pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0217522**
Facility Type	**Municipal**	APS ID	**924632**
Major / Minor	**Minor**	Authorization ID	**1396378**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Smithton Borough Municipal Authority**	Facility Name	**Smithton Borough Municipal Authority**
Applicant Address	PO Box 342	Facility Address	690 Peer Street
	Smithton, PA 15479-0342		Smithton, PA 15479-0342
Applicant Contact	Mary Ulish	Facility Contact	Jason Beck
Applicant Phone	(724) 872-6406	Facility Phone	(724) 872-4712
Client ID	45225	Site ID	248184
Ch 94 Load Status	Not Overloaded	Municipality	Smithton Borough
Connection Status	No Limitations	County	Westmoreland
Date Application Received	May 12, 2022	EPA Waived?	Yes
Date Application Accepted	May 16, 2022	If No, Reason	

Purpose of Application: Application for renewal and transfer of an NPDES permit for treated sewage.

Summary of Review

The permittee has applied for a renewal and transfer of NPDES Permit No. PA0217522. PA0217522 was previously issued by the Pennsylvania Department of Environmental Protection (PA DEP) on November 3, 2017 and expired on November 30, 2022.

Sewage from this facility is treated with extended aeration and UV disinfection before discharging to Tributary 37856 to the Youghiogheny River through Outfall 001. Tributary 37856 to the Youghiogheny is classified as a Warm Water Fishery (WWF) per Chapter 93 Designated Use.

The permittee is currently enrolled in and will continue to use eDMR.

The permittee complied with Act 14 notifications through letters dated March 16, 2022 and sent to Westmoreland County and Smithton Borough. No comments were received.

Biosolids at this facility are pumped and hauled to either Clairton Municipal Authority or Liquid Assets Disposal, Inc.

Since the last permit cycle, the summer and winter ammonia-nitrogen concentration and mass loading limits have become more restrictive due to a decrease in the state criteria. Additionally, quarterly *E. coli* monitoring has been added to the permit.

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		Stephanie Conrad / Environmental Engineering Specialist	February 23, 2023
x		Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	May 8, 2023

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)	0.066
Latitude	40º 9' 23"	Longitude	-79º 44' 35.00"
Quad Name	Smithton	Quad Code	1708
Wastewater Description:	Sewage Effluent		
Receiving Waters	Tributary 37856 to the Youghiogheny River (WWF)	Stream Code	37856
NHD Com ID	69914479	RMI	0.057
Drainage Area	4.3	Yield (cfs/mi^2)	0.01067
Q_{7-10} Flow (cfs)	0.0459	Q_{7-10} Basis	USGS Stream Stats
Elevation (ft)		Slope (ft/ft)	
Watershed No.	19-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Metals, Oil and Grease, Organic Enrichment		
Source(s) of Impairment	Acid Mine Drainage, Highway/Road/Bridge Runoff, On-Site Treatment Systems		
TMDL Status		Name	

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

Nearest Downstream Public Water Supply Intake	West County Municipal Authority		
PWS Waters	Youghiogheny	Flow at Intake (MGD)	12
PWS RMI	1.3	Distance from Outfall (mi)	23.7

Changes Since Last Permit Issuance:

Other Comments:

Treatment Facility Summary

Treatment Facility Name: Smithton Borough Municipal Authority STP

WQM Permit No.	Issuance Date	Purpose
6596412	December 4, 1997	Permit issued to Smithton Boro Municipal Authority (SBMA) by PA DEP approving construction of a collection and treatment system including: • 11,000 LF of 6" and 8" pipe • 0.066 MGD extended aeration basin • 460-gallon influent pump station with two 175gpm submersible pump. • One comminutor with debris basket and bypass manually cleaned bar screen • 2-8,000 gallon settling tanks • One emergency generator • One alkalinity feed pump • 2 liquid chlorine feed pumps
6596412A-1	June 3, 2011	Permit issued to SBMA by PA DEP approving installation of a Trojan System UV3000 PTP Disinfection Unit, one 12' x 6' x 14', a backup generator, and a remote monitoring system.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with Ammonia Reduction	Extended Aeration	Ultraviolet	0.066

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.066	112	Not Overloaded	Pumped and Hauled	Other WWTP

Changes Since Last Permit Issuance: None

Other Comments:

Compliance History

Operations Compliance Check Summary Report

Facility: Smithton Borough Municipal Authority STP

NPDES Permit No.: PA0217522

Compliance Review Period: 6/2017 – 6/2022

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
3323599	02/10/2022	Compliance Evaluation	PA Dept of Environmental Protection	Violation(s) Noted
3323183	02/09/2022	Administrative/File Review	PA Dept of Environmental Protection	No Violations Noted
2712804	03/20/2018	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted

Violation Summary:

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE
945630	02/10/2022	92A.44	NPDES - Violation of effluent limits in Part A of permit	06/21/2022
945631	02/10/2022	252.4(A)	NPDES - Failure to utilize an accredited environmental laboratory for testing or analysis of environmental samples	06/21/2022

Open Violations by Client ID:

No open violations for client id 45225

Enforcement Summary:

No open enforcements

DMR Violation Summary:

TSS 11/20

Fecals 7/19

Ammonia-nitrogen 7/17

Compliance Status:

Permittee in compliance.

Completed by: John Murphy

Completed date: 6/21/2022

Compliance History

DMR Data for Outfall 001 (from May 1, 2021 to April 30, 2022)

Parameter	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21
Flow (MGD) Average Monthly	0.062	0.040	0.114	0.042	0.042	0.024	0.040	0.023	0.037	0.030	0.035	0.037
Flow (MGD) Daily Maximum	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
pH (S.U.) Instantaneous Minimum	7.10	7.00	7.12	6.81	7.11	6.93	6.77	7.18	7.11	6.88	7.08	7.12
pH (S.U.) Instantaneous Maximum	8.65	7.97	8.93	7.98	8.06	7.92	7.85	8.05	7.92	7.98	7.98	7.71
DO (mg/L) Instantaneous Minimum	5.66	5.83	5.69	5.90	7.70	7.69	5.21	5.98	6.58	6.00	6.38	6.29
$CBOD_5$ (lbs/day) Average Monthly	1.55	1.00	2.85	1.05	1.05	0.60	1.00	2.17	0.92	4.44	0.87	0.92
$CBOD_5$ (mg/L) Average Monthly	< 3.0	< 3	< 3	< 3	< 3	< 3	< 3	11.35	< 3	17.75	< 3	< 3
$CBOD_5$ (mg/L) Instantaneous Maximum	< 3.0	< 3	< 3	< 3	< 3	< 3	< 3	19.7	< 3	32.5	< 3	< 3
BOD_5 (lbs/day) Raw Sewage Influent Average Monthly	48.86	27.38	96.88	42.20	104.20	35.22	110.42	33.94	58.63	66.92	35.90	79.61
BOD_5 (mg/L) Raw Sewage Influent Average Monthly	94.5	82.10	101.9	120.5	297.5	176	331	102	190	267.5	123	258
TSS (lbs/day) Average Monthly	1.55	1.33	4.27	1.22	1.92	1.80	1.00	0.86	1.38	0.75	0.087	1.23
TSS (lbs/day) Raw Sewage Influent Average Monthly	27.92	19.34	72.25	34.85	42	23.21	47.03	19.56	30.24	30.27	28.60	49.37
TSS (mg/L) Average Monthly	3	4	4.5	3.5	5.5	9	3	4.5	4.5	3	< 3	4

TSS (mg/L) Raw Sewage Influent Average Monthly	54	58	76	99.5	120	116	141	102	98	121	98	160
TSS (mg/L) Instantaneous Maximum	3	5	6	4	8	11	< 3	6	6	3	< 3	5
Fecal Coliform (No./100 ml) Geometric Mean	< 1	1	7	< 1	< 1	1	1	1	2	< 1	1	1
Fecal Coliform (No./100 ml) Instantaneous Maximum	2	12	8	< 1	< 1	11	1	7	6	< 1	1	6
UV Transmittance (%) Instantaneous Minimum	1.0	1.0	0.4	0.7	0.7	1.0	1.4	1.6	2.1	1.8	1.8	3.6
UV Transmittance (%) Average Monthly	1.2	1.1	0.9	1.0	0.9	1.3	1.7	1.9	2.1	2.87	2.97	4.1
UV Transmittance (%) Daily Maximum	1.5	1.3	1.2	1.2	1.3	1.7	2.3	2.1	2.8	3.4	3.9	4.5
Total Nitrogen (mg/L) Daily Maximum					14.7							
Ammonia (mg/L) Average Monthly	0.15	0.15	0.28	0.11	0.16	0.16	0.20	0.26	0.23	0.22	0.17	0.12
Ammonia (mg/L) Instantaneous Maximum	0.15	0.19	0.45	0.13	0.19	0.18	0.23	0.28	0.26	0.23	0.19	0.15
Total Phosphorus (mg/L) Daily Maximum					1.40							

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .066
Latitude 40º 9' 23.00" **Longitude** -79º 44' 35.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations (TBELs)

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
Flow (MGD)	Report	Average Monthly	-	92a.27, 92a.61
$CBOD_5$	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)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
Ammonia-Nitrogen	25	Average Monthly	-	BPJ
Dissolved Oxygen	4.0	Min	-	BPJ
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Total Nitrogen	Report	Average Monthly	-	92a.61
Total Phosphorus	Report	Average Monthly	-	92a.61
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)

Water Quality-Based Effluent Limitations (WQBELs)

Pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* on July 11, 2020, new water quality criteria for ammonia-nitrogen apply to waters of the commonwealth. Therefore, WQBELs for Outfall 001 are being re-evaluated even though there have been no changes to the STP.

WQM 7.0 Water Quality Modeling

The Department's WQM 7.0 version 1.1 model is a Microsoft Access ® Program used for sewage dischargers to determine whether TBELs are sufficient to meet in-stream water quality criteria for ammonia-nitrogen, carbonaceous biochemical oxygen demand ($CBOD_5$), and dissolved oxygen (DO). To accomplish this, the model simultaneously simulates mixing and degradation of ammonia-nitrogen and mixing and consumption of DO through $CBOD_5$ and ammonia-nitrogen degradation. WQM 7.0 determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

The model is a two-step process. The discharge is first modeled for the summer period (May through October) because warm temperatures are more likely to result in critical loading conditions. Reduced DO levels likely also play a role in ammonia toxicity and solubility of DO decreases at increased water temperature. If summer modeling determines WQBELs are appropriate for the summer period, then modeling is completed for the winter period (November through April). This is in accordance with the Department's *Implementation Guidance of Section 93.7 Ammonia Criteria* [Doc. No. 391-2000-013] (Ammonia Guidance).

River Mile Index (RMI) was measured in eMAP PA as the distance from the facility's outfall to the mouth of Tributary 37856 to the Youghiogheny River. Elevation was read by applying a topomap in eMAP PA. Discharge point and downstream drainage area were generated in USGS Stream Stats, the output files for which are included in Attachment

A. Q_{7-10} flow was also generated by USGS Stream Stats and yield was calculated as the Q_{7-10} flow divided by the drainage area. In the absence of site-specific data, discharge temperature, stream temperature, and stream pH were assumed to be 20, 25, and 7, respectively in accordance with the Ammonia Guidance. Stream width to depth ratio was assumed to be 10 in accordance with the Department's *Technical Reference Guide (TRG) WQM 7.0 for Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen Version 1.0* [Doc. No. 391-2000-007]. Discharge concentrations for ammonia-nitrogen, $CBOD_5$, and DO are set as the effluent limits for the 2017 permit.

WQM 7.0 modeling inputs are documented in the table below:

Discharge Characteristics		Basin/Stream Characteristics	
Parameter	**Value**	**Parameter**	**Value**
River Mile Index (RMI)	0.057	Drainage Area	4.3
Discharge Flow (MGD)	0.066	Q_{7-10} (cfs)	0.0459
Discharge Temp (^oC)	20	Low-flow yield (cfs/mi^2)	0.01067
Ammonia-Nitrogen (mg/L)	3.5	Elevation (ft)	940
$CBOD_5$ (mg/L)	25	Stream Width/Depth Ratio (ft)	10
Dissolved Oxygen (DO) (mg/L)	5.0	Stream Temp (^oC)	25
		Stream pH (s.u.)	7

The discharge was evaluated using WQM 7.0 to evaluate $CBOD_5$, ammonia-nitrogen, and DO. The modeling results confirmed that a technology based $CBOD_5$ limit and a water-quality based DO limit of 5.0 are still appropriate. The modeling also determined that new, more restrictive water quality-based ammonia-nitrogen limits are necessary to meet in-stream water quality criteria. In accordance with DEP's SOP *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033, Revised March 24, 2021 Version 1.9], winter ammonia-nitrogen limits are assessed by comparing the winter WQM 7.0 output value with one calculated by multiplying the summer limit by a multiplier of three. The more restrictive of the two limits is then imposed. For this facility, the winter ammonia-nitrogen limit to be imposed was calculated using the summer limit. WQM 7.0 modeling output files are included in Attachment B.

The facility is receiving new, more restrictive summer and winter ammonia-nitrogen limits. Based on historic eDMR data, the facility as currently operating should be able to meet the new limits.

Water Quality Based Effluent Limits

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	5.0	Instantaneous Minimum	WQM 7.0
Ammonia-Nitrogen (summer)	2.69	Average Monthly	WQM 7.0
Ammonia-Nitrogen (winter)	8.07	Average Monthly	WQM 7.0

Mass Loading Limits

Section 1.A of the Department's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9] and Table 5.3 of the Department's *Technical Guidance for the Development and Specification of Effluent Limitations* [Doc No. 362-0400-001] establish mass loading limits for Publicly Owned Treatment Works (POTWs) for ammonia-nitrogen, $CBOD_5$, and TSS. Average monthly and average weekly limits will be assigned for $CBOD_5$ and TSS. Mass loading limits are calculated according to the following equation:

$$mass\ loading\ limit\ \left(\frac{lbs}{day}\right) = average\ annual\ flow\ (MGD) * concentration\ limit\ \left(\frac{mg}{L}\right) * 8.34\ (conversion\ factor)$$

The following mass loading limits are being imposed:

Parameter	Average Monthly (lbs/day)

TSS (mg/L)	16.0
$CBOD_5$ (mg/L)	13.0
Ammonia-Nitrogen summer (mg/L)	4.44
Ammonia-Nitrogen winter (mg/L)	1.48

Additional Considerations

In accordance with Section 1.A. of the Department's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9], pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* on July 11, 2020, and under the authority of § 93.7(a) and § 92.a.61, sewage discharges will include monitoring for *E. coli*. For new and reissued permits, a monitoring frequency of 1/quarter will be imposed for a design flow between 0.05 and 1.0 MGD.

In accordance with Section 1.A of the Department's SOP for *Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9], and under the authority of 25 Pa Code § 92a.61(b), nutrient monitoring for total nitrogen and total phosphorus will be imposed. The intent of this monitoring is to establish the nutrient load of the wastewater and evaluate the impact that load may have on the quality of the receiving stream. The SOP states that a monitoring frequency shall be imposed equivalent to that imposed for conventional pollutants if the receiving stream is nutrient impaired or a lesser frequency if the receiving stream is not nutrient impaired. The receiving stream, Tributary 37856 to the Youghiogheny River is not impaired for nutrients, therefore an annual monitoring frequency will again be imposed.

In accordance with Section IV.F.2 of the Department's SOP for *New and Reissuance Sewage Individual NPDES Permit Applications* [SOP No. BCW-PMT-002 Version 2.0] for POTWs with design flows greater than 2,000 GPD, influent BOD_5 and TSS monitoring will be imposed in the permit at a frequency and sample type equivalent to that imposed for the effluent parameters.

Monitoring frequency of the proposed effluent limits are based on Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Department's *Technical Guidance for the Development and Specification of Effluent Limitations* [Doc No. 362-0400-001]. Please note that Monitoring Requirements were not changed.

UV Disinfection is used, therefore, in accordance with Section 1.A. of DEP's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9], Total Residual Chlorine (TRC) limits are not applicable. Routine monitoring of UV transmittance will again be imposed at the same monitoring frequency specified for TRC.

In accordance with Section I.A. of DEP's *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9], weekly average limits for $CBOD_5$ and TSS are not applicable to facilities who sample less than once per week. SBMA samples for these parameters twice monthly, therefore no weekly average limits are being imposed in this permit.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Instantaneous Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
$CBOD_5$	13.0	XXX	XXX	25.0	XXX	50.0	2/month	Grab
BOD_5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
TSS	16.0	XXX	XXX	30.0	XXX	60.0	2/month	Grab
TSS Raw Sewage Influent	Report	XXX	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
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
UV Transmittance (%)	XXX	XXX	Report	Report	Report	XXX	1/day	Measured
Total Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	4.44	XXX	XXX	8.07	XXX	16.14	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	1.48	XXX	XXX	2.69	XXX	5.38	2/month	Grab

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Instantaneous Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total Phosphorus	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001

Other Comments:

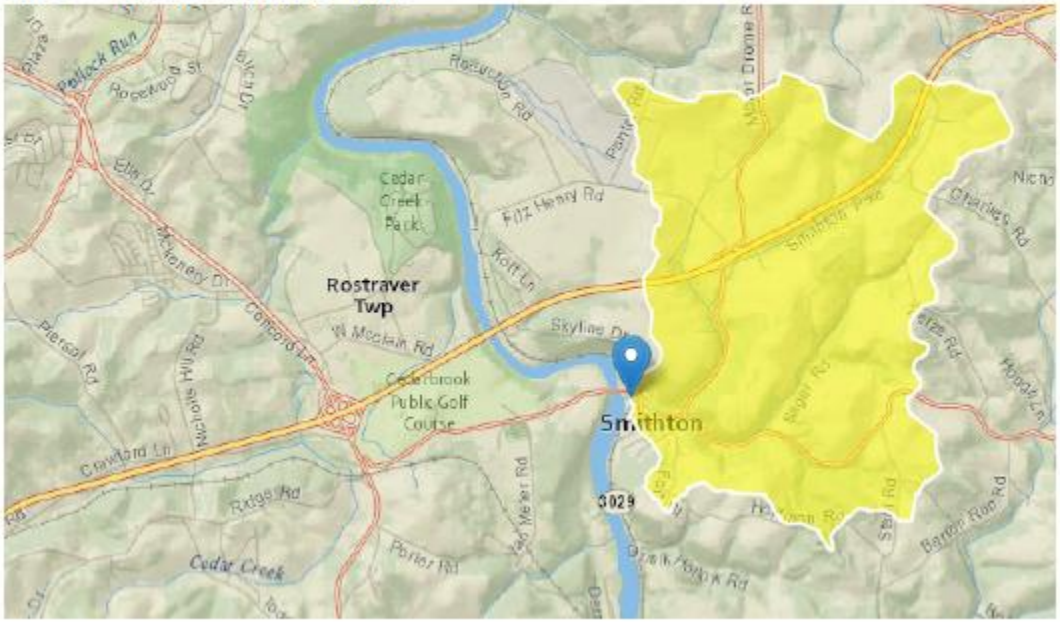
ATTACHMENT A

USGS Stream Stats Output Files

Discharge Point

StreamStats Report

Region ID: PA
Workspace ID: PA20220622182506380000
Clicked Point (Latitude, Longitude): 40.15628, -79.74340
Time: 2022-06-22 14:25:27 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	4.3	square miles
ELEV	Mean Basin Elevation	1045	feet

Low-Flow Statistics Flow Report [Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.132	ft^3/s
30 Day 2 Year Low Flow	0.236	ft^3/s
7 Day 10 Year Low Flow	0.0459	ft^3/s
30 Day 10 Year Low Flow	0.087	ft^3/s
90 Day 10 Year Low Flow	0.161	ft^3/s

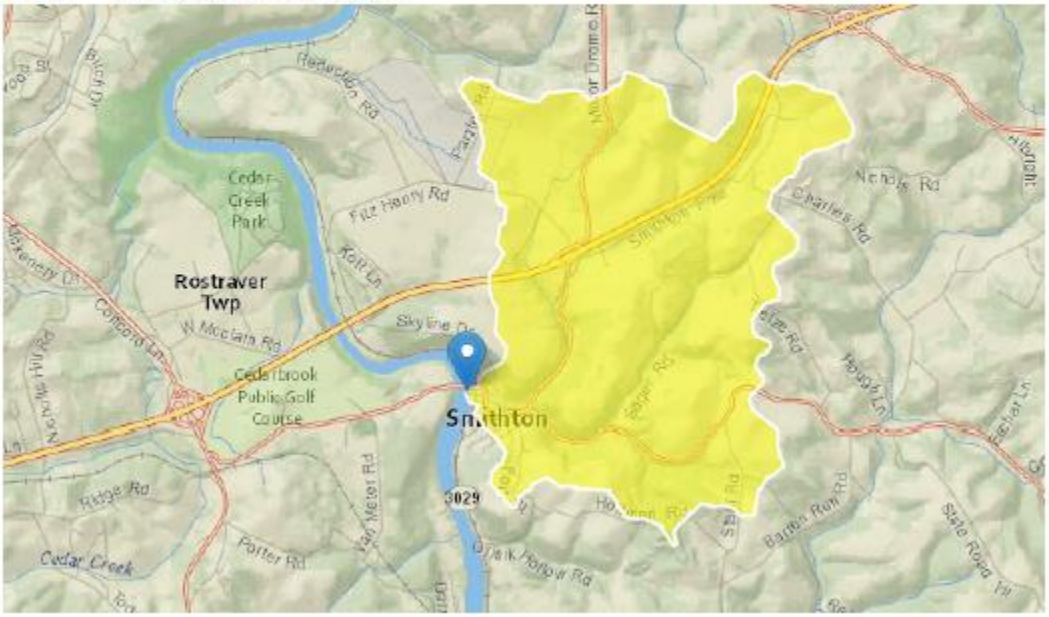
Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Down Stream

StreamStats Report

Region ID: PA
Workspace ID: PA20220622182756646000
Clicked Point (Latitude, Longitude): 40.15639, -79.74450
Time: 2022-06-22 14:28:17 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	4.3	square miles
ELEV	Mean Basin Elevation	1045	feet

ATTACHMENT B

WQM 7.0 Modeling Results

Summer

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
19D	37856	Trib 37856 to Youghiogheny River	0.057	940.00	4.30	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	0.011	0.00	0.00	0.000	0.000	10.0	0.00	0.00	25.00	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
Smithton STP	PA0217522	0.0000	0.0660	0.0000	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	3.50	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
19D	37856	Trib 37856 to Youghiogheny River	0.010	939.00	4.40	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	0.011	0.00	0.00	0.000	0.000	10.0	0.00	0.00	25.00	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
19D	37856	Trib 37856 to Youghiogheny 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 (°C)	Analysis pH
Q7-10 Flow												
0.057	0.05	0.00	0.05	.1021	0.00403	.383	7.53	19.66	0.05	0.056	21.55	7.00
Q1-10 Flow												
0.057	0.03	0.00	0.03	.1021	0.00403	NA	NA	NA	0.05	0.060	21.12	7.00
Q30-10 Flow												
0.057	0.06	0.00	0.06	.1021	0.00403	NA	NA	NA	0.05	0.053	21.90	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 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19D	37856	Trib 37856 to Youghiogheny 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
0.057	Smithton STP	15.28	7	15.28	7	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.057	Smithton STP	1.67	2.69	1.67	2.69	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
0.06	Smithton STP	25	25	2.69	2.69	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19D	37856	Trib 37856 to Youghiogheny River

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.057	0.066	21.550	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
7.527	0.383	19.662	0.051
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
17.87	1.446	1.86	0.789
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.005	18.196	Owens	5
Reach Travel Time (days)			
0.056			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.006	17.71	1.85	6.03
0.011	17.56	1.84	6.05
0.017	17.41	1.83	6.08
0.022	17.26	1.82	6.10
0.028	17.11	1.82	6.12
0.034	16.96	1.81	6.15
0.039	16.82	1.80	6.17
0.045	16.67	1.79	6.19
0.050	16.53	1.78	6.22
0.056	16.38	1.78	6.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19D	37856	Trib 37856 to Youghiogheny River

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Eff. Limit 30-day Ave. (mg/L)	Eff. Limit Maximum (mg/L)	Eff. Limit Minimum (mg/L)
0.057	Smithton STP	PA0217522	0.000	CBOD5	25		
				NH3-N	2.69	5.38	
				Dissolved Oxygen			5

Winter

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
19D	37856	Trib 37856 to Youghiogheny River	0.057	940.00	4.30	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	0.021	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	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
Smithton STP	PA0217522	0.0000	0.0660	0.0000	0.000	15.00	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	12.51	0.00	0.00
NH3-N	10.50	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
19D	37856	Trib 37856 to Youghiogheny River	0.010	939.00	4.40	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	0.021	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	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
19D	37856	Trib 37856 to Youghiogheny 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 (°C)	Analysis pH
Q7-10 Flow												
0.057	0.09	0.00	0.09	.1021	0.00403	.398	8.15	20.45	0.06	0.048	10.27	7.00
Q1-10 Flow												
0.057	0.06	0.00	0.06	.1021	0.00403	NA	NA	NA	0.05	0.053	11.35	7.00
Q30-10 Flow												
0.057	0.12	0.00	0.12	.1021	0.00403	NA	NA	NA	0.07	0.044	9.50	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 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19D	37856	Trib 37856 to Youghiogheny 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
0.057	Smithton STP	24.1	21	24.1	21	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.057	Smithton STP	3.71	8.25	3.71	8.25	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)		
0.06	Smithton STP	25	25	8.25	8.25	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19D	37856	Trib 37856 to Youghiogheny River

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.057	0.066	10.267	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
8.146	0.398	20.447	0.060
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
14.11	1.397	4.35	0.331
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.555	14.314	Owens	5
Reach Travel Time (days)			
0.048			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.005	14.05	4.34	8.61
0.010	13.99	4.33	8.67
0.014	13.93	4.33	8.72
0.019	13.87	4.32	8.76
0.024	13.81	4.31	8.81
0.029	13.75	4.30	8.85
0.034	13.70	4.30	8.89
0.038	13.64	4.29	8.93
0.043	13.58	4.28	8.97
0.048	13.52	4.28	9.00

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19D	37856	Trib 37856 to Youghiogheny River

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Eff. Limit 30-day Ave. (mg/L)	Eff. Limit Maximum (mg/L)	Eff. Limit Minimum (mg/L)
0.057	Smithton STP	PA0217522	0.000	CBOD5	25		
				NH3-N	8.25	16.5	
				Dissolved Oxygen			5