pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0114693**
Facility Type	**Municipal**	APS ID	**1110544**
Major / Minor	**Minor**	Authorization ID	**1478799**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Clymer Township Municipal Authority Tioga County**	Facility Name	**Clymer Township Municipal Authority Sewer System STP**
Applicant Address	PO Box 62	Facility Address	4965 Route 349
	Sabinsville, PA 16943-0062		Sabinsville, PA 16943
Applicant Contact	Michele Shepley-Zinck	Facility Contact	William Bloom
Applicant Phone	(814) 628-2078	Facility Phone	(814) 628-2405
Client ID	63926	Site ID	255429
Ch 94 Load Status	Not Overloaded	Municipality	Clymer Township
Connection Status	No Limitations	County	Tioga
Date Application Received	March 28, 2024	EPA Waived?	Yes
Date Application Accepted	April 3, 2024	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit

Summary of Review

The subject facility is a POTW serving the village of Sabinsville in Clymer Township, Tioga County. A map of the discharge location is attached (see Attachment A).

Sludge use and disposal description and location(s): The facility's dried sludge is transferred to other WWTPs for further processing. Per the application approximately 4.17 tons were removed in the previous year.

Public Participation

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

Approve	Deny	Signatures	Date
✓		Keith C. Allison Keith C. Allison / Project Manager	August 14, 2024
✓		N. W. H. Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	August 22, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.025
Latitude	41º 52' 19.64"	Longitude	-77º 31' 24.00"
Quad Name	Sabinsville, PA	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Mill Creek (TSF)	Stream Code	31085
NHD Com ID	57351621	RMI	3.816
Drainage Area	7.69 mi^2	Yield (cfs/mi^2)	0.0132
Q_{7-10} Flow (cfs)	0.102	Q_{7-10} Basis	Gage 01518862, Cowanesque River at Westfield
Elevation (ft)	1600	Slope (ft/ft)	0.01251
Watershed No.	4-A	Chapter 93 Class.	TSF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	Cause Unknown		
Source(s) of Impairment	Pathogens		
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	PA-NY Border		
PWS Waters	Cowanesque River	Distance from Outfall (mi)	31.0

Changes Since Last Permit Issuance: None. The existing stream and drainage characteristics are adequate.

Other Comments: The discharge is not expected to be contributing to the impairment to Mill Creek by pathogens. The discharge is not identified as receiving a wasteload allocation in the TMDL. The discharge consistently meets its fecal coliform limitations. Proposed monitoring for e. coli will verify whether new criteria for E. Coli in Chapter 93 of the Department's regulations (promulgated in 2020) is being achieved.

The discharge is not expected to affect any downstream water supply at this time with the limitations and monitoring proposed.

Treatment Facility Summary

Treatment Facility Name: Clymer Township Municipal Authority

WQM Permit No.	Issuance Date	Permit Covers:
5991401	Original – 02/06/92	
	A-1 – 12/18/06	Rerate of Organic Capacity

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Rotating Biological Contactors	Hypochlorite	0.025

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.025	68	Not Overloaded	Dewatering	Land Application

Changes Since Last Permit Issuance: None

Other Comments: The treatment plant as permitted under WQM Permit No. 5991401 consists of comminutor, bar screen, equalization tank, primary clarifier, rotating biological contactor, final clarifier, sodium hypochlorite disinfection, chlorine contact tank, post aeration, aerobic digester, and sludge drying beds.

Compliance History

DMR Data for Outfall 001 (from July 1, 2023 to June 30, 2024)

Parameter	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23
Flow (MGD) Average Monthly	0.008	0.008	0.011	0.00818	0.00797	0.011	0.00875	0.0078	0.00751	0.00754	0.008	0.00754
Flow (MGD) Daily Maximum	0.012	0.01013	0.026	0.01432	0.01049	0.02	0.01616	0.01156	0.01213	0.01066	0.015	0.01135
pH (S.U.) Instantaneous Minimum	7.33	7.23	7.24	7.06	7.08	7.1	7.33	7.55	6.67	7.4	7.55	7.38
pH (S.U.) Instantaneous Maximum	7.79	7.58	7.58	8.34	7.55	7.7	7.97	8.05	7.96	7.9	7.92	7.86
DO (mg/L) Instantaneous Minimum	5.75	6.34	6.57	7.36	7.85	7.78	7.82	7.86	6.31	6.16	5.63	6.1
TRC (mg/L) Average Monthly	0.22	0.23	0.19	0.20	0.20	0.18	0.18	0.20	0.19	0.16	0.21	0.19
TRC (mg/L) Instantaneous Maximum	0.27	0.28	0.28	0.23	0.23	0.23	0.23	0.26	0.25	0.25	0.3	0.29
CBOD5 (lbs/day) Average Monthly	0.4	0.6	0.9	0.6	0.7	1.5	0.6	0.8	0.8	0.9	0.9	0.6
CBOD5 (lbs/day) Weekly Average	0.7	0.8	1.1	0.7	0.9	2.0	0.9	1.0	1.0	1.3	1.1	0.7
CBOD5 (mg/L) Average Monthly	9.3	9.2	7.9	11.6	10.3	17.0	9.1	13.9	13.8	13.6	13.5	10.2
CBOD5 (mg/L) Weekly Average	10.4	9.9	8.8	13.6	12.3	18.6	13.9	17.6	16.5	16.6	15.9	13.2
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	10.0	14.0	27.0	22.0	21.0	27.0	23.0	11.0	11.0	22.0	13.0	13.0
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	10.0	17.0	30.0	30.0	27.0	33.0	34.0	13.0	17.0	36.0	13.0	18.0
BOD5 (mg/L) Raw Sewage Influent Average Monthly	167.0	225.0	358.0	405.0	297.0	312.0	352.0	197.0	196.0	305.0	195.0	243.0
TSS (lbs/day) Average Monthly	1.0	0.9	1.9	1.8	1.0	1.7	1.4	1.2	1.0	0.8	1.0	1.0

TSS (lbs/day) Raw Sewage Influent Average Monthly	5.0	9.0	19.0	9.0	13.0	15.0	15.0	8.0	5.0	12.0	9.0	14.0
TSS (lbs/day) Raw Sewage Influent Daily Maximum	5.0	11.0	24.0	13.0	17.0	24.0	27.0	8.0	7.0	18.0	10.0	21.0
TSS (lbs/day) Weekly Average	1.2	1.2	2.2	1.9	1.1	1.8	1.5	1.4	1.1	1.0	1.1	1.0
TSS (mg/L) Average Monthly	15.5	14.8	16.0	32.5	14.5	22.0	21.5	20.5	19.0	11.5	14.5	17.5
TSS (mg/L) Raw Sewage Influent Average Monthly	81.0	137.0	184.0	167.0	180.0	144.0	217.0	133.0	90.0	171.0	136.0	258.0
TSS (mg/L) Weekly Average	18.0	21.0	18.0	35.0	16.0	32.0	24.0	25.0	19.0	13.0	17.0	20.0
Fecal Coliform (No./100 ml) Geometric Mean	48.0	94.0	129.0	72.0	3.0	21.0	119.0	9.0	36.0	15.0	99.0	7.0
Fecal Coliform (No./100 ml) Instantaneous Maximum	88.2	110.6	360.9	248.1	12.2	73.3	123.4	18.3	58.1	37.3	727.0	21.3
Ammonia (lbs/day) Average Monthly	0.02	0.01	0.05	0.006	0.03	0.02	0.04	0.01	0.02	0.04	0.03	0.05
Ammonia (lbs/day) Weekly Average	0.03	0.01	0.09	0.006	0.03	0.03	0.04	0.02	0.03	0.05	0.03	0.05
Ammonia (mg/L) Average Monthly	0.4	0.1	0.4	0.1	0.4	0.2	0.6	0.2	0.5	0.6	0.4	0.82
Ammonia (mg/L) Weekly Average	0.4	0.2	0.6	0.1	0.4	0.2	0.6	0.3	0.6	0.7	0.4	1.0

Compliance History, Cont'd

Effluent Violations for Outfall 001, from: July 1, 2023 to: June 30, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TSS	03/31/24	Avg Mo	32.5	mg/L	30.0	mg/L

Compliance History, Cont'd	
Summary of Inspections:	The facility has been inspected approximately annually by the Department over the past permit term. The most recently inspection on April 17, 2024 identified an eDMR effluent violation but no operational violations at the time of inspection.
Other Comments:	A query in WMS found no open violations in eFACTS for Clymer Township Municipal Authority.

Existing Effluent Limitations and Monitoring Requirements

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	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.39	XXX	1.2	1/day	Grab
CBOD5	5.0	8.0	XXX	25.0	40.0	50	2/month	Grab
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
TSS	6.0	9.0	XXX	30.0	45.0	60	2/month	Grab
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Total Nitrogen	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Ammonia Nov 1 - Apr 30	3.0	4.0	XXX	12.0	18.0	24	2/month	Grab
Ammonia May 1 - Oct 31	1.0	1.0	XXX	4.0	6.0	8	2/month	Grab
Total Phosphorus	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.025
Latitude 41º 52' 19.94" **Longitude** -77º 31' 24.20"
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)

Comments: The above limitations are applicable and included in the existing permit.

Water Quality-Based Limitations

DO, CBOD5 and NH3-N

The WQM7.0 model allows the Department to evaluate point source discharges of dissolved oxygen (DO), carbonaceous BOD ($CBOD_5$), and ammonia-nitrogen (NH_3-N) into free-flowing streams and rivers. To accomplish this, the model simulates two basic processes: the mixing and degradation of NH_3-N in the stream and the mixing and consumption of DO in the stream due to the degradation of $CBOD_5$ and NH_3-N. WQM7.0 modeling was performed for the discharge to Mill Creek and showed that the existing water quality-based ammonia-nitrogen limitation of 4 mg/L and DO minimum of 4 mg/L and Technology limit for $CBOD_5$ are adequate to protect the receiving waters. See Attachment B.

Total Residual Chlorine

The Department uses a modeling spreadsheet to analyze the toxicity of a discharge's TRC in a receiving stream, accounting for available dilution. The attached results of the TRC spreadsheet (see Attachment C) show that the existing water quality-based limit of 0.39 mg/l is adequate to protect the receiving stream.

Toxics Management

No further "Reasonable Potential Analysis" was performed to determine additional parameters as candidates for limitations or monitoring for this minor POTW with no industrial influent flows.

Chesapeake Bay/Nutrient Requirements

According to the Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, this facility is an existing Phase 5 Chesapeake Bay sewage discharger that is not expanding, and as such requires no nutrient loading limits. Annual nutrient monitoring was included in current permit. The average Total Nitrogen concentration over the past permit term was 29 mg/L and the Average Phosphorus concentration was 3.9 mg/L. Because the nutrient load has been adequately characterized no additional nutrient monitoring will be required at this time consistent with the Phase III WIP Wastewater Supplement.

Best Professional Judgment (BPJ) Limitations

None needed beyond the Technology and Water Quality-Based limitations noted above.

e. Coli

Annual e. coli monitoring will be required at this time due to recent changes to Chapter 93 of the Department's regulations and Department policy.

Anti-Backsliding

No proposed limitations or monitoring are less stringent than the existing requirements consistent with anti-backsliding provisions of the Clean Water Act and 40 CFR 122.44(I).

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	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
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.39	XXX	1.2	1/day	Grab
CBOD5	5.0	8.0	XXX	25.0	40.0	50	2/month	Grab
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
TSS	6.0	9.0	XXX	30.0	45.0	60	2/month	Grab
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Ammonia Nov 1 - Apr 30	3.0	4.0	XXX	12.0	18.0	24	2/month	Grab
Ammonia May 1 - Oct 31	1.0	1.0	XXX	4.0	6.0	8	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

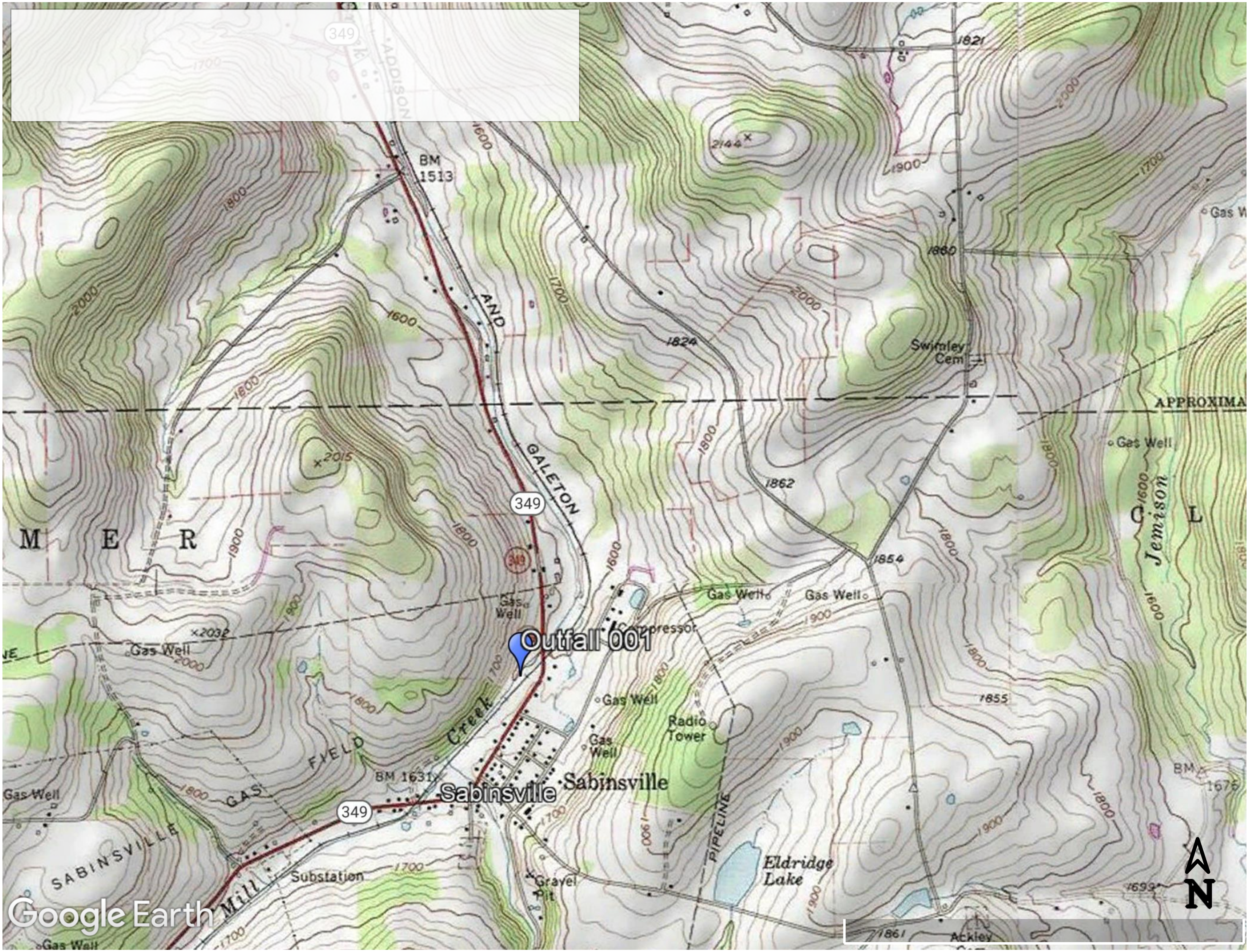
Compliance Sampling Location: Outfall 001

Other Comments: E. Coli monitoring is new as mentioned above. Total Nitrogen and Total Phosphorus monitoring have been removed as also mentioned above.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☒	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☒	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.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☒	Design Stream Flows, 386-2000-003, 9/98.
☐	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.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

Attachments:

A. Discharge Location Map
B. WQM7.0 Model
C. TRC Model



Outfall 001
Sabinsville
Sabinsville
349
349
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BM 1513
BM 1631
AND
GALETON
ADDISON
Gas Well
Compressor
Radio Tower
Eldridge Lake
PIPELINE
Substation
Gravel Pit
Mill
Creek
FIELD
GAS
SABINSVILLE
Swimley Cem
Jemison
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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
04A	31085	MILL CREEK	**3.816**	1600.00	7.69	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	0.013	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
Clymer Twp	PA0114693	0.0250	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	4.00	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
04A	31085	MILL CREEK	**0.001**	1348.00	13.00	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	0.013	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	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	31085	MILL 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 (ºC)	Analysis pH
Q7-10 Flow												
3.816	0.10	0.00	0.10	.0387	0.01251	.384	7.54	19.65	0.05	4.871	21.39	7.00
Q1-10 Flow												
3.816	0.06	0.00	0.06	.0387	0.01251	NA	NA	NA	0.04	5.763	21.88	7.00
Q30-10 Flow												
3.816	0.14	0.00	0.14	.0387	0.01251	NA	NA	NA	0.05	4.280	21.11	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
04A	31085	MILL CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.816	0.025	21.395	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
7.545	0.384	19.652	0.048
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
8.42	0.277	1.12	0.779
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.780	17.204	Owens	5
Reach Travel Time (days)			
4.871			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.487	7.29	0.76	8.03
0.974	6.31	0.52	8.03
1.461	5.47	0.36	8.03
1.948	4.74	0.24	8.03
2.435	4.10	0.17	8.03
2.922	3.55	0.11	8.03
3.409	3.08	0.08	8.03
3.896	2.67	0.05	8.03
4.383	2.31	0.04	8.03
4.871	2.00	0.03	8.03

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
04A	31085	MILL 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
3.816	Clymer Twp	14.34	8	14.34	8	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
3.816	Clymer Twp	1.76	4	1.76	4	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)		
3.82	Clymer Twp	25	25	4	4	3	3	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
04A	31085	MILL 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)
3.816	Clymer Twp	PA0114693	0.025	CBOD5	25		
				NH3-N	4	8	
				Dissolved Oxygen			3

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.102	= Q stream (cfs)	0.5	= CV Daily
0.025	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= 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)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.860	1.3.2.iii	WLA cfc = 0.831
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.321	5.1d	LTA_cfc = 0.483

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.395	AFC
		INST MAX LIMIT (mg/l) = 1.290	

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)