Pennsylvania Department of Environmental Protection

CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0239445**
Facility Type	**Municipal**	APS ID	**1142334**
Major / Minor	**Minor**	Authorization ID	**1535559**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Sugar Grove Area Sewer Authority Warren County**	Facility Name	**Sugar Grove Area STP**
Applicant Address	195 Creek Road	Facility Address	181 Dobson Road
	Sugar Grove, PA 16350-5803		Sugar Grove, PA 16350
Applicant Contact	Melanie Eggleston	Facility Contact	
Applicant Phone	(814) 489-7809	Facility Phone	
Client ID	216050	Site ID	627650
Ch 94 Load Status	Not Overloaded	Municipality	Sugar Grove Borough
Connection Status	No Limitations	County	Warren
Date Application Received	July 28, 2025	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: Renewal Application for a Minor Sewage Facility

Summary of Review

The permittee is applying for reissuance of Individual Permit No. **PA0239445** which will expire on January 31, 2026. In the facility, the Influent flow first enters a 54,722-gallon aerated flow equalization tank. From there, it proceeds to two 125,000-gallon aeration basins, followed by two 32,944-gallon secondary clarifiers. Thereafter, the flow moves into a 5,656-gallon chlorine contact tank for disinfection, then into a 1,480-gallon polishing clarifier. Dechlorination and post-aeration are performed before final flow monitoring and discharge at the outfall.

Waste solids are directed to two 46,455-gallon sludge holding tanks and subsequently processed through three reed beds, each measuring 2,480 square feet

This is a discharge into a stream channel - Stillwater Creek

DMRs were submitted for the past five years.

Act 14 – Notifications were submitted and received.

There are no open violations in WMS for the subject Client ID (**216050**) as of 7/31/25.

Sludge use and disposal description and location(s): 152.35 dry tons of sewage sludge were disposed of at landfills.

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-

Approve	Deny	Signatures	Date
x		Adebayo Olude Adebayo Olude / Civil Engineer Trainee	July 31, 2025
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	August 15, 2025

Summary of Review
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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.2
Latitude	41º 59' 7.05"	Longitude	-79º 19' 8.82"
Quad Name	Sugar Grove	Quad Code	41079H3
Wastewater Description:	Sewage Effluent		

Receiving Waters	Stillwater Creek (CWF)	Stream Code	56422
NHD Com ID	129447492	RMI	13.8600
Drainage Area	12.2	Yield (cfs/mi^2)	0.0674
Q_{7-10} Flow (cfs)	0.823	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1362	Slope (ft/ft)	-
Watershed No.	16-B	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired		
Cause(s) of Impairment	SILTATION, SILTATION, SILTATION		
Source(s) of Impairment	AGRICULTURE, CROP PRODUCTION (CROP LAND OR DRY LAND), GRAZING IN RIPARIAN OR SHORELINE ZONES		
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)	7	Default
Temperature (°F)	20	Default - CWF
Hardness (mg/L)	100	Default
Other:	-	-

Nearest Downstream Public Water Supply Intake		State of New York	
PWS Waters	Stillwater Creek	Flow at Intake (cfs)	-
PWS RMI	-	Distance from Outfall (mi)	1.78

Changes Since Last Permit Issuance: Elevation was revised using Google Earth. Drainage Area and Q_{7-10} Flow were revised using USGS StreamStats.

Other Comments: The streamflow value used for the receiving stream is different from previous permit. According to USGS Stream Stats, the anticipated low-flow (Q7-10) for the stream is 0.823cfs, whereas the previous model assumed a low-flow of 1.27cfs. The basis for the earlier flow value is unclear, but this difference in streamflow inputs likely accounts for the change in modeled results under attachment 3 and 4.

Treatment Facility Summary

Treatment Facility Name: Sugar Grove Area STP

WQM Permit No.	Issuance Date
6208401 A1	11/18/2010
6208401	04/08/2009
6203418 A1	07/18/2005
6203418	12/15/2004

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia Reduction	Extended Aeration	Hypochlorite	0.2

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.2	316	Not Overloaded	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance: WQM Permit No. 6203418 dated October 22, 2008, in previous permit is not found on WMS.

Other Comments: 6203418 was first issued on 12/15/2004 and later amended on 07/18/2005. WQ2PS for the same permit No. was issued on 04/08/2009. Lastly an amendment was executed on 11/18/2010 for WQ2TP.

WQG028304 issued on November 8. 2006 and WQG028303 was issued 11/07/2006.

Compliance History	
Summary of DMRs:	DMRs were submitted for the past five years.
Summary of Inspections:	There are no open violations in WMS for the subject Client ID (**216050**) as of 7/31/25.

Other Comments: None

Compliance History

DMR Data for Outfall 001 (from June 1, 2024 to May 31, 2025)

Parameter	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24
Flow (MGD) Average Monthly	0.101	0.09	0.103	0.097	0.094	0.106	0.075	0.066	0.063	0.077	0.084	0.081
Flow (MGD) Daily Maximum	0.219	0.162	0.232	0.115	0.183	0.166	0.106	0.093	0.085	0.116	0.146	0.154
pH (S.U.) Instantaneous Minimum	6.2	6.2	6.4	6.6	6.7	6.4	6.4	6.1	6.0	6.1	5.8	6.1
pH (S.U.) Instantaneous Maximum	7.4	7.0	7.1	7.1	7.1	7.1	7.8	7.3	7.0	7.1	7.1	7.4
DO (mg/L) Daily Minimum	6.1	5.1	7.1	7.6	7.8	7.0	6.5	5.7	5.7	6.1	6.1	6.4
TRC (mg/L) Average Monthly	0.18	0.16	0.16	0.17	0.22	0.18	0.17	0.14	0.17	0.19	0.2	0.15
CBOD5 (lbs/day) Average Monthly	2.0	5.0	6.0	4.0	< 3.0	5.0	4.0	3.0	1.0	< 2.0	2.0	< 3.0
CBOD5 (lbs/day) Weekly Average	5.0	8.0	13.0	9.0	4.0	7.0	6.0	4.0	1.0	3.0	3.0	5.0
CBOD5 (mg/L) Average Monthly	< 2.8	6.15	5.75	3.82	< 3.18	4.62	5.6	5.12	2.66	3.09	< 2.68	< 3.99
CBOD5 (mg/L) Weekly Average	4.35	8.64	8.34	4.9	3.87	7.08	7.25	6.21	2.61	3.79	4.45	6.05
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	141	189	345	214	189	168	132.0	116	114	150	146	145
BOD5 (mg/L) Raw Sewage Influent Average Monthly	183	215	347	193	195	171	210.0	204	248	213	190	205
TSS (lbs/day) Average Monthly	8.0	19.0	11.0	5.0	7.0	7.0	6.0	8.0	6.0	< 7.0	6.0	5.0
TSS (lbs/day) Raw Sewage Influent Average Monthly	150	168	169	124	115	159	97.0	123	129	170	156	169.0

TSS (lbs/day) Weekly Average	18.0	40.0	15.0	9.0	12.0	9.0	10.0	11.0	7.0	9.0	9.0	6.0
TSS (mg/L) Average Monthly	8.5	23.0	11.1	5.0	7.4	7.54	10.0	14.1	12.7	< 9.3	8.1	6.6
TSS (mg/L) Raw Sewage Influent Average Monthly	202	195	178	114	118	162	160.0	218	278	239	200	237.0
TSS (mg/L) Weekly Average	15.0	49.5	14.5	6.0	11.5	10.0	12.0	19.5	14.5	< 3.79	15.5	8.5
Fecal Coliform (No./100 ml) Geometric Mean	27	15.0	21.0	20	39.0	47.0	11.0	42.0	82	93	25	18.0
Total Nitrogen (mg/L) Average Monthly	31.4	29.15	36.41	34.87	31.87	32.32	45.68	44.7	47.48	47.01	50.16	47.3
Ammonia (lbs/day) Average Monthly	< 0.08	< 0.1	0.2	< 0.1	< 0.1	< 0.2	< 0.06	0.07	< 0.08	< 2.1	< 0.3	< 0.07
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1598	< 0.2	< 0.1	< 0.1	< 0.193	< 0.1	0.115	< 0.2	< 2.1	0.44	< 0.1034
Total Phosphorus (mg/L) Average Monthly	3.92	3.81	2.67	3.37	3.48	3.73	6.07	6.29	6.8	7.59	7.08	6.97

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .2
Latitude 41º 59' 7.08" **Longitude** -79º 19' 8.76"
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)
Total Nitrogen	Report	Average Monthly		92a.61
Total Phosphorus	Report	Average Monthly		92a.61
E. Coli	Report	IMAX		92a.61

Comments: The limits for pH are technology-based on Chapter 93.7. The limits for Total Suspended Solids, and Fecal Coliforms are technology-based on Chapter 92a.47. The limits for TRC are applicable under chapter 92a.48. Monitoring for E. Coli is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits." With a design flow >= 0.05 and < 1 MGD, a sample frequency of 1/quarter is being proposed.

Water Quality-Based Limitations

CBOD5, Ammonia, and Dissolved oxygen are evaluated using WQM 7.0 (Attachment 3). TRC is evaluated using the Department's TRC evaluation spreadsheet (Attachment 4).

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
CBOD5	25	Average Monthly	WQM 7.0
	50	IMAX	
NH3-N May 1 – Oct 31	8.0	Average Monthly	WQM 7.0
	16	IMAX	
NH3-N Nov 1 – Apr 30	24	Average Monthly	WQM 7.0
	48	IMAX	
Dissolved Oxygen	5.0	Daily minimum	WQM 7.0
TRC	0.4	Average Monthly	TRC Spreadsheet Model
	1.3	IMAX	

Comments: This discharge was evaluated using the WQM 7.0 model to determine appropriate effluent limitations for $CBOD_5$, Ammonia-Nitrogen, and Dissolved Oxygen. The modeling results confirmed that the current $CBOD_5$ limitations remain appropriate, and existing Dissolved Oxygen limits are also adequate for the facility. The model calculated WQBELs for NH3-N that are less stringent than what is currently imposed in the previous permit. The default pH value of 7.0 S.U. was used in this most recent WQM 7.0 model run, instead of a site-specific pH value like what was done in the previous permit renewal. This may explain why different WQBELs were calculated in the previous permit. The previous NH3-N limits will be retained in this renewal.

The current limit for TRC (0.5 mg/L) is less stringent than what was calculated as part of this renewal (0.398 mg/L). Based on the existing discharge data, the permittee has demonstrated its ability to comply by meeting the proposed limit at least 75% of the time; therefore, no compliance schedule is established in the draft permit. This is in accordance with the Department's SOP entitled "New and Reissuance Sewage Individual NPDES Permit Applications."

Best Professional Judgment (BPJ) Limitations

Comments: None

Anti-Backsliding

The previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The previous permit limitations, monitoring requirements, and conditions will be retained. New or more stringent limitations are being proposed for E. Coli, and TRC.

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	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Influent BOD5	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Influent Total Suspended Solids	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5)	41.0	65.0	XXX	25.0	40.0	50	1/week	8-Hr Composite
Total Suspended Solids	50.0	75.0	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	XXX	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	32	XXX	XXX	19.5	XXX	39	1/week	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	15.8	XXX	XXX	6.5	XXX	13	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite

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.

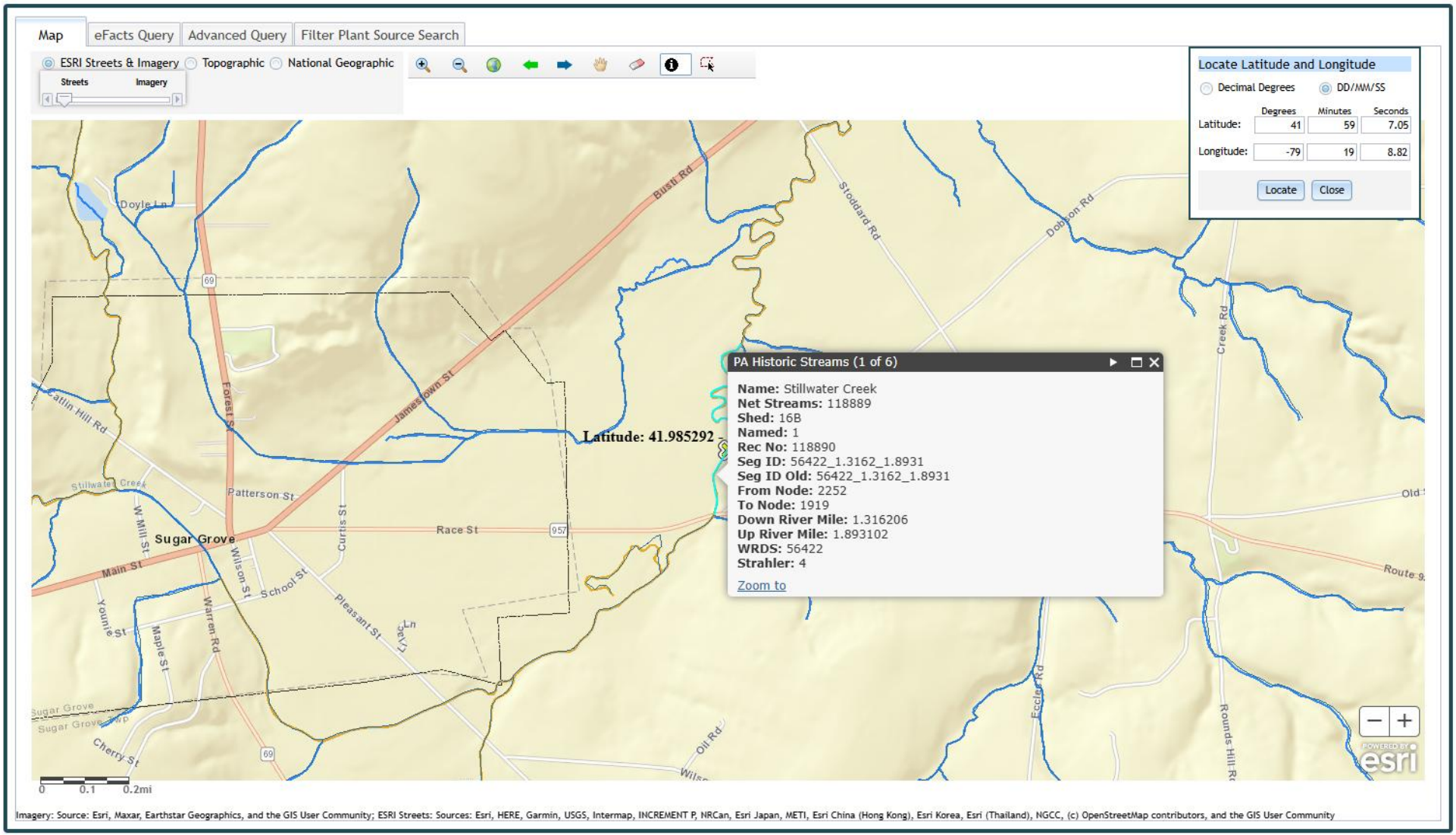
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.4	XXX	1.3	1/day	Grab
CBOD5	41.0	65.0	XXX	25.0	40.0	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	50.0	75.0	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	XXX	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Ammonia Nov 1 - Apr 30	32	XXX	XXX	19.5	XXX	39	1/week	8-Hr Composite
Ammonia May 1 - Oct 31	15.8	XXX	XXX	6.5	XXX	13	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	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 after disinfection

Other Comments:

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	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:

Attachment 1
eMAP – Receiving stream location and Designation



Attachment 2
Google Earth Aerial Site View

Attachment 3
WQM 7.0 Modeling Output files

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
	16B	56422	STILLWATER CREEK	1.720	1373.00	12.00	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	0.067	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
StillwaterCreek	PA0239445	0.2000	0.2000	0.2000	0.000	25.00	7.00

Parameter Data

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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
16B	56422	STILLWATER CREEK	1.316	1357.00	12.20	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	0.068	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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
16B	56422	STILLWATER 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												
1.720	0.81	0.00	0.81	.3094	0.00750	.525	15.91	30.31	0.13	0.184	21.38	7.00
Q1-10 Flow												
1.720	0.52	0.00	0.52	.3094	0.00750	NA	NA	NA	0.11	0.218	21.87	7.00
Q30-10 Flow												
1.720	1.10	0.00	1.10	.3094	0.00750	NA	NA	NA	0.15	0.162	21.10	7.00

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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 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
16B	56422	STILLWATER 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
1.720	StillwaterCreek	14.35	38.37	14.35	38.37	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
1.720	StillwaterCreek	1.76	8.01	1.76	8.01	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)		
1.72	StillwaterCreek	25	25	8.01	8.01	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16B	56422	STILLWATER CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.720	0.200	21.383	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
15.911	0.525	30.314	0.134
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
8.36	1.207	2.22	0.779
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.346	9.862	Tsivoglou	5
Reach Travel Time (days)			
0.184			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.018	8.17	2.18	7.21
0.037	7.98	2.15	7.10
0.055	7.79	2.12	7.02
0.074	7.61	2.09	6.96
0.092	7.43	2.06	6.92
0.111	7.25	2.03	6.89
0.129	7.08	2.00	6.88
0.148	6.92	1.98	6.87
0.166	6.76	1.95	6.87
0.184	6.60	1.92	6.88

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16B	56422	STILLWATER 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)
1.720	StillwaterCreek	PA0239445	0.200	CBOD5	25		
				NH3-N	8.01	16.02	
				Dissolved Oxygen			5

Attachment 4
TRC_CALC Modeling Output files

TRC_CALC

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.823	= Q stream (cfs)	0.5	= CV Daily
0.2	= 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 = 0.868	1.3.2.iii	WLA cfc = 0.838
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.323	5.1d	LTA_cfc = 0.487

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.398	AFC
		INST MAX LIMIT (mg/l) = 1.301	

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)