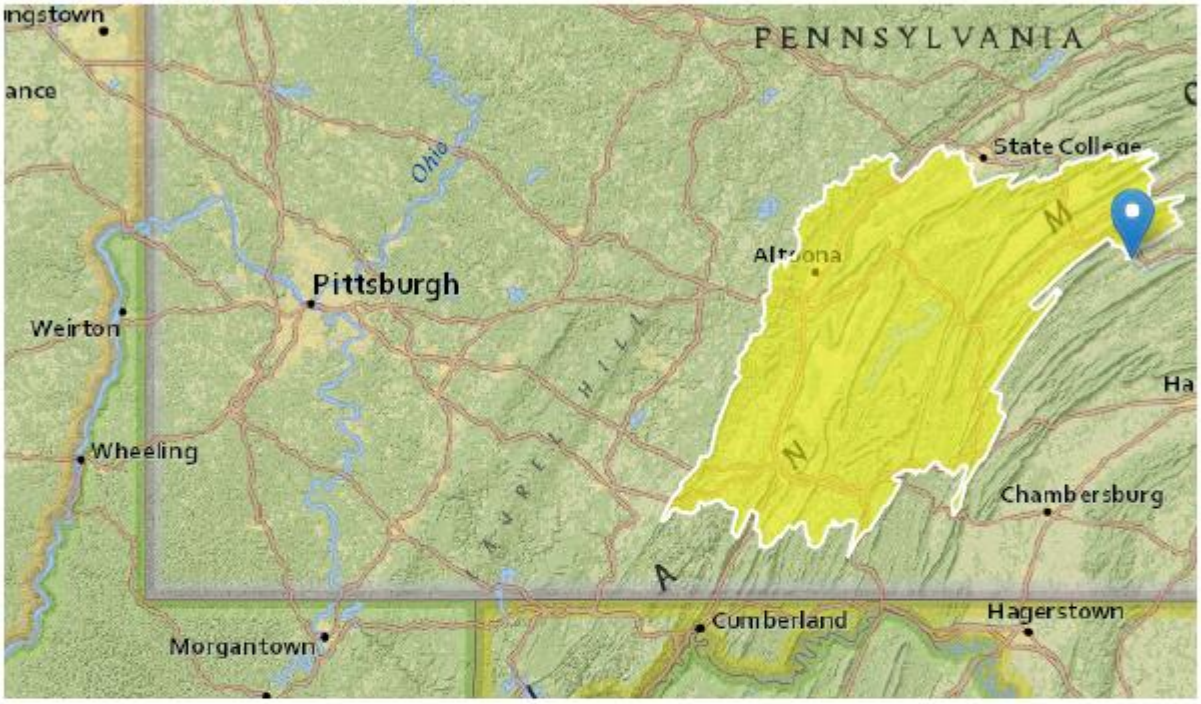
☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)		mg/L	Discharge Conc ≤ 10% WQBEL
Chloride (PWS)		mg/L	Discharge Conc ≤ 10% WQBEL
Sulfate (PWS)		mg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	159	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	1,358	µg/L	Discharge Conc ≤ 10% WQBEL

StreamStats Report

Region ID: PA
Workspace ID: PA20211204171323969000
Clicked Point (Latitude, Longitude): 40.54802, -77.39375
Time: 2021-12-04 12:13:47 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	2840	square miles
PRECIP	Mean Annual Precipitation	39	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.94	miles per square mile
ROCKDEP	Depth to rock	4.5	feet
CARBON	Percentage of area of carbonate rock	18.69	percent

Low-Flow Statistics Parameters [100.0 Percent (2840 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2840	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	1.94	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	18.69	percent	0	99

Low-Flow Statistics Disclaimers [100.0 Percent (2840 square miles) Low Flow Region 2]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [100.0 Percent (2840 square miles) Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	504	ft^3/s
30 Day 2 Year Low Flow	609	ft^3/s
7 Day 10 Year Low Flow	336	ft^3/s
30 Day 10 Year Low Flow	407	ft^3/s
90 Day 10 Year Low Flow	521	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

StreamStats Report

Region ID: PA
Workspace ID: PA20211204170807495000
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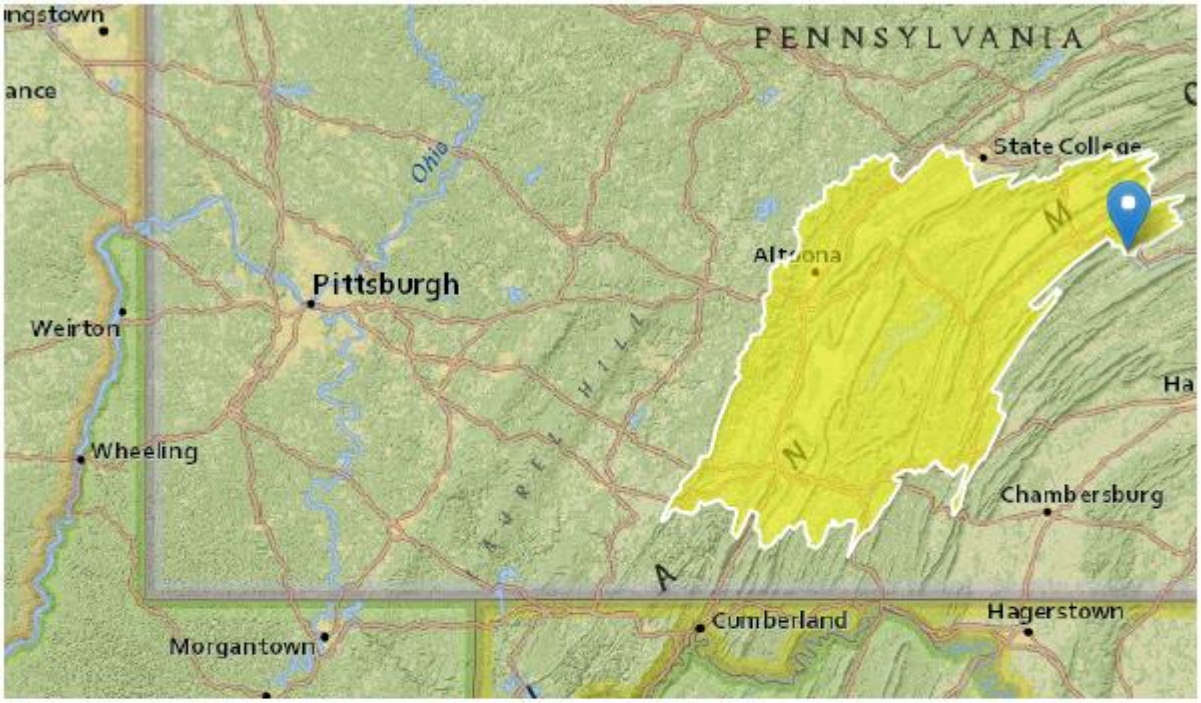
Time: 2021-12-04 12:08:35 -0500



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WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
33.940	Twin Boroughs	PA0023264	0.900	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
33.940	Twin Boroughs	16.72	50	16.72	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
33.940	Twin Boroughs	1.89	25	1.89	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
33.94	Twin Boroughs	25	25	25	25	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
33.940	0.900	20.021	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
335.777	1.183	283.872	0.849
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.09	0.069	0.10	0.701
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.230	2.685	Tsivoglou	6
Reach Travel Time (days)			
0.100			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.010	2.09	0.10	8.24
0.020	2.09	0.10	8.24
0.030	2.09	0.10	8.24
0.040	2.09	0.10	8.24
0.050	2.09	0.10	8.24
0.060	2.09	0.10	8.24
0.070	2.08	0.10	8.24
0.080	2.08	0.10	8.24
0.090	2.08	0.10	8.24
0.100	2.08	0.10	8.24

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
33.940	336.00	0.00	336.00	1.3923	0.00068	1.183	335.78	283.87	0.85	0.100	20.02	7.00
Q1-10 Flow												
33.940	215.04	0.00	215.04	1.3923	0.00068	NA	NA	NA	0.66	0.128	20.03	7.00
Q30-10 Flow												
33.940	456.96	0.00	456.96	1.3923	0.00068	NA	NA	NA	1.01	0.084	20.02	7.00

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
12B	11414	JUNIATA RIVER	33.940	411.94	2840.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	336.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Twin Boroughs	PA0023264	0.9000	0.9000	0.9000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70