pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0020036**
Facility Type	**Municipal**	APS ID	**1042613**
Major / Minor	**Minor**	Authorization ID	**1360625**

Applicant and Facility Information

Applicant Name	**Blossburg Municipal Authority**	Facility Name	**Blossburg Municipal Authority Wastewater Treatment Plant**
Applicant Address	241 Main Street	Facility Address	93 East Creek Road
	Blossburg, PA 16912-1125		Blossburg, PA 16912-1110
Applicant Contact	George Lloyd	Facility Contact	George Lloyd
Applicant Phone	(570) 638-2452	Facility Phone	(570) 638-2452
Client ID	61974	Site ID	248315
Ch 94 Load Status	Existing Hydraulic Overload	Municipality	Blossburg Borough
Connection Status	No Exceptions Allowed	County	Tioga
Date Application Received	July 6, 2021	EPA Waived?	No
Date Application Accepted	July 13, 2021	If No, Reason	Significant CB Discharge
Purpose of Application	Renewal of an existing NPDES permit for the discharge of treated sewage.		

Public Participation

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

Approve	Deny	Signatures	Date
X		*Derek S. Garner* Derek S. Garner / Project Manager	3/30/2022
X		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	3/31/2022

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.45
Latitude	41º 41' 38.69"	Longitude	-77º 4' 25.35"
Quad Name	Blossburg	Quad Code	0529
Wastewater Description:	Sewage Effluent		

Receiving Waters	Tioga River	Stream Code	30990
NHD Com ID	57353107	RMI	36.68
Drainage Area	91	Yield (cfs/mi^2)	0.061
Q_{7-10} Flow (cfs)	5.59	Q_{7-10} Basis	Streamgage No. 01516350
Elevation (ft)	1300	Slope (ft/ft)	0.015
Watershed No.	4-A	Chapter 93 Class.	CWF
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a
Assessment Status	Impaired		
Cause(s) of Impairment	Metals, pH		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final	Name	Tioga River

Nearest Downstream Public Water Supply Intake	PA-NY Border		
PWS Waters	Tioga River	Flow at Intake (cfs)	27.88
PWS RMI	13.14	Distance from Outfall (mi)	23.73

Treatment Facility Summary

The Blossburg Municipal Authority (“BMA”) Wastewater Treatment Plant (“WWTP”) is operated under WQM Permit No. 5902403. Influent flows are screened by a manual bar screen and comminutor and pumped to a splitter box. The splitter box diverts wastewater to one of two clarigesters (a primary clarifier stacked on an anaerobic digester) for primary clarification. From the clarigesters the wastewater flows via gravity to a trickling filter. A portion of the flow is then recirculated back to the head of the trickling filter, while the majority of the wastewater flows via gravity to the secondary clarifier. After secondary clarification wastewater is disinfected in two chlorine contact tanks operated in series. The disinfected effluent is ultimately discharged to the Tioga River.

Sludge that is anaerobically digested at the bottom of the clarigesters is wasted to four sand drying beds. Sludge that is wasted from the secondary clarifier is wasted to a separate set of two drying beds. The dried sludge is either hauled to the Northern Tier Solid Waste Authority Landfill in Burlington or used as a soil amendment in regional mine reclamation projects. The facility does not have a biosolids program.

WQM Permit No. 5902403 was amended in November 2019 to approve significant upgrades to the existing treatment plant. The upgrades include; a new mechanical fine screen, upgrades to the existing influent pumps station, replacement of the existing force main, new headworks building, new grit removal system, new sludge dewatering system, installation of a new sequencing batch reactor (SBR) process, new aerobic digestion facilities, new equalization system, tertiary filtration, chemical feed systems, UV disinfection, and a new outfall. The upgraded treatment plant will increase the annual average design flow from 0.40 to 0.45 MGD and the design organic capacity from 680 to 1,020 lb/day. Construction of the upgrades has not yet begun.

Compliance History

On November 17, 2016 DEP and BMA entered into a Consent Order and Agreement ("CO&A") that required BMA to construct significant upgrades to the existing wastewater treatment plant to address chronic effluent limit exceedances. As part of the CO&A, BMA was required to develop a Corrective Action Plan ("CAP"). The CAP required construction of the facility upgrades to start by September 30, 2020 and start-up of the upgrades by September 30, 2022. Neither of these deadlines were met, and the CO&A was amended in May 2021 with updated milestone dates; commence construction by October 31, 2022 and start-up by October 31, 2024.

The following violations occurred during the existing permit's term:

Violation ID	Violation Date	Violation Type	Violation Type Description	Resolved Date
803305	10/30/2017	92A.47(C)	NPDES - Illegal discharge to waters of the Commonwealth from a sanitary sewer overflow (SSO)	12/6/2017
816035	4/24/2018	92A.44	NPDES - Violation of effluent limits in Part A of permit	5/8/2018
820304 (1)	5/31/2018	CSL201	CSL - Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth	6/21/2018
820449 (2)	3/2/2018	CSL201	CSL - Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth	6/25/2018
820450 (3)	4/16/2018	CSL201	CSL - Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth	6/25/2018
842078	1/28/2019	92A.44	NPDES - Violation of effluent limits in Part A of permit	2/19/2019
842079	11/26/2018	CSL201	CSL - Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth	2/19/2019
854629 (4)	6/18/2019	CSL201	CSL - Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth	7/3/2019
868277	10/31/2019	CSL201	CSL - Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth	11/26/2019
876979	2/13/2020	92A.44	NPDES - Violation of effluent limits in Part A of permit	2/20/2020
884141	4/30/2020	CSL201	CSL - Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth	5/7/2020
904904 (5)	12/24/2020	CSL201	CSL - Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth	12/27/2020
919419 (6)	5/10/2021	CSL201	CSL - Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth	6/4/2021
924971	7/12/2021	CSL201	CSL - Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth	8/2/2021
931659	9/23/2021	CSL201	CSL - Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth	3/17/2022
936294	10/29/2021	CSL201	CSL - Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth	11/22/2021

(1) SSO at the sewer plant lift station from approximately 5:30 pm on May 11 until 11:00 pm on May 11. It was estimated that 0.02145 MG of sewage was discharged onto the ground adjacent to the Tioga River during the event.
(2) SSO at sewer plant lift station on March 02, 2018. It was estimated by BMA that 0.28 MG was discharged during the event.
(3) BMA estimated that 0.0765 MG of sewage was discharged onto the ground adjacent to the Tioga River during the event.
(4) SSO event which began on 6/18/2019. 5 day follow up letter estimated that approximately 1.57 MG of sewage was discharge onto the ground adjacent to the Tioga River.
(5) Area wide flood event.
(6) Unauthorized discharge due to high flows, approximately 130,000 gallons discharged.

There are no open violations associated with the permittee.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.45
Latitude 41º 41' 39.10" **Longitude** -77º 4' 25.20"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Water Quality-Based Limitations ("WQBELs")

DEP models in-stream conditions to determine if WQBELs are appropriate. Models were created using WQM 7.0 v1.0b for CBOD5, ammonia-N, and dissolved oxygen and the Toxics Management Spreadsheet v1.3 ("TMS") for toxics. Both models were run at the proposed increased design flow of 0.45 MGD to ensure water quality is not impacted at the higher rate of discharge.

The water quality model WQM 7.0 v1.0b is used to determine the WQBELs for dissolved oxygen, CBOD5 and ammonia-n (NH3-N) based on a multiple-discharge analysis, if applicable. The model assumes complete and instantaneous mixing with the receiving surface water. The reach chosen to model the in-stream characteristics is appropriate as a recovery in dissolved oxygen levels is demonstrated. The modeling output is as follows:

Parameter	Discharge Conc. (mg/l)	Effluent Limitations		
		30 Day Average (mg/l)	Maximum (mg/l)	Minimum (mg/l)
CBOD5	25	25		
NH3-N	25	25	50	
Dissolved Oxygen	3			3

The input concentration for CBOD5 is the current average monthly technology-based concentration limitation in the existing permit. The ammonia-N and dissolved oxygen input concentrations of 25 and 3 mg/l, respectively, are typical concentrations contained within treated effluent. Based on the model output (attached), no WQBELs are recommended for CBOD5, ammonia-n and dissolved oxygen.

Unlike WQM 7.0 v1.0b, the TMS is a single discharge model that does not assume instantaneous mixing with the receiving surface water upon discharge, but instead, assigns a partial mixing factor based upon surface water and discharge characteristic.

Maximum concentrations for pollutants reported in the effluent testing section of the application as well as historic sample results for metals currently in the existing NPDES permit were entered into the TMS to determine if the pollutant requires limits are monitoring requirements. The TMS output results (attached) indicate no limits or monitoring requirements are necessary.

Total residual chlorine ("TRC") limitations were evaluated using the TRC_CALC spreadsheet (attached). The existing design flow of 0.40 MGD was used since upon expansion to 0.45 MGD the facility will switch to UV disinfection. The spreadsheet indicates the existing BAT effluent limitations are protective of the receiving water.

The existing permit requires total phosphorus limits of 2.0 mg/l average monthly, 3.0 mg/l weekly average, and 4.0 mg/l instantaneous maximum since the discharge is upstream of Tioga Lake. A Lake Trophic Survey was conducted in 2006 to determine if phosphorus limits were necessary to protect water quality of the lake. The survey data was input into DEP's lake model. The model output (attached) indicates that no additional point source controls are required at this time.

Best Professional Judgment (BPJ) Limitations

DEP proposes to retain effluent monitoring requirements for ammonia-n and dissolved oxygen, as well as influent monitoring for BOD5 and TSS to continue to characterize the wastewater.

The existing permit established annual monitoring requirements for bromide based on sample results reported in the previous application. A review of the annual sample results since permit renewal indicates bromide has not been detected during this permit cycle. Accordingly, DEP recommends that bromide monitoring requirements are removed from the permit.

The abovementioned CO&A requires the upgraded WWTP to be operational by October 31, 2024, which includes a new UV disinfection system. Accordingly, DEP has proposed to remove TRC requirements and establish UV requirements effective November 1, 2024 through the permit's expiration date.

Total Maximum Daily Load (TMDL)

The Tioga River TMDL establishes abandoned mine drainage ("AMD") related load and waste load allocations for non-point and point source discharges, respectively. A waste load allocation was not assigned to the BMA WWTP. However, to verify that the facility is not contributing to the impairment of Tioga River, annual monitoring requirements for the metals traditionally associated with AMD (aluminum, iron, and manganese) were established in the existing permit. The annual monitoring results are as follows:

Parameter	WQ Criteria (mg/l)	Sample Results (mg/l)			
Aluminum	0.75	0.236	0.117	0.103	0.156
Iron	1.5	0.523	0.508	0.926	0.803
Manganese	1.0	0.278	0.194	0.274	0.561

Annual monitoring results indicate that none of the parameters are discharged in concentrations that exceed water quality criterion. Since a discharge below criteria is generally not anticipated to add to the receiving water body's impairment, DEP has proposed to eliminate monitoring requirements for aluminum, iron, and manganese.

Chesapeake Bay

Pennsylvania's Phase 3 Watershed Implementation Plan ("WIP") Wastewater Supplement (Revised, September 13, 2021) identifies the BMA WWTP as a Phase 3 facility with a total nitrogen cap load of 7,306 lbs/yr and a total phosphorus cap load of 974 lbs/yr. These cap loads are unchanged from previous phases of the WIP and match the existing cap loads currently established in the permit. The WIP states that expansions by any significant sewage discharger, such as BMA, will not result in any increase in cap loads. Accordingly, no adjustment is needed for the proposed expansion from 0.4 to 0.45 MGD.

Anti-Backsliding

Per 40 CFR § 122.44(l)(2)(i)(B)(1), DEP has proposed to eliminate monitoring requirements for bromide, aluminum, iron, and manganese based on sample results that were not available at the time of the existing permit's renewal.

Existing Effluent Limitations and Monitoring Requirements

The existing effluent limitations and monitoring requirements are as follows:

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	80	130	XXX	25.0	40.0	50	1/week	8-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids	100	150	XXX	30.0	45.0	60	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ammonia-Nitrogen	Report	Report	XXX	Report	Report	XXX	2/week	8-Hr Composite
Total Phosphorus	6.5	10	XXX	2.0	3.0	4	2/week	8-Hr Composite
Aluminum, Total	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Iron, Total	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Manganese, Total	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Bromide	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite

Compliance Sampling Location: Outfall 001

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

Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	2/week	8-Hr Composite
Kjeldahl---N	Report	XXX	XXX	Report	XXX	2/week	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/week	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	8-Hr Composite
Net Total Nitrogen	Report	7306	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	974	XXX	XXX	XXX	1/month	Calculation

Compliance Sampling Location: Outfall 001

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, 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 October 31, 2024.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	80	130	XXX	25.0	40.0	50	1/week	8-Hr Composite
Total Suspended Solids	100	150	XXX	30.0	45.0	60	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 as N	XXX	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Nitrate-Nitrite as N (Total Load, lbs) (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 (Total Load, lbs) (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia-Nitrogen	Report	Report	XXX	Report	Report	XXX	2/week	8-Hr Composite
Ammonia-Nitrogen (Total Load, lbs) (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

Outfall 001 , Continued (from Permit Effective Date through October 31, 2024)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Total Kjeldahl Nitrogen (Total Load, lbs) (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	6.5	10	XXX	2.0	3.0	4	2/week	8-Hr Composite
Total Phosphorus (Total Load, lbs) (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

Compliance Sampling Location: Outfall 001

Outfall 001, Effective Period: November 1, 2024 through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum 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	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	90	150	XXX	25.0	40.0	50	1/week	8-Hr Composite
Total Suspended Solids	110	165	XXX	30.0	45.0	60	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
Ultraviolet light transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
Nitrate-Nitrite as N	XXX	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Nitrate-Nitrite as N (Total Load, lbs) (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 (Total Load, lbs) (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia-Nitrogen	Report	Report	XXX	Report	Report	XXX	2/week	8-Hr Composite
Ammonia-Nitrogen (Total Load, lbs) (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Total Kjeldahl Nitrogen (Total Load, lbs) (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	7.5	11	XXX	2.0	3.0	4	2/week	8-Hr Composite

Outfall 001 , Continued (from November 1, 2024 through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Phosphorus (Total Load, lbs) (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

Compliance Sampling Location: Outfall 001

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Maximum	Instant. Maximum		
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab

Compliance Sampling Location: Outfall 001

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Total Nitrogen (lbs) Effluent Net	XXX	7306 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Ammonia (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs) Effluent Net	XXX	974 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: Outfall 001

Input Data WQM 7.0

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
30990	TIOGA RIVER	**38.680**	1294.00	91.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.061	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.50	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
Blossburg WWTP	PA0020036	0.4500	0.4500	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	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
30990	TIOGA RIVER	**35.820**	1209.00	102.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.061	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.50	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	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
04A	30990	TIOGA RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (ºC)	Analysis pH
Q7-10 Flow												
38.680	5.55	0.00	5.55	.6188	0.00563	.725	39.05	53.84	0.22	0.802	20.50	6.53
Q1-10 Flow												
38.680	4.61	0.00	4.61	.6188	0.00563	NA	NA	NA	0.20	0.880	20.59	6.54
Q30-10 Flow												
38.680	7.49	0.00	7.49	.6188	0.00563	NA	NA	NA	0.25	0.688	20.38	6.52

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	0.83	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.35	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
04A	30990	TIOGA RIVER

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
38.680	Blossburg WWT	21.28	50	21.28	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
38.680	Blossburg WWT	2.07	25	2.07	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
38.68	Blossburg WWTP	25	25	25	25	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
04A	30990	TIOGA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
38.680	0.400	20.501	6.531
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
39.045	0.725	53.840	0.218
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.31	0.647	2.51	0.728
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.717	11.793	Tsivoglou	6
Reach Travel Time (days)			
0.802			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.080	4.08	2.37	7.91
0.160	3.87	2.23	8.02
0.241	3.67	2.10	8.10
0.321	3.48	1.99	8.16
0.401	3.30	1.87	8.17
0.481	3.13	1.77	8.17
0.561	2.97	1.67	8.17
0.642	2.82	1.57	8.17
0.722	2.67	1.48	8.17
0.802	2.53	1.40	8.17

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
04A	30990	TIOGA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
38.680	Blossburg WWTP	PA0020036	0.450	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

Discharge Information

Instructions | Discharge | Stream

Facility: **BMA WWTP** NPDES Permit No.: **PA0020036** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Sewage**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.45	100	7						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		264									
	Chloride (PWS)	mg/L		112									
	Bromide	mg/L	<	0.5									
	Sulfate (PWS)	mg/L		40.3									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	mg/L		0.156									
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L											
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	mg/L		0.926									
	Total Lead	µg/L											
	Total Manganese	mg/L		0.561									
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L											
	Total Silver	µg/L											
	Total Thallium	µg/L											
	Total Zinc	µg/L											
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

Group 3	Carbon Tetrachloride	µg/L	<										
	Chlorobenzene	µg/L											
	Chlorodibromomethane	µg/L	<										
	Chloroethane	µg/L	<										
	2-Chloroethyl Vinyl Ether	µg/L	<										
	Chloroform	µg/L	<										
	Dichlorobromomethane	µg/L	<										
	1,1-Dichloroethane	µg/L	<										
	1,2-Dichloroethane	µg/L	<										
	1,1-Dichloroethylene	µg/L	<										
	1,2-Dichloropropane	µg/L	<										
	1,3-Dichloropropylene	µg/L	<										
	1,4-Dioxane	µg/L	<										
	Ethylbenzene	µg/L	<										
	Methyl Bromide	µg/L	<										
	Methyl Chloride	µg/L	<										
	Methylene Chloride	µg/L	<										
	1,1,2,2-Tetrachloroethane	µg/L	<										
	Tetrachloroethylene	µg/L	<										
	Toluene	µg/L	<										
	1,2-trans-Dichloroethylene	µg/L	<										
	1,1,1-Trichloroethane	µg/L	<										
	1,1,2-Trichloroethane	µg/L	<										
	Trichloroethylene	µg/L	<										
	Vinyl Chloride	µg/L	<										
Group 4	2-Chlorophenol	µg/L	<										
	2,4-Dichlorophenol	µg/L	<										
	2,4-Dimethylphenol	µg/L	<										
	4,6-Dinitro-o-Cresol	µg/L	<										
	2,4-Dinitrophenol	µg/L	<										
	2-Nitrophenol	µg/L	<										
	4-Nitrophenol	µg/L	<										
	p-Chloro-m-Cresol	µg/L	<										
	Pentachlorophenol	µg/L	<										
	Phenol	µg/L	<										
	2,4,6-Trichlorophenol	µg/L	<										
Group 5	Acenaphthene	µg/L	<										
	Acenaphthylene	µg/L	<										
	Anthracene	µg/L	<										
	Benzidine	µg/L	<										
	Benzo(a)Anthracene	µg/L	<										
	Benzo(a)Pyrene	µg/L	<										
	3,4-Benzofluoranthene	µg/L	<										
	Benzo(ghi)Perylene	µg/L	<										
	Benzo(k)Fluoranthene	µg/L	<										
	Bis(2-Chloroethoxy)Methane	µg/L	<										
	Bis(2-Chloroethyl)Ether	µg/L	<										
	Bis(2-Chloroisopropyl)Ether	µg/L	<										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<										
	4-Bromophenyl Phenyl Ether	µg/L	<										
	Butyl Benzyl Phthalate	µg/L	<										
	2-Chloronaphthalene	µg/L	<										
	4-Chlorophenyl Phenyl Ether	µg/L	<										
	Chrysene	µg/L	<										
	Dibenzo(a,h)Anthrancene	µg/L	<										
	1,2-Dichlorobenzene	µg/L	<										
	1,3-Dichlorobenzene	µg/L	<										
	1,4-Dichlorobenzene	µg/L	<										
	3,3-Dichlorobenzidine	µg/L	<										
	Diethyl Phthalate	µg/L	<										
	Dimethyl Phthalate	µg/L	<										
	Di-n-Butyl Phthalate	µg/L	<										
	2,4-Dinitrotoluene	µg/L	<										

	2,6-Dinitrotoluene	µg/L	<										
	Di-n-Octyl Phthalate	µg/L	<										
	1,2-Diphenylhydrazine	µg/L	<										
	Fluoranthene	µg/L	<										
	Fluorene	µg/L	<										
	Hexachlorobenzene	µg/L	<										
	Hexachlorobutadiene	µg/L	<										
	Hexachlorocyclopentadiene	µg/L	<										
	Hexachloroethane	µg/L	<										
	Indeno(1,2,3-cd)Pyrene	µg/L	<										
	Isophorone	µg/L	<										
	Naphthalene	µg/L	<										
	Nitrobenzene	µg/L	<										
	n-Nitrosodimethylamine	µg/L	<										
	n-Nitrosodi-n-Propylamine	µg/L	<										
	n-Nitrosodiphenylamine	µg/L	<										
	Phenanthrene	µg/L	<										
	Pyrene	µg/L	<										
	1,2,4-Trichlorobenzene	µg/L	<										
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

Stream / Surface Water Information

BMA WWTP, NPDES Permit No. PA0020036, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Tioga River**

No. Reaches to Model: **1**

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	030990	38.68	1300	91			Yes
End of Reach 1	030990	35.82	1230	102			Yes

Q *7-10*

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	38.68	0.061										100	6.5		
End of Reach 1	35.82	0.061										100	6.5		

Q *h*

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	38.68														
End of Reach 1	35.82														

Model Results

BMA WWTP, NPDES Permit No. PA0020036, Outfall 001

Instructions | *Results* | RETURN TO INPUTS | SAVE AS PDF | PRINT | (●) All ( ) Inputs ( ) Results ( ) Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.606 Analysis Hardness (mg/l): 100 Analysis pH: 6.55

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	4,375	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	

☑ ***CFC*** CCT (min): 40.831 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 6.53

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	13,461	WQC = 30 day average; PMF = 1
Total Manganese	0	0		0	N/A	N/A	N/A	

☑ ***THH*** CCT (min): 40.831 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	

Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	8,974	

☑ ***CRL*** CCT (min): 16.240 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

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

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	2.8	mg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	13.5	mg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	8.97	mg/L	Discharge Conc ≤ 10% WQBEL

TRC EVALUATION

Input appropriate values in B4:B8 and E4:E7

5.59	= Q stream (cfs)	0.5	= CV Daily
0.4	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.606	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 1.765	1.3.2.iii	WLA cfc = 2.820
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.658	5.1d	LTA_cfc = 1.640

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

WLA afc	(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))... ...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))... ...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)

MPLEMENTATION SPREADSHEET FOR § 96.5 MANAGEMENT OF POINT SOURCE PHOSPHORUS DISCHARGES TO LAKES, PONDS & IMPOUNDMENT

Water Body Name:	Tioga Lake
Chapter 93 Classification:	Non-Special Protection
No. Point Source Discharges:	8

Discharger Name	NPDES Permit No.	Existing Flow (MGD)	Design Flow (MGD)	Avg Monthly Effluent TP Conc (mg/L)	Direct or Tributary Discharge	Existing Annual Load (lbs/yr)	Design Annual Load (lbs/yr)
Mansfield Muni Auth		0.6	1.3	1	Tributary	1,826.5	3,957.3
Blossburg Muni Auth		0.375	0.4	2	Tributary	2,283.1	2,435.3
Sullivan Township		0.01	0.015	8	Tributary	243.5	365.3
Farr Valley		0.0011	0.013	8	Tributary	26.8	316.6
Wanderland Trails		0.005	0.0127	8	Tributary	121.8	309.3
Robinson Mobile Home Park		0.0045	0.0078	8	Tributary	109.6	190.0
Bakercrest		0.0023	0.005	8	Tributary	56.0	121.8
Richmond Township		0.003	0.002	8	Tributary	73.1	48.7

Lake Inputs	***Value***
In-Lake TP Concentration (mg/L):	0.033
Mean Depth of Lake (m):	6.09
Mean Detention Time of Lake (days):	15.7
Surface Area of Lake (acres):	470
Lake Type:	Anoxic
Mean Depth / Detention Time (m/yr)	141.6

Water Body Results

Water Body Name: **Tioga Lake**

Type: **Anoxic**

Status: **Non-Special Protection**

Parameter	*Existing Conditions*	*Design Conditions*	
		Additional PS Controls	*Recommended PS Controls*
In-Lake TP Concentration (mg/L):	0.033	0.037	0.037
Total TP Loading Rate (lbs/ac/yr):	47.40	53.74	53.74
Point Source Loading Rate (lbs/ac/yr):	10.24	16.58	16.58
Trophic State Index (TSI):	54.6	56.4	56.4
NPS Loading Rate (lbs/ac/yr):	37.16	37.16	37.16
NPS TSI:	51.1	51.1	51.1

Lake Status, Existing Conditions: ***Water Body is Currently Eutrophic***

Discharge Results

Water Body Name: **Tioga Lake**
Status: **Non-Special Protection**

Based on the TSI at Design Conditions, No Additional Point Source Controls are Required at This Time

Discharger Name	NPDES Permit No.	Existing Flow (MGD)	Design Flow (MGD)	Avg Monthly Effluent TP Conc (mg/L)	Recommended TP AML (mg/L)	Additional Controls?	Design Annual Load (lbs/yr)
Mansfield Muni Auth		0.6	1.3	1	1.00	No	3,957.3
Blossburg Muni Auth		0.375	0.4	2	2.00	No	2,435.3
Sullivan Township		0.01	0.015	8	8.00	No	365.3
Farr Valley		0.0011	0.013	8	8.00	No	316.6
Wanderland Trails		0.005	0.0127	8	8.00	No	309.3
Robinson Mobile Home Park		0.0045	0.0078	8	8.00	No	190.0
Bakercrest		0.0023	0.005	8	8.00	No	121.8
Richmond Township		0.003	0.002	8	8.00	No	48.7