pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0022250**
Facility Type	**Municipal**	APS ID	**278096**
Major / Minor	**Minor**	Authorization ID	**1246301**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Biglerville Borough Authority**	Facility Name	**Biglerville STP**
Applicant Address	33 Musselman Avenue	Facility Address	3251 Biglerville Road
	Biglerville, PA 17307-9233		Biglerville, PA 17307
Applicant Contact	Richard Mountfort	Facility Contact	Kevin Bollinger
Applicant Phone	(717) 677-9488	Facility Phone	7176778802
Client ID	64562	Site ID	237897
Ch 94 Load Status		Municipality	Biglerville Borough
Connection Status		County	Adams
Date Application Received	September 24, 2018	EPA Waived?	Yes
Date Application Accepted	October 2, 2018	If No, Reason	

Purpose of Application: Permit renewal for discharge of treated sewage

Summary of Review

1.0 General Discussion

This fact sheet supports the re-issuance of an existing NPDES permit for discharge of treated domestic wastewater from Biglerville Borough's wastewater treatment plant located in Butler Township, Adams County. Biglerville Borough Authority owns and operates the wastewater treatment plant, which provides sanitary services to Biglerville Borough(84.5% of the flow) and Butler Township(15.5%of the flow). The sewer collection system is not combined and there is no bypasses or overflows approved in the collection system. The Sequencing Batch Reactor treatment plant at the site has an annual design capacity of 0.37 MGD, hydraulic design capacity of 0.925MG and an organic design capacity of 750 lbs/day- BOD5. The facility discharge to unnamed tributary of Conewago Creek which is classified for Warm Water Fishes (WWF). The existing NPDES permit was issued on April 18, 2014 with an effective date of May 1, 2014 and expiration date of April 30, 2019. The applicant submitted timely NPDES renewal application to the Department and is currently 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 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

Approve	Deny	Signatures	Date
X		J. Pascal Kwedza, P.E. / Environmental Engineer	December 3, 2019
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D Bebenek, P.E. /Program Manager	

Summary of Review

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.

1.2 Changes to the existing Permit

- UV Light intensity monitoring has been added
- Mass limits were added for Total Lead and Total Copper

1.3 Existing Permit Limits and Monitoring Requirements

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)					
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Instantaneous Maximum	Minimum Measurement Frequency	Required Sample Type
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.018	XXX	0.059	1/day	Grab
CBOD5 Nov 1 - Apr 30	77	123	XXX	25	40	50	1/week	8-Hr Composite
CBOD5 May 1 - Oct 31	46	67	XXX	15	22	30	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	92	138	XXX	30	45	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
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	1/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	1/month	Calculation
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	12	XXX	XXX	3.9	XXX	7.8	1/week	8-Hr Composite

Summary of Review

Ammonia May 1 - Oct 31	4.0	XXX	XXX	1.3	XXX	2.6	1/week	8-Hr Composite
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	6.0	XXX	XXX	2.0	XXX	4	1/week	8-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Copper	XXX	XXX	XXX	0.014	XXX	XXX	1/month	8-Hr Composite
Total Hardness	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite

1.4 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.37
Latitude	39º 55' 9.10"	Longitude	-77º 14' 44.34"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Conewago Creek (WWF)	Stream Code	09140
NHD Com ID	57472663	RMI	0.52 mi
Drainage Area	1.7 mi^2	Yield (cfs/mi^2)	0.0218
Q_{7-10} Flow (cfs)	0.037	Q_{7-10} Basis	USGS gage 01574000
Elevation (ft)	595	Slope (ft/ft)	
Watershed No.	7-F	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation		
Source(s) of Impairment	Agriculture		
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake		Wrightsville Water Supply Company	
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	77.75

Changes Since Last Permit Issuance:

Other Comments:

1.4.1 Water Supply Intake

The nearest downstream water supply intake is approximately 16 miles downstream by Wrightsville Water Supply Company.No impact is expected from this discharge on the intake.

2.0 Treatment Facility Summary

Treatment Facility Name: Biglerville STP

WQM Permit No.	Issuance Date
0185405 A-3	5/24/2016
0185405 A-2	12/22/2015
0185405 A-1	6/27/2006

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Sequencing Batch Reactor	Ultra Violet Light	0.37

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.925	750		Aerobic Digestion	

Changes Since Last Permit Issuance:

Other Comments:

2.1 Treatment Facility

The Biglerville Borough WWTP was originally built in early 1960s. In 1987, Biglerville replaces an old contact stabilization process with a new Fluidyne Sequencing Batch Reactor (SBR) system. The Water Quality Management (WQM) Permit (#0185405 06-1) was amended in 2006, approving an upgrade/expansion of the treatment plant and replacement of a portion of the interceptor. The amendment approved a hydraulic design capacity of 0.925MGD. In 2015 the WQM permit was amended to upgrade headworks and to install an Ultra Violet light disinfection system to replace the Chlorine System. This amendment changed the hydraulic design to coincide with the annual average design of 0.37MGD with no reason for the change. In 2016 the permit was amended to change the screenings system approved for the headworks in 2015. The WQM will need to be amended to include the hydraulic design capacity approved in 2006 if the reason for the reduction cannot be found. The treatment system consists of the following units:

Fine screen with Bar Screen back -up → Influent Pump Station → Sequencing Batch Reactors (2) → UV system → Cascade Aeration → Outfall 001 to an unnamed tributary to Conewago Creek. There are two (2) aerobic digesters on-site, a screw press for sludge dewatering, and two (2) sludge storage pads. Solids are hauled to a landfill for disposal.

2.2 Chemicals

- Aluminum sulfate is added for phosphorous removal
- Mastercat 4230 is added for Copper removal

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from October 1, 2018 to September 30, 2019)

Parameter	SEP-19	AUG-19	JUL-19	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18
Flow (MGD) Average Monthly	0.112	0.171	0.265	0.192	0.368	0.302	0.370	0.352	0.372	0.427	0.540	0.228
Flow (MGD) Daily Maximum	0.148	0.250	0.819	0.400	1.070	0.736	1.218	0.737	1.286	1.037	1.043	0.535
pH (S.U.) Minimum	6.8	7.0	6.9	6.8	6.7	6.5	6.8	6.6	6.7	7.0	7.0	7.2
pH (S.U.) Maximum	7.7	7.4	7.3	7.2	7.1	7.2	7.2	7.2	7.3	7.4	7.5	7.6
DO (mg/L) Minimum	8.0	7.7	8.0	8.1	8.6	8.9	9.5	10.1	9.4	8.8	8.2	7.9
TRC (mg/L) Average Monthly	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
TRC (mg/L) Instant. Maximum	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
CBOD5 (lbs/day) Average Monthly	< 2.7	< 5.0	< 5.8	< 5.2	< 6.8	< 6.6	< 8.0	< 9.8	< 7.1	< 7.2	< 12.4	< 5.6
CBOD5 (lbs/day) Weekly Average	< 3.2	6.9	< 7.4	5.9	7.9	< 8.9	< 10.6	< 15.5	< 8.8	< 9.5	< 17.5	8.5
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
CBOD5 (mg/L) Weekly Average	< 3.0	4.0	< 3.0	3.0	3.0	4.0	< 3.0	4.0	3.0	3.0	3.0	3.0
BOD5 (lbs/day) Raw Sewage Influent Aver. Monthly	216	245	267	349	296	210	215	386	235	170	346	174
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	260	293	489	527	369	302	241	652	322	205	619	196
BOD5 (mg/L) Raw Sewage Influent Aver. Monthly	247	161	139	200	134	110	87	128	103	74	82	97
TSS (lbs/day) Average Monthly	4.0	8.0	11.0	8.0	10	6.0	12	12	6.0	8.0	12	5.0
TSS (lbs/day) Raw Sewage Influent Aver. Monthly	127	235	263	328	291	220	237	652	242	173	278	210

TSS (lbs/day) Raw Sewage Influent Daily Maximum	161	335	182	488	374	291	401	1652	340	202	572	299
TSS (lbs/day) Weekly Average	7.4	11.7	26.2	14	19.9	17.9	21.1	19.1	10.0	15.8	17.5	6.8
TSS (mg/L) Average Monthly	4.0	5.0	5.0	5	4.0	3.0	5	4.0	2.0	3.0	3.0	3.0
TSS (mg/L) Raw Sewage Influent Ave. Monthly	144	152	134	188	128	109	89	228	107	76	63	116
TSS (mg/L) Weekly Average	10	7.0	11.0	10	8.0	6.0	6	7.0	4.0	5.0	4.0	4.0
Fecal Coliform (CFU/100 ml) Geometric Mean	6.0	< 4.0	3.0	< 3.0	2	< 1.0	< 2.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0
Fecal Coliform (CFU/100 ml) Instant. Maximum	56	10	5.0	12	8	3.0	6.0	1.0	12	4.0	2.0	3.0
Nitrate-Nitrite (mg/L) Average Monthly	< 9.1	< 7.3	< 7.4	< 8.9	< 7.3	< 7.6	< 8.2	< 8.8	< 8.8	< 8.6	< 8.5	< 7.7
Nitrate-Nitrite (lbs) Total Monthly	< 241	< 346	< 432	< 462	< 519	< 453	< 645	< 749	< 624	< 614	< 1076	< 442
Total Nitrogen (mg/L) Average Monthly	< 9.6	< 8.2	< 7.9	< 9.4	< 7.8	< 8.21	< 8.7	< 9.6	< 9.3	< 9.1	< 9.0	< 8.4
Total Nitrogen (lbs) Effluent Net Total Monthly	< 254	< 392	< 463	< 487	< 554	< 491	< 686	< 809	< 661	< 652	< 1138	< 489
Total Nitrogen (lbs) Total Monthly	< 254	< 392	< 463	< 487	< 554	< 491	< 686	< 809	< 661	< 652	< 1138	< 489
Total Nitrogen (lbs) Total Annual										< 8358		
Ammonia (lbs/day) Average Monthly	< 0.09	< 0.4	< 0.2	< 0.2	< 0.2	< 0.4	< 0.4	< 0.8	< 0.8	< 0.4	< 0.4	< 0.2
Ammonia (mg/L) Average Monthly	< 0.1	< 0.24	< 0.1	< 0.12	< 0.1	< 0.17	< 0.14	< 0.31	< 0.31	< 0.18	< 0.1	< 0.1
Ammonia (lbs) Total Monthly	< 3.0	< 12	< 6.0	< 6.0	< 7	< 12	< 12	< 22	< 23	< 14	< 12	< 6.0
Ammonia (lbs) Total Annual										< 385		
TKN (mg/L) Average Monthly	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.57	< 0.5	< 0.8	< 0.5	< 0.5	< 0.5	< 0.7
TKN (lbs) Total Monthly	< 13	< 46	< 30	< 26	< 35	< 37	< 41	< 60	< 37	< 37	< 62	< 46

Total Phosphorus (lbs/day) Average Monthly	0.2	0.3	0.3	< 0.3	< 0.2	< 0.2	< 0.3	< 0.3	< 0.2	< 0.3	< 0.6	< 0.2
Total Phosphorus (mg/L) Aver. Monthly	0.2	0.17	0.15	< 0.14	< 0.1	< 0.11	< 0.11	< 0.11	< 0.1	< 0.12	< 0.14	< 0.1
Total Phosphorus (lbs) Effluent Net Total Monthly	5.0	8.0	9.0	< 8.0	< 7	< 7	< 9	< 9.0	< 8	< 9.0	< 17	< 6.0
Total Phosphorus (lbs) Total Monthly	5.0	8.0	9.0	< 8.0	< 7	< 7	< 9	< 9.0	< 8	< 9.0	< 17	< 6.0
Total Phosphorus (lbs) Total Annual										< 125		
Total Copper (mg/L) Average Monthly	0.022	0.008	0.011	0.008	0.007	0.007	0.007	0.013	0.009	0.008	0.009	0.014
Total Hardness (mg/L) Average Monthly	191	177	187	178	107	141	187	188	103	132	119	115

3.1.1 Effluent Violations for Outfall 001, from: November 1, 2018 To: September 30, 2019

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Total Copper	09/30/19	Avg Mo	0.022	mg/L	0.014	mg/L

3.2 Compliance History	
Summary of DMRs:	Discharge Monitoring Reports (DMRs) review for the facility for the last 12 months of operation presented on the table above in section 3.1 indicate permit limits have been met consistently except in September 2019 where Total Copper violation occurred shown on table in section 3.1.1. The violation appeared to be a onetime occurrence.
Summary of Inspections:	The facility was inspected 6 times during the past permit cycle. Inspection reports review for the facility during the period indicate permit limits have been met satisfactorily. Copper limit violations occurred numerous times in 2017. The violations have been addressed with the start of addition of Mastercat 4230 on 12/15/2017.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .37
Latitude 39º 55' 9.10" **Longitude** -77º 14' 44.34"
Wastewater Description: Sewage Effluent

4.1 Basis for Effluent Limitations

In general, the Clean Water Act(AWA) 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.

4.1.1 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: TRC is not applicable to this discharge

4.2 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:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34

4.3 Water Quality-Based Limitations

4.3.1 Stream flows

These flows were determined by correlating with the yield of USGS gage No. 01574000 on the West Conewago Creek near Manchester. The $Q_{7\text{-}10}$ and drainage area at the gage is 11.1 ft^3/s and 510mi^2 respectively. The $Q_{30\text{-}10}$ and $Q_{1\text{-}10}$ at the gage are 17.7 ft^3/s and 8 ft^3/s, respectively as well. The resulting yields are as follows:

- $Q_{7\text{-}10}$ = (11.1ft^3/s)/510 mi^2 = 0.0218$ft^3/s/ mi^2$
- $Q_{30\text{-}10}$ / $Q_{7\text{-}10}$ = 1.59
- $Q_{1\text{-}10}$ / $Q_{7\text{-}10}$ = 0.72

The drainage area at the point of discharge taken from the previous protection report = 1.7 mi^2.

The Q_{7-10} at discharge = 1.7 mi^2 x 0.0218 $ft^3/s/mi^2$ = 0.037 ft^3/s.

4.3.2 NH_3N Calculations

NH_3N 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 NH_3N criteria used in the attached computer model of the stream:

- Discharge pH = 6.9 (DMR median)
- Discharge Temperature = 25 ^{o} C (Default)
- Stream pH = 7.0 ((Default)
- Stream Temperature = 20 ^{o}C ((Default)
- Background NH_3-N = 0.0 (Default)
- Discharge flow = 0.37MGD

4.3.3CBOD$_5$

WQM7.0 which is a steady state model that simplifies many natural processes into a reach-by-reach simulation was used for the water quality analysis. The attached result of the WQM 7.0 stream model (attachment B) indicates that an average monthly limit of 25mg/l is adequate to protect the water quality of the stream. However due to anti-backsliding, the previous limit of 15mg/l for the summer months and 25mg/l for winter months will remain with their corresponding mass limits calculated following the equation discussed in section 4.2. Past DMRs and inspection reports show the facility has been consistently achieving these limits.

4.3.4 NH_3-N

The attached model results of the WQM 7.0 stream model (attachment B) also indicates that a summer limit of 1.6 mg/l NH_3 as a monthly average is necessary to protect the aquatic life from toxicity effects. This limit is less stringent than the existing summer limit of 1.3mg/l. Due to anti-backsliding restrictions, the existing summer limit of 1.3mg/l and winter limit of 3.9mg/l will remain in the permit with their corresponding mass limits calculated following the equation discussed in section 4.2

4.3.5 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 as well, this limit will be continued in the renewed permit with a daily monitoring requirement per DEP guidance.

4.3.6 Total Suspended Solids(TSS):

There is no water quality criteria for TSS. The existing limit of 30 mg/l AML based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1), 40 CFR 133.102b(1), 25 PA § 92a.47(a)(1) and 92a.47(a)(2) will remain in the permit. Mass limit were calculated using the equation discussed in section 4.2

4.3.7 Chesapeake Bay Strategy:

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay Foundation 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 will receive 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) will be 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). Any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away.

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 and Phase 2 in March 2012. In accordance with the Phase 2 WIP and its supplement, 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. This facility is, classified as a phase 4, and has been monitoring Nitrate-Nitrite as N, Total Kjeldahl Nitrogen and Total Nitrogen weekly and will continue to monitor them weekly during this permit cycle to collect data. There is limitation on Total Phosphorus in the permit, no monitoring is required.

4.3.8 Phosphorus

The existing average monthly phosphorus limitation of 2mg/l and maximum daily limitation of 4mg/l established in the permit to control phosphorus discharges to the Lower Susquehanna River Basin had been superseded by the Chesapeake Bay Strategy/TMDL but would be continued due to anti-backsliding. The existing mass limit of 6lbs/day will remain as well.

4.3.9 Total Residual Chlorine:

The permittee installed a UV disinfection system to replace the chlorine disinfection system at the facility during the last permit cycle. Since UV rather than chlorine is currently utilized for disinfection, Total Residual Chlorine limitation is no longer applicable to this discharge and has been removed from the permit. Daily monitoring of UV light intensity will be required in the permit.

4.3.10 Toxics

A reasonable potential (RP) analysis was done for pollutants submitted with the application. All pollutants sampled were entered into a Toxics Screening Analysis spreadsheet to determine if any pollutants were parameters of concern that require PENTOXSD modeling. All pollutants above the most stringent Chapter 93 criteria are considered parameters of concern. This also includes samples that resulted in non-detect, but the method detection limit that was used is higher than DEP's target quantitation limit (QL). All pollutants that were determined to be candidates for PENTOXSD modeling were entered into the PENTOXSD model. The most stringent WQBELs recommended by the PENTOXSD model were then entered into the same Toxics Screening Analysis spreadsheet in order to determine which parameters of concern needs limitation or monitoring. Total Copper and Total Lead were determined to be parameters of concern and were analyzed with the PENTOXSD Model. The most stringent WQBELs recommended by the PENTOXSD model presented in attachment C were then entered into the same Toxics Screening Analysis spreadsheet (attachment D) in order to determine if limitation or monitoring was necessary. A monthly average limit of 0.014 mg/l was recommended for Total Copper and a monthly limit of 0.06mg/l was recommended for Total Lead. Total Lead was reported as non-detect using a less sensitive method. The permit was given an opportunity to re-sample lead using DEP's target QL. The permittee submitted 3 additional non-detect sample results collected weekly using DEP'S target QL of 0.001 mg/L. Total Lead was no longer a pollutant of concern when added to the Toxic screening spreadsheet and was not added to the draft permit. Hardness monitoring requirement in the permit will remain. Mass limits will be calculated for Total Lead and Total Copper.

The recommended limit follows the logic presented in DEPs SOP, to establish limits in the permit where the maximum reported concentration exceeds 50% of the WQBEL, or for non-conservative pollutants to establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL, or to establish monitoring requirements for conservative pollutants where the maximum reported concentration is between 10% - 50% of the WQBEL

4.3.11 TDS, Sulfate, Chloride, Bromide & 1,4-Dioxane

Under the authority of §92a.61, DEP has determined it should implement increased monitoring in NPDES permits for TDS, sulfate, chloride, bromide, and 1,4-dioxane. The following approach will be implemented for point source discharges upon issuance or reissuance of an individual NPDES permit:

- Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.

- Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.

- Where the concentration of 1,4-dioxane (CAS 123-91-1) in a discharge exceeds 10 µg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for 1,4-dioxane. Discharges of 0.1 MGD or less should monitor and report for 1,4-dioxane if the concentration of 1,4-dioxane in the discharge exceeds 100 µg/L.

The maximum daily TDS discharge submitted with the application is 218 mg/L which is equivalent to 673lbs/day based on the permitted flow of 0.37 MGD. The discharge level for TDS is below the minimum 1000 mg/l and 20,000lbs/day, to require monitoring, therefore no monitoring of TDS, Chloride, Sulfate, and Bromide will be required in the permit. There is no data for 1,4-dioxane, therefore no monitoring is required for 1,4-dioxane

4.3.12 Influent BOD and TSS Monitoring

The permit will include 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.

4.3.13 Pretreatment Requirements

The design annual average flow of the treatment plant is 0.37 MGD and the facility receives flow from no significant Industrial users. There is no approved pretreatment program for the facility, 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 Stormwater:

No storm water outfall is associated with this facility

5.3 Special Permit Conditions

The permit will contain the following special conditions:

1. Stormwater Prohibition. 2. Approval Contingencies, 3. Management of collected screenings, slurries, sludges and other solids 4. Restrictions on flow acceptance under certain conditions.

5.4 Biosolids Management

Digested sludge is dewatered using a filter belt press and hauled off site to landfill.

5.5 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.

5.6 Class A Wild Trout Fisheries

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

5.7 303d Listed Streams:

The discharge is located on a 303d listed stream segment within the impaired Upper Conewago Creek watershed for aquatic life and recreational use due to pathogens and siltation caused by agricultural activities .A draft TMDL was developed for the Upper Conewago Creek watershed. The document which is not final allocated the existing Total Suspended Solids load of 92lbs/day or 33,580 lb/yr. in the permit to this Facility. No further action is needed at this time. If the finalized TMDL change the allocation, the permit will be amended to address it.

5.8 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).

5.9 Effluent Monitoring

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" (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	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 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5 Nov 1 - Apr 30	77	123	XXX	25	40	50	1/week	8-Hr Composite
CBOD5 May 1 - Oct 31	46	67	XXX	15	22	30	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	92	138	XXX	30	45	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	2,000 Geo Mean	XXX	10.000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1.000	1/week	Grab
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	12	XXX	XXX	3.9	XXX	7.8	1/week	8-Hr Composite

Outfall 001, Continued (from Permit Effective Date through Permit Expiration Date)

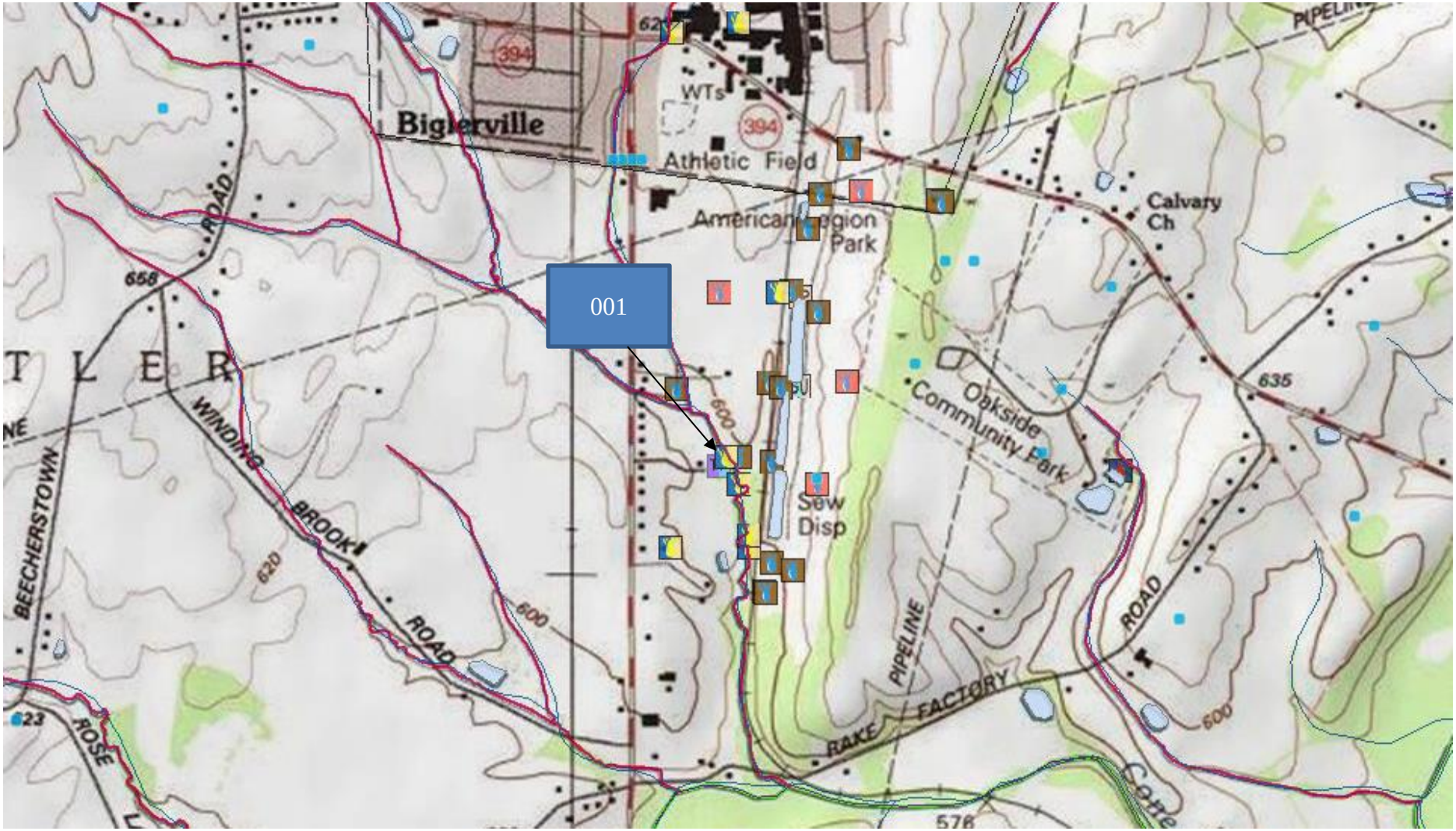
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia May 1 - Oct 31	4.0	XXX	XXX	1.3	XXX	2.6	1/week	8-Hr Composite
TKN	XXX	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Phosphorus	6.0	XXX	XXX	2.0	XXX	4	1/week	8-Hr Composite
Total Copper	0.043	XXX	XXX	0.014	XXX	XXX	1/month	8-Hr Composite
Total Hardness	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
UV Light Intensity (mW/cm^2)	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Recorded

Compliance Sampling Location: At Outfall 001

7.0 Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☒	PENTOXSD for Windows Model (see Attachment **C**)
☒	TRC Model Spreadsheet (see Attachment **D**)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Toxics Screening Analysis Spreadsheet (see Attachment **E**)
☒	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: 1. Establishing effluent limitation for individual sewage permit,
☐	Other:

8. Attachment

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07F	9140	Trib 09140 to Conewago 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)
0.520	Biglerville STP	PA0022250	0.370	CBOD5	25		
				NH3-N	1.61	3.22	
				Dissolved Oxygen			5

Permit No. PA0022250

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
07F	9140	Trib 09140 to Conewago Creek	**0.520**	595.00	1.70	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	0.022	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
Biglerville STP	PA0022250	0.3700	0.3700	0.3700	0.000	25.00	6.90

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

Permit No. PA0022250

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
07F	9140	Trib 09140 to Conewago Creek	**0.100**	583.00	2.04	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	0.022	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
		0.0000	0.0000	0.0000	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

Permit No. PA0022250

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07F	9140	Trib 09140 to Conewago Creek

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												
0.520	0.04	0.00	0.04	.5724	0.00541	.467	9.16	19.63	0.14	0.180	24.70	6.91
Q1-10 Flow												
0.520	0.03	0.00	0.03	.5724	0.00541	NA	NA	NA	0.14	0.182	24.78	6.90
Q30-10 Flow												
0.520	0.06	0.00	0.06	.5724	0.00541	NA	NA	NA	0.15	0.176	24.53	6.91

Permit No. PA0022250

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	0.72	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.59	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

Permit No. PA0022250

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07F	9140	Trib 09140 to Conewago 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
0.520	Biglerville STP	7.29	7.63	7.29	7.63	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
0.520	Biglerville STP	1.46	1.61	1.46	1.61	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)		
0.52	Biglerville STP	25	25	1.61	1.61	5	5	0	0

Permit No. PA0022250

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07F	9140	Trib 09140 to Conewago Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.520	0.370	24.696	6.905
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
9.158	0.467	19.626	0.143
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
23.60	1.491	1.51	1.005
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.197	26.944	Owens	5
Reach Travel Time (days)			
0.180			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.018	22.83	1.49	5.42
0.036	22.08	1.46	5.59
0.054	21.36	1.43	5.72
0.072	20.66	1.41	5.84
0.090	19.98	1.38	5.94
0.108	19.33	1.36	6.02
0.126	18.70	1.33	6.11
0.144	18.08	1.31	6.18
0.162	17.49	1.29	6.25
0.180	16.92	1.26	6.32

Permit No. PA0022250

C. PENTOXSD Model Results

PENTOXSD Analysis Results

Recommended Effluent Limitations

SWP Basin	Stream Code:	Stream Name:
07F	9140	Trib 09140 to Conewago Creek

RMI	Name	Permit Number	Disc Flow (mgd)
0.52	Biglerville STP	PA0022250	0.3700

Parameter	Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L)	Most Stringent WQBEL Criterion
COPPER	13.897	AFC	21.681	13.897	AFC
LEAD	5.62	CFC	8.768	5.62	CFC

Permit No. PA0022250

PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
9140	0.52	595.00	1.70	0.00000	0.00	☑

Stream Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	Tributary pH	Stream Hard	Stream pH	Analysis Hard	Analysis pH
	(cfsm)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.0218	0	0	0	0	0	0	0	100	7	0	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow	Permitted Disc Flow	Design Disc Flow	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard	Disc pH
		(mgd)	(mgd)	(mgd)						(mg/L)	
Biglerville STP	PA0022250	0.37	0.37	0.37	0	0	0	0	0	152	6.9

Parameter Data

Parameter Name	Disc Conc	Trib Conc	Disc Daily CV	Disc Hourly CV	Steam Conc	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc
	(µg/L)	(µg/L)			(µg/L)					(µg/L)
COPPER	30	0	0.5	0.5	0	0	0	0	1	0
LEAD	50	0	0.5	0.5	0	0	0	0	1	0

Permit No. PA0022250

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
9140	0.10	583.00	2.04	0.00000	0.00	☑

Stream Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	Tributary pH	Stream Hard	Stream pH	Analysis Hard	Analysis pH
	(cfsm)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.0218	0	0	0	0	0	0	0	100	7	0	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow	Permitted Disc Flow	Design Disc Flow	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard	Disc pH
		(mgd)	(mgd)	(mgd)						(mg/L)	
		0	0	0	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Conc	Trib Conc	Disc Daily CV	Disc Hourly CV	Steam Conc	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc
	(µg/L)	(µg/L)			(µg/L)					(µg/L)
COPPER	0	0	0.5	0.5	0	0	0	0	1	0
LEAD	0	0	0.5	0.5	0	0	0	0	1	0

Permit No. PA0022250

PENTOXSD Analysis Results

Hydrodynamics

SWP Basin	Stream Code:	Stream Name:
07F	9140	Trib 09140 to Conewago Creek

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Trav Time (days)	CMT (min)
Q7-10 Hydrodynamics											
0.520	0.0371	0	0.0371	0.57239	0.0054	0.4666	9.1584	19.626	0.1426	0.18	.018
0.100	0.0445	0	0.0445	NA	0	0	0	0	0	0	NA
Qh Hydrodynamics											
0.520	0.4171	0	0.4171	0.57239	0.0054	0.5776	9.1584	15.857	0.1871	0.1372	.632
0.100	0.4891	0	0.4891	NA	0	0	0	0	0	0	NA

Permit No. PA0022250

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number
0.52	**Biglerville STP**	**PA0022250**

AFC

Q7-10: **CCT (min)** 0.018 **PMF** 1 **Analysis pH** 6.905 **Analysis Hardness** 148.837

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
COPPER	0	0	0	0	19.548	20.362	21.681
	Dissolved WQC. Chemical translator of 0.96 applied.						
LEAD	0	0	0	0	99.296	135.455	144.225
	Dissolved WQC. Chemical translator of 0.733 applied.						

CFC

Q7-10: **CCT (min)** 0.018 **PMF** 1 **Analysis pH** 6.905 **Analysis Hardness** 148.837

Parameter	Stream Conc. (µg/L)	Stream CV	Trib Conc. (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
COPPER	0	0	0	0	12.58	13.104	13.953
	Dissolved WQC. Chemical translator of 0.96 applied.						
LEAD	0	0	0	0	3.869	5.278	5.62
	Dissolved WQC. Chemical translator of 0.733 applied.						

THH

Q7-10: **CCT (min)** 0.018 **PMF** NA **Analysis pH** NA **Analysis Hardness** NA

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
COPPER	0	0	0	0	NA	NA	NA
LEAD	0	0	0	0	NA	NA	NA

CRL

Qh: **CCT (min)** 0.632 **PMF** 1

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
COPPER	0	0	0	0	NA	NA	NA
LEAD	0	0	0	0	NA	NA	NA

Permit No. PA0022250

D. Toxics Screening Spreadsheet

TOXICS SCREENING ANALYSIS
WATER QUALITY POLLUTANTS OF CONCERN
VERSION 2.7

CLEAR FORM

Facility: **Biglerville STP** NPDES Permit No.: **PA0022250** Outfall: **001**
Analysis Hardness (mg/L): **152** Discharge Flow (MGD): **0.37** Analysis pH (SU): **7**
Stream Flow, Q_{7-10} (cfs): **0.037**

Parameter	Maximum Concentration in Application or DMRs (µg/L)		Most Stringent Criterion (µg/L)	Candidate for PENTOXSD Modeling?	Most Stringent WQBEL (µg/L)	Screening Recommendation
Total Dissolved Solids		218000	500000	No		
Chloride		5000	250000	No		
Bromide	<	50	N/A	No		
Sulfate		21000	250000	No		
Total Aluminum			750			
Total Antimony			5.6			
Total Arsenic			10			
Total Barium			2400			
Total Beryllium			N/A			
Total Boron			1600			
Total Cadmium			0.369			
Total Chromium			N/A			
Hexavalent Chromium			10.4			
Total Cobalt			19			
Total Copper		30	13.3	Yes	13.897	Establish Limits
Free Available Cyanide			5.2			
Total Cyanide			N/A			
Dissolved Iron			300			
Total Iron			1500			
Total Lead	<	1	5.4	No (Value < QL)		
Total Manganese			1000			
Total Mercury			0.05			
Total Nickel			74.3			
Total Phenols (Phenolics)			5			
Total Selenium			5.0			
Total Silver			7.8			
Total Thallium			0.24			
Total Zinc	<	50	170.8	No		
Total Molybdenum			N/A			