

Application Type Renewal
Facility Type Municipal
Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. PA0037737
APS ID 918
Authorization ID 1398580

Applicant and Facility Information

Applicant Name	<u>Elizabethville Borough Area Authority</u>	Facility Name	<u>Elizabethville STP</u>
Applicant Address	<u>4154 N Route 225</u> <u>Elizabethville, PA 17023-9704</u>	Facility Address	<u>Market Street Ext</u> <u>Elizabethville, PA 17023-9704</u>
Applicant Contact	<u>Dennis Henninger</u>	Facility Contact	<u>Travis Zearing</u>
Applicant Phone	<u>(717) 362-8472</u>	Facility Phone	
Client ID	<u>36460</u>	Site ID	<u>452623</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>Elizabethville Borough</u>
Connection Status	<u>No Limitations</u>	County	<u>Dauphin</u>
Date Application Received	<u>June 6, 2022</u>	EPA Waived?	<u>No</u>
Date Application Accepted	<u>June 22, 2022</u>	If No, Reason	<u>Significant CB Discharge</u>
Purpose of Application	<u>Renewal of NPDES permit for discharge of treated sewage</u>		

Summary of Review

1.0 General Discussion

This fact sheet supports the renewal of an existing NPDES permit for discharge of treated domestic wastewater from Elizabethville Wastewater Treatment Plant located in Washington Township, Dauphin County. Elizabethville Borough Area Authority (Authority) owns, operates, and maintains the wastewater treatment plant. The treatment plant serves Elizabethville Borough (69% of the flow), and Washington Township (31% of the flow). The sewer collection system is not combined and there are no bypasses or overflows authorized in the collection system. The facility is a sequential batch reactor (SBR) secondary treatment plant with a hydraulic design capacity of 0.72 MGD and an annual average design capacity of 0.400 MGD. The organic design capacity of the facility is 1,483 lbs/day- BOD5. The facility discharge to Wiconisco Creek, which is classified for Warm Water Fishes (WWF). The existing NPDES permit was issued on December 14, 2017 with effective date of January 1, 2018 and an expiration date of December 31, 2022. The applicant submitted a timely renewal application to the Department and has been operating under the terms and conditions in the existing permit under administrative extension provisions pending Department action on the renewal application. A topographic map showing the discharge location is presented in attachment A.

1.1 Sludge use and disposal description and location(s):

Sludge is digested in aerobic digesters and directed to reed beds or hauled off to either Kelly Township, City of Harrisburg or Milton Sewer for disposal.

Approve	Deny	Signatures	Date
X		<i>J. Pascal Kwedza,</i> J. Pascal Kwedza, P.E. / Environmental Engineer	January 18, 2024
X		<i>Maria D. Bebenek for</i> Daniel W. Martin, P.E. / Environmental Engineer Manager	February 1, 2024
X		<i>Maria D. Bebenek</i> Maria D. Bebenek, P.E. / Program Manager	February 1, 2024

Summary of Review

1.2 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.

1.3 Changes to the existing Permit

- Quarterly monitoring of E. Coli has been added

1.4 Existing Permit limitation and Monitoring Requirements

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Instantaneous 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
TSS	100	150	XXX	30	45	60	1/Week	24-hr comp
CBOD ₅	83	133	XXX	25	40	50	1/Week	24-hr comp
Fecal Coliform (5/1 to 9/30) ⁽⁵⁾	XXX	XXX	XXX	200	XXX	1000	1/Week	Grab
Fecal Coliform (10/1 to 4/30)	XXX	XXX	XXX	2,000	XXX	10000	1/Week	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	36	XXX	XXX	11.0	XXX	22	2/week	24-Hr Composite

1.4.1 Chesapeake Bay Limits

Discharge Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Load(lbs)		Concentrations (mg/l)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	1/week	24-hr Comp
Kjeldahl---N	Report	XXX	XXX	Report	XXX	1/Week	24-hr Comp
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	1/Week	24-hr Comp
Total Nitrogen	Report	Report	XXX	Report	XXX	1/Month	Calculate
Total Phosphorus	Report	Report	XXX	Report	XXX	1/week	24-hr Comp
Net Total Nitrogen	Report	7,306	XXX	XXX	XXX	1/Month	Calculate
Net Total Phos.	Report	974	XXX	XXX	XXX	1/Month	Calculate

1.5 Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>001</u>	Design Flow (MGD)	<u>.4</u>
Latitude	<u>40° 33' 38.68"</u>	Longitude	<u>-76° 48' 51.04"</u>
Quad Name	<u>Elizabethville</u>	Quad Code	<u></u>
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>Wiconisco Creek (WWF)</u>	Stream Code	<u>16895</u>
NHD Com ID	<u>54973235</u>	RMI	<u>15.95</u>
Drainage Area	<u>80.49</u>	Yield (cfs/mi ²)	<u>0.04</u>
Q ₇₋₁₀ Flow (cfs)	<u>3.22</u>	Q ₇₋₁₀ Basis	<u>USGS Gage station</u>
Elevation (ft)	<u>518</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>6-C</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>
Background/Ambient Data		Data Source	
pH (SU)	<u></u>		<u></u>
Temperature (°F)	<u></u>		<u></u>
Hardness (mg/L)	<u></u>		<u></u>
Other:	<u></u>		<u></u>
Nearest Downstream Public Water Supply Intake	<u>Veolia Water PA</u>		
PWS Waters	<u></u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u></u>	Distance from Outfall (mi)	<u><37</u>

Changes Since Last Permit Issuance: None

1.5.1 Public Water Supply Intake

The closest water supply intake located downstream from the discharge is Veolia Water PA in Susquehanna Twp., Dauphin County. The distance downstream from the discharge to the intake is approximately 37 miles. No impact is expected on the intake as a result of this discharge.

2.0 Treatment Facility Summary				
Treatment Facility Name: Elizabethville STP				
WQM Permit No.		Issuance Date		
2214401		September 17, 2014		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Ultraviolet	0.4
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.72	1483	Not Overloaded	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance: None

2.1 Treatment Facility Details

The treatment plant consists of an influent pump station with screw pumps to pump influent to the headworks (fine screen & grit chamber), flow divides via floats to the 2 SBR units capable of treating annual average flow of 0.4MGD and a maximum monthly flow of 0.72MGD and UV for disinfection. Alum is added for phosphorus removal, Sludge is wasted to a common aerobic digester and later sent to reed beds in the warmer months or transferred to the old digesters and later hauled out for ultimate disposal at other treatment facilities.

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from December 1, 2022 to November 30, 2023)

Parameter	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22
Flow (MGD) Average Monthly	0.1520	0.1697	0.1669	0.1785	0.2395	0.1453	0.1883	0.1677	0.1931	0.1596	0.2249	0.2359
Flow (MGD) Daily Maximum	0.2627	0.3005	0.3061	0.3863	0.5046	0.2110	5.8387	0.7285	0.4517	0.1970	0.3365	0.6150
pH (S.U.) Minimum	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
pH (S.U.) Maximum	7.3	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.3
DO (mg/L) Minimum	6.4	6.5	6.5	6.5	6.3	6.4	6.6	6.6	6.5	6.6	6.6	6.4
CBOD5 (lbs/day) Average Monthly	< 4	3	10	< 5.0	< 5	< 3	< 4	< 3	< 5	< 5	< 4	< 3
CBOD5 (lbs/day) Weekly Average	5	4	13	11	7	4	5	5.0	7	13	< 5	4
CBOD5 (mg/L) Average Monthly	< 4.0	3.0	7.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 4.0	< 2.0	< 2.0
CBOD5 (mg/L) Weekly Average	5.0	3.0	7.2	9.0	5.0	4.0	3.0	4.0	6.0	9.0	< 2.0	3.0
BOD5 (lbs/day) Raw Sewage Influent Ave. Monthly	169	306	200	171	178	69	191	117	78	62	138	49
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	303	559	212	276	314	100	327	156	119	106	208	60
BOD5 (mg/L) Raw Sewage Influent Ave. Monthly	136	252	156	119	112	62	128	101	57	48	79	34
TSS (lbs/day) Average Monthly	< 6	< 7	< 3	8	< 7	< 5	< 6	< 5	< 7	< 5	< 8	< 6
TSS (lbs/day) Raw Sewage Influent Ave. Monthly	105	138	166	146	250	41	101	37	28	29	86	26
TSS (lbs/day) Raw Sewage Influent Daily Maximum	255	283	205	231	380	46	240	51	39	46	148	30
TSS (lbs/day) Weekly Average	< 8	10	4	15	< 10	< 6	< 10	5	10	< 6	< 10	< 7

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Elizabethville STP**

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TSS (mg/L) Average Monthly	< 5.0	< 5.0	< 2.0	< 6.0	< 4.0	< 4.0	< 4.0	< 4.0	< 5.0	< 4.0	< 4.0	< 4.0
TSS (mg/L) Raw Sewage Influent Ave. Monthly	73	113	128	102	148	38	70	33	20	21	51	18
TSS (mg/L) Weekly Average	6.0	8.0	3.0	12.0	4.0	< 4.0	< 4.0	4.0	7.0	< 4.0	< 4.0	4.0
Fecal Coliform (No./100 ml) Geometric Mean	3.0	< 1.0	< 2	< 8.0	28	19	31	< 3.0	< 3	< 2.0	< 1	< 1
Fecal Coliform (No./100 ml) Instant. Maximum	8.0	< 1.0	8.0	2100	4300	228	508	29	19	23	2	< 1
UV Intensity (mW/cm ²) Instantaneous Minimum	101	101	101	101	101	101	101	101	101	101	101	101
Nitrate-Nitrite (mg/L) Average Monthly	< 1.73	< 1.35	< 1.23	1.409	< 1.3	< 1	< 1.41	< 1.35	< 1.35	1.65	< 1.54	2.08
Nitrate-Nitrite (lbs) Total Monthly	< 72	< 54	< 51	73	< 86	< 35	< 72	< 46	< 61	< 64	< 91	101
Total Nitrogen (mg/L) Average Monthly	< 3.94	< 3.20	< 3.77	< 5.7	< 4.97	< 4.78	< 4.13	< 4.47	< 3.15	< 3.19	< 3.79	< 2.93
Total Nitrogen (lbs) Effluent Net Total Monthly	< 160	< 128	< 160	< 253	< 294	< 168	< 191	< 152	< 143	< 123	< 263	< 142
Total Nitrogen (lbs) Total Monthly	< 160	< 128	< 160	< 253	< 294	< 168	< 191	< 152	< 143	< 123	< 263	< 142
Total Nitrogen (lbs) Effluent Net Total Annual			< 2218									
Total Nitrogen (lbs) Total Annual			< 2218									
Ammonia (lbs/day) Average Monthly	1	1.0	< 2	< 4	< 4	< 3	< 2	3	< 0.6	< 0.2	< 3	< 0.2
Ammonia (mg/L) Average Monthly	0.71	0.73	< 1.65	< 3.05	< 2.12	2.32	< 1.61	2.98	< 0.44	< 0.13	< 1.16	< 0.1
Ammonia (lbs) Total Monthly	29	30	< 71	< 124	< 116	< 81	< 71	103	< 19	< 5	< 97	< 5
Ammonia (lbs) Total Annual			< 842									
TKN (mg/L) Average Monthly	2.21	1.85	2.54	< 4.31	3.67	3.78	< 2.72	< 3.12	1.8	1.54	< 2.25	< 0.85
TKN (lbs) Total Monthly	88	74	108	< 180	208	133	< 119	< 106	82	59	< 172	< 41

Total Phosphorus (mg/L) Average Monthly	1.46	1.17	2.38	2.42	2.14	2.81	2.12	1.742	1.57	1.74	< 0.29	3.33
Total Phosphorus (lbs) Effluent Net Total Monthly	56	48	98	103	136	100	92	60	69	68	< 18	161
Total Phosphorus (lbs) Total Monthly	56	48	98	103	136	100	92	60	69	68	< 18	161
Total Phosphorus (lbs) Effluent Net Total Annual			< 1013									
Total Phosphorus (lbs) Total Annual			< 1013									

3.2 Effluent Violations for Outfall 001, from: December 1, 2022 To: November 30, 2023

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
CBOD5	06/30/23	Avg Mo	> 3.0	mg/L	25.0	mg/L
Fecal Coliform	08/31/23	IMAX	2100	No./100 ml	1000	No./100 ml
Fecal Coliform	07/31/23	IMAX	4300	No./100 ml	1000	No./100 ml
Total Phosphorus	09/30/23	Total Annual	< 1013	lbs	974	lbs

3.3 Summary of Discharge Monitoring Reports (DMRs):

DMRs review for the facility for the last 12 months of operation, presented on the table above in section 3.1 indicates permit limits have been met most of the time. Fecal Coliform violations were noted on DMRs for the months of July and August in 2023 and presented in section 3.2 above. Total Annual cap load for Total Phosphorus has been exceeded for the 2022-2023 compliance year and enforcement action is currently being taken for non-compliance. The permit will be drafted, and the cover letter of the draft permit will have the following condition “According to DEP’s records, there are unresolved violation(s) at one or more facilities you own or operate. In accordance with DEP’s Clean Water Program standard operating procedures, an applicant’s compliance history is considered prior to making a final decision on any permit application. Please take the opportunity to address these violations during this draft comment period. DEP may not be able to issue a final permit until the violation(s) are resolved”

3.4 Summary of Inspections:

The facility has been inspected a couple times during last permit cycle. No effluent violations were found during plant inspections. An NOV was sent on December 13, 2022 for non-compliance with Chesapeake Bay requirement.

4.0 Development of Effluent Limitations

Outfall No. <u>001</u>	Design Flow (MGD) <u>.4</u>
Latitude <u>40° 33' 38.00"</u>	Longitude <u>-76° 48' 51.00"</u>
Wastewater Description: <u>Sewage Effluent</u>	

4.1 Basis for Effluent Limitations

In general, the Clean Water Act (CWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

4.2 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: Total Residual Chlorine limitation not applicable. The facility utilizes UV for disinfection.

4.3 Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass-based limits are expressed in pounds per day and are calculated as follows:

$$\text{Mass based limit (lb/day)} = \text{concentration limit (mg/L)} \times \text{design flow (mgd)} \times 8.34$$

4.3.1 WQM 7.0 Stream Model

WQM 7.0 is a water quality model DEP utilizes to establish appropriate effluent limits for CBOD₅, NH₃-N and DO in permits. The model simulates mixing and degradation of NH₃-N in the stream and compares calculated instream NH₃-N concentrations to NH₃-N water quality criteria and also simulates mixing and consumption of D.O. in the stream due to the degradation of CBOD₅ and NH₃-N and compares calculated instream D.O. concentrations to D.O. water quality criteria and recommends effluent limits

4.4 Water Quality-Based Limitations

4.4.1 Receiving Stream

The receiving stream is the Wiconisco Creek. According to 25 PA § 93.9o, Wiconisco Creek is protected for Warm Water Fishes (WWF). It is located in Drainage List m and State Watershed 6-C. It has been assigned stream code 16895. According to the Department's Pennsylvania Integrated Water Quality Monitoring and Assessment Report, this stream is impaired for pH, siltation and metals due to abandoned mine drainage. A TMDL for the effects of Acid Mine Drainage was completed and approved on November 24, 2008 and is discussed further in section 5.4 of the report.

4.4.2 Streamflow:

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No. 0155500 on Mahantango. The Q_{7-10} and drainage area at the gage are 6.38ft³/s and 164 mi² respectively. The resulting yields are as follows:

$$\begin{aligned} Q_{7-10} &= 6.38 \text{ cfs} / 164 \text{ sq. mi} = 0.04\text{cfs/sq.mi} \\ Q_{30-10} / Q_{7-10} &= 1.47 \\ Q_{1-10} / Q_{7-10} &= 0.74 \end{aligned}$$

The drainage area at the point of discharge taken from previous protection report = 80.49sq. mi.
The design flow is calculated as: $Q_{7-10} = 0.04\text{cfs} \times 80.49 \text{ sq. mi} = 3.22\text{cfs}$

NH₃N calculations will be based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the instream NH₃N criteria used in the attached computer model of the stream:

- STP pH = 7.0 (DMR median July – Sept.)
- STP Temperature = 25 ° C (Default)
- Stream pH = 7.0(Default)
- Stream Temperature = 20 ° C (Default)
- Background NH₃-N = 0.0 (Default)

4.4.3 CBOD₅:

Water quality modeling for this discharge was done in conjunction with the Williamstown Borough Authority STP discharge, Washington Township STP's discharge and Lykens Borough's discharge due to the proximity of these discharges to each other. The attached results of the WQM 7.0 stream model (attachment B) indicates that for Elizabethville Township's discharge with an annual average flow of 0.4 MGD, a monthly average limit of 25 mg/l is needed to protect the water quality of the stream. This limit is consistent with the existing limit. DMRs and inspection reports show that the STP has been achieving less than 25 mg/l CBOD₅. Therefore, a limit of 25mg/l monthly average with 40mg/l weekly average and 50 mg/l instantaneous maximum will be applied again for this current permit cycle.

Mass Limits are calculated as follows:

$$\text{Mass based AML (lb/day)} = 25 \text{ (mg/L)} \times 0.4(\text{mgd}) \times 8.34 = 83$$

$$\text{Mass based AWL (lb/day)} = 40(\text{mg/L}) \times 0.4(\text{mgd}) \times 8.34 = 133$$

4.4.4 NH₃-N

The attached results of the WQM 7.0 stream model (Attachment B) also indicates a summer average monthly limit of 16mg/l NH₃-N is necessary to protect the aquatic life from toxicity effects. However, due to anti-backsliding restrictions the existing summer limit of 11mg/l for ammonia nitrogen will remain with monitor and report during winter months. The facility's DMR and inspection report indicate the facility is meeting the limits without difficulty.

$$\text{Mass based AML (lb/day) for the summer months} = 11 \text{ (mg/L)} \times 0.40(\text{mgd}) \times 8.34 = 36$$

4.4.5 Dissolved Oxygen

The existing permit contains a limit of 5 mg/l for Dissolved Oxygen (DO). 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.

4.4.6 Total Suspended Solids (TSS)

There is no water quality criteria for TSS. A limit of 30 mg/l AML will be required based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 PA § 92a.47(a)(1) and an AWL of 45mg/l per 40CFR 133.102(b)(2) and 25 PA § 92a.47(a)(2). Mass Limits are calculated as follows:

Mass based AML (lb/day) = 30 (mg/L) × 0.40(mgd) × 8.34 = 100

Mass based AWL (lb/day) = 45(mg/L) × 0.40(mgd) × 8.34 = 150

4.4.7 Phosphorus

Currently there is no watershed-wide requirement for phosphorus limitation in the Wiconisco Basin, therefore no phosphorus limitation is required for this discharge other than Chesapeake Bay Annual Total Phosphorus Cap load.

4.4.8 Total Residual Chlorine

The discharge does not have a reasonable potential to cause or contribute to a water quality standards violation for total residual chlorine since the permittee does not add chlorine to the wastewater for disinfection. Therefore, the proposed permit does not contain effluent limits for total residual chlorine. Daily UV intensity monitoring and reporting will be required in the permit to ensure routine check for UV efficiency.

4.4.9 Toxics

A reasonable potential (RP) analysis was done for pollutants in the discharge. The discharge consists entirely of domestic wastewater with no pollutants of concern that needs further analysis.

4.4.10 Fecal Coliform and E. Coli

The existing Fecal Coliform limit is consistent with the technology limits recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. In March of 2021, EPA approved DEP's Triennial Review of Water Quality Standards, which included a new swimming season criterion for E. coli. As a result, DEP is including monitoring requirements for E. Coli in new and renewed sewage permits above 2000gpd. Monitoring frequency is based on annual average flow as follows: 1/month for design flows >= 1 MGD, 1/quarter for design flows >= 0.05 and < 1 MGD and 1/year for design flows of 0.002 and < 0.05 MGD. Your discharge of 0.4MGD requires 1/quarter monitoring as included in the permit.

4.4.11 Chesapeake Bay Strategy

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay 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 DEP 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 0.2mgd) are required to monitor and report TN and TP during permit renewal and any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. EPA published Chesapeake Bay TMDL in December of 2010. In order to address the TMDL, Pennsylvania developed Chesapeake Watershed Implementation Plan (WIP) Phase 1, Phase 2 and currently Phase 3 WIP and a supplement to the WIPs to be implemented with the original Chesapeake Bay Strategy.

Phase 3 WIP and the supplement to the WIP, indicates renewing permits for significant dischargers would 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 renewals. This facility was originally omitted from the significant Bay discharger list but was added as a phase 3 facility and was required under the Bay strategy to meet a total maximum annual Total Nitrogen Cap load of 7,306 lbs/year based on a design annual wasteflow of 0.4 MGD and 6 mg/l total nitrogen and a TP cap load of 974 lbs/year based on annual wasteflow of 0.4 MGD and 0.8 mg/l total phosphorus. The facility is complying with the Chesapeake Bay Cap load requirements.

The Department approved a total nitrogen offset of 175lbs of nitrogen based on 7EDUs at 25lbs/EDU for the Authority. The offsets are for 7 EDUs on-lot disposal systems that have been connected to the sewer conveyance system. These on-lot systems were put into use prior to January 1, 2003 and retired after January 1, 2003. The approved offsets are only for compliance purposes and are not available for trading or selling. The permit will show the base cap load on the effluent page and show the offsets as a foot note with a language indicating the offsets may be applied throughout the compliance year or during the truing period. A complete list of addresses of the dwellings that were served by the retired on-lot systems that are now connected to the sewage conveyance system is on file.

4.4.12 Influent BOD and TSS Monitoring

The permit includes influent BOD5 and TSS monitoring at the same frequency as is done for effluent in order to implement Chapter 94.12 and assess percent removal requirements.

4.4.13 Stormwater

There is no stormwater outfall associated with this facility.

4.4.14 Industrial Users

This Wastewater Treatment Plant does not receive wastewater from any significant industrial users.

4.4.15 Pretreatment Requirements

The design annual average flow of the treatment plant is 0.4 MGD and the facility receives no flow from significant Industrial users. EPA does not require development of pretreatment program for facilities with design flow less than 5MGD. However, the permit contains standard conditions requiring the permittee to monitor and control industrial users if applicable.

5.0 Other Requirements

5.1 Anti-backsliding

Not applicable to this permit

5.2 Anti-Degradation (93.4)

The effluent limits for this discharge 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. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

5.3 Class A Wild Trout Fisheries

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

5.4 303d Listed Streams

The discharge is not located on a 303d listed stream segment. TMDL was approved for portions of Wiconisco creek and its tributaries; however, this discharge is located downstream of the affected stream segment. No further action is required.

5.5 Special Permit Conditions

The permit contains the following special conditions:

- Stormwater Prohibition, Approval Contingencies, Solids Management and Restriction on receipt of hauled in waste under certain conditions, SBR discharge condition and chlorine minimization requirement.

5.6 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

5.7 Effluent Monitoring Frequency

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

6.0 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” (386-0400-001), 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 Daily Min	XXX	XXX	XXX	1/day	Grab
CBOD5	83	133	XXX	25.0	40.0	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	100	150	XXX	30.0	45.0	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-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
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
UV Intensity (mW/cm ²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded 24-Hr Composite
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite (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	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	36	XXX	XXX	11.0	XXX	22	2/week	24-Hr Composite
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-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	24-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

Compliance Sampling Location: Outfall 001

6.1 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.

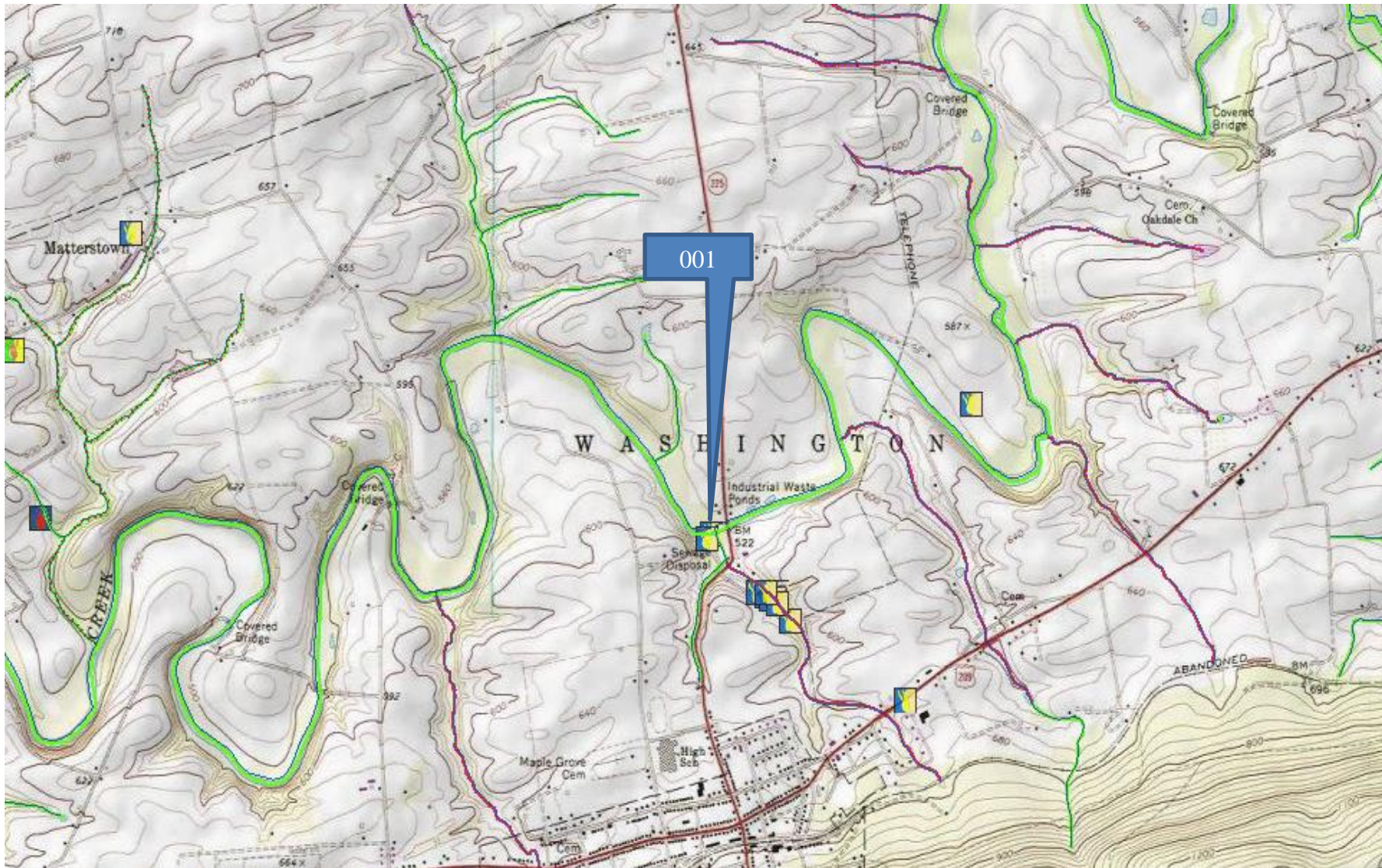
Parameter ⁽¹⁾	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)			Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	2/week	24-Hr Composite
Kjeldahl---N	Report	XXX	XXX	Report	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	24-Hr Composite
Net Total Nitrogen*	Report	7,306	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	974	XXX	XXX	XXX	1/month	Calculation

Compliance Sampling Location: Outfall 001

7.0 Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment [redacted])
<input type="checkbox"/>	Toxics Management Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	TRC Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment [redacted])
<input checked="" type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
<input checked="" type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 386-2000-002, 9/08.
<input checked="" 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, 386-2000-008, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
<input type="checkbox"/>	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
<input checked="" type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
<input checked="" type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
<input checked="" type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
<input type="checkbox"/>	Design Stream Flows, 386-2000-003, 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, 386-2000-006, 10/98.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
<input checked="" type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	SOP: Establishing effluent limitations for individual sewage permit
<input type="checkbox"/>	Other: [redacted]

8.0 Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
06C		16895		WICONISCO CREEK			
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)
32.400	Williamstwn STP	PA0021491	0.450	CBOD5	15.01		
				NH3-N	4.49	8.98	
				Dissolved Oxygen			5
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)
27.600	Lykens Boro STP	PA0043575	0.410	CBOD5	25		
				NH3-N	11.82	23.64	
				Dissolved Oxygen			5
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)
23.500	Washington Twp	PA0086185	0.050	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5
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)
15.950	Elizabethville	PA0037737	0.400	CBOD5	25		
				NH3-N	15.76	31.52	
				Dissolved Oxygen			5

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
06C	16895	WICONISCO CREEK	32.400	695.00	21.80	0.00000	0.00	<input checked="" type="checkbox"/>

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		Stream	
									Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.040	0.00	0.00	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
Williamstwn STP	PA0021491	0.4500	0.4500	0.4500	0.000	22.00	6.80

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

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
06C	16895	WICONISCO CREEK	27.600	645.00	60.00	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.040	0.00	0.00	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
Lykens Boro STP	PA0043575	0.4100	0.4100	0.4100	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

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
06C	16895	WICONISCO CREEK	23.500	580.00	66.00	0.00000	0.00	<input checked="" type="checkbox"/>

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		Stream	
									Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.040	0.00	0.00	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
Washington Twp	PA0086185	0.0500	0.0500	0.0500	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

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
06C	16895	WICONISCO CREEK	15.950	518.00	80.49	0.00000	0.00	<input checked="" type="checkbox"/>

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)	pH	Stream Temp (°C)	pH
Q7-10	0.040	0.00	0.00	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
Elizabethville	PA0037737	0.4000	0.4000	0.4000	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

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
06C	16895	WICONISCO CREEK	7.420	450.00	89.60	0.00000	0.00	<input checked="" type="checkbox"/>

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		Stream	
									Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.040	0.00	0.00	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
Dauphin Meadows	PA0080187	0.0500	0.0500	0.0500	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	50.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	50.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
06C		16895				WICONISCO CREEK						
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)	
Q7-10 Flow												
32.400	0.87	0.00	0.87	.6962	0.00197	.577	21.43	37.17	0.13	2.308	20.89	6.90
27.600	2.41	0.00	2.41	1.3304	0.00300	.67	32.56	48.58	0.17	1.464	21.22	6.96
23.500	2.65	0.00	2.65	1.4078	0.00156	.692	35.27	50.98	0.17	2.777	21.22	6.96
15.950	3.23	0.00	3.23	2.0266	0.00151	.722	39.7	55.02	0.18	2.842	21.53	6.97
Q1-10 Flow												
32.400	0.65	0.00	0.65	.6962	0.00197	NA	NA	NA	0.12	2.519	21.04	6.88
27.600	1.78	0.00	1.78	1.3304	0.00300	NA	NA	NA	0.15	1.622	21.47	6.95
23.500	1.96	0.00	1.96	1.4078	0.00156	NA	NA	NA	0.15	3.082	21.47	6.95
15.950	2.39	0.00	2.39	2.0266	0.00151	NA	NA	NA	0.17	3.133	21.82	6.96
Q30-10 Flow												
32.400	1.29	0.00	1.29	.6962	0.00197	NA	NA	NA	0.14	2.026	20.70	6.92
27.600	3.54	0.00	3.54	1.3304	0.00300	NA	NA	NA	0.20	1.262	20.94	6.97
23.500	3.89	0.00	3.89	1.4078	0.00156	NA	NA	NA	0.19	2.391	20.93	6.97
15.950	4.74	0.00	4.74	2.0266	0.00151	NA	NA	NA	0.21	2.466	21.19	6.97

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.74	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.47	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin Stream Code Stream Name
06C 16895 WICONISCO CREEK

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
32.400	Williamstwn STP	16.87	32.56	16.87	32.56	0	0
27.600	Lykens Boro STP	15.03	50	15.52	50	0	0
23.500	Washington Twp	16.5	50	15.47	50	0	0
15.950	Elizabethville	15.39	50	14.89	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
32.400	Williamstwn STP	1.86	5.28	1.86	5.28	0	0
27.600	Lykens Boro STP	1.8	11.82	1.8	11.82	0	0
23.500	Washington Twp	1.88	25	1.8	25	0	0
15.950	Elizabethville	1.82	15.76	1.76	15.76	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
32.40	Williamstwn STP	15.01	15.01	4.49	4.49	5	5	0	0
27.60	Lykens Boro STP	25	25	11.82	11.82	5	5	0	0
23.50	Washington Twp	25	25	25	25	5	5	0	0
15.95	Elizabethville	25	25	15.76	15.76	5	5	0	0

WQM 7.0 D.O. Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>			
06C	16895	WICONISCO CREEK			
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>		<u>Analysis pH</u>	
32.400	0.450	20.887		6.900	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>		<u>Reach Velocity (fps)</u>	
21.429	0.577	37.171		0.127	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>		<u>Reach Kn (1/days)</u>	
7.77	0.565	1.99		0.749	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>		<u>Reach DO Goal (mg/L)</u>	
6.805	2.433	Tsivoglou		5	
<u>Reach Travel Time (days)</u>					
2.308					
	<u>Subreach Results</u>				
	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>	
	0.231	6.78	1.67	5.53	
	0.462	5.92	1.41	5.12	
	0.692	5.17	1.18	5.16	
	0.923	4.51	1.00	5.41	
	1.154	3.94	0.84	5.76	
	1.385	3.44	0.71	6.12	
	1.615	3.00	0.59	6.48	
	1.846	2.62	0.50	6.80	
	2.077	2.29	0.42	7.10	
	2.308	2.00	0.35	7.36	
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>		<u>Analysis pH</u>	
27.600	0.860	21.221		6.955	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>		<u>Reach Velocity (fps)</u>	
32.565	0.670	48.580		0.171	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>		<u>Reach Kn (1/days)</u>	
5.90	0.675	2.15		0.769	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>		<u>Reach DO Goal (mg/L)</u>	
7.320	5.027	Tsivoglou		5	
<u>Reach Travel Time (days)</u>					
1.464					
	<u>Subreach Results</u>				
	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>	
	0.146	5.32	1.92	6.82	
	0.293	4.79	1.72	6.71	
	0.439	4.32	1.54	6.79	
	0.586	3.89	1.37	6.94	
	0.732	3.50	1.23	7.11	
	0.878	3.15	1.10	7.29	
	1.025	2.84	0.98	7.45	
	1.171	2.56	0.88	7.60	
	1.317	2.31	0.78	7.74	
	1.464	2.08	0.70	7.86	

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
06C	16895	WICONISCO CREEK		
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
23.500	0.910	21.221	6.958	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
35.272	0.692	50.979	0.166	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
2.51	0.077	1.12	0.769	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
7.831	2.527	Tsivoglou	5	
<u>Reach Travel Time (days)</u>	<u>Subreach Results</u>			
2.777	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.278	2.45	0.91	7.64
	0.555	2.40	0.73	7.68
	0.833	2.34	0.59	7.81
	1.111	2.29	0.48	7.96
	1.389	2.24	0.39	8.06
	1.666	2.19	0.31	8.06
	1.944	2.14	0.25	8.06
	2.222	2.09	0.20	8.06
	2.499	2.05	0.16	8.06
	2.777	2.00	0.13	8.06
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
15.950	1.310	21.531	6.968	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
39.698	0.722	55.018	0.183	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
4.71	0.281	1.96	0.788	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
7.719	2.729	Tsivoglou	5	
<u>Reach Travel Time (days)</u>	<u>Subreach Results</u>			
2.842	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.284	4.32	1.57	6.73
	0.568	3.97	1.25	6.55
	0.853	3.64	1.00	6.70
	1.137	3.34	0.80	6.95
	1.421	3.07	0.64	7.22
	1.705	2.82	0.51	7.46
	1.989	2.59	0.41	7.68
	2.273	2.37	0.33	7.86
	2.558	2.18	0.26	8.01
	2.842	2.00	0.21	8.01