pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0081582**
Facility Type	**Municipal**	APS ID	**275376**
Major / Minor	**Minor**	Authorization ID	**1462991**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Possum Valley Municipal Authority** **Adams County**	Facility Name	**Possum Valley STP**
Applicant Address	609 Clearview Road Aspers, PA 17304-9703	Facility Address	609 Clearview Road Aspers, PA 17304-9703
Applicant Contact	Stephen Russell	Facility Contact	Steve Russell
Applicant Phone	(717) 677-8551	Facility Phone	(717) 677-8551
Client ID	6159	Site ID	252213
Ch 94 Load Status	Not Overloaded	Municipality	Menallen Township
Connection Status	No Limitations	County	Adams
Date Application Received	November 27, 2023	EPA Waived?	Yes
Date Application Accepted	November 28, 2023	If No, Reason	

Purpose of Application: NPDES permit renewal.

Summary of Review

Terrence L. Sheldon, P.E. RLA, on behalf of the Possum Valley Municipal Authority (Authority/Permittee), applied to the Pennsylvania Department of Environmental Protection (DEP) for issuance of the NPDES permit. The permit was reissued on May 21, 2019 and became effective on June 1, 2019. The permit expires on May 31, 2024.

The average annual design flow and hydraulic design capacity is 0.12 MGD, and the organic loading capacity is 325.0 lbs BOD_5/day. The renewal application indicated the STP receives its 60% from the Bendersville Borough and 40% from Menallen Township.

The WQM Part II permit No. WQG02012102 pump station was issued on 2/09/2022.

Sludge use and disposal description and location(s): N/A because sludge hauled by Peck's Septic Service.

Changes from the previous permit: E. Coli monitoring and report requirements will add to the proposed permit.

Based on the review outlined in this fact sheet, it is recommended that the permit be drafted. A public notice of the draft permit will be published in the *Pennsylvania Bulletin* for public comments for 30 days.

Approve	Deny	Signatures	Date
X		*Hilaryle* Hilary H. Le / Environmental Engineering Specialist	March 8, 2024
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	March 22, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.12
Latitude	39º 58' 30.71"	Longitude	-77º 13' 28.58"
Quad Name	Biglerville	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Opossum Creek (TSF & MF)	Stream Code	9057
NHD Com ID	57470197	RMI	4.77
Drainage Area	17.3 mi.^{2}	Yield (cfs/mi^2)	See comment below
Q_{7-10} Flow (cfs)	See comment below	Q_{7-10} Basis	See comment below
Elevation (ft)	602.37	Slope (ft/ft)	
Watershed No.	7-F	Chapter 93 Class.	TSF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s) supports aquatic life. Impaired for recreational uses		
Cause(s) of Impairment	Pathogens		
Source(s) of Impairment	Unknown source		
TMDL Status	Tentative	Name	Opossum Creek
Nearest Downstream Public Water Supply Intake	PPL Brunner Island		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI	53.7 miles	Distance from Outfall (mi)	Approximate 67.0 miles

Changes Since Last Permit Issuance: none

Drainage Area

The discharge is to Opossum Creek at RMI 4.77 miles. A drainage area upstream of the discharge is 17.3 mi.^{2}, according to USGS PA StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow

The USGS gauging station No. 01574000 on the West Conewago Creek near at Manchester PA has the following data:

Yield = 39.2 cfs/512 mi^2 = 0.077 cfs/mi^2
Q_{7-10} = 0.077 cfs/mi^2 * 17.3 mi^2 = 1.32 cfs
Q_{30-10} = 1.32 cfs * 1.36 = 1.8 cfs
Q_{1-10} = 1.32 cfs * 0.64 = 0.84 cfs

Node	Distance (miles)	Q_{7-10} (cfs)	Drainage Area (mi.^{2})	LFY (cfs/mi.^{2})
Modeling Point #1	4.77	5.28	17.3	0.3052
Modeling Point #2	4.24	4.95	18.4	0.269
Modeling Point #3	4.14	5.09	19.5	0.261
Modeling Point #4	3.14	5.04	20.1	0.251
	Average			0.27

Receiving Water Characteristics

Under 25 Pa Code §93.9f, Opossum Creek is designated as Trout Stocking Fishes and Migratory Fishes (TSF & MF). The discharge is located within a stream segment listed as attaining uses.

Public Water Supply

The nearest downstream public water supply intake is for PPL Brunner Island on Susquehanna River, approximately 67.0 miles downstream of this discharge. Considering distance and dilution, the discharge is not expected to impact the water supply.

303d Listed Streams

Based on the 2022 Integrated Report, Opossum Creek, assessment unit IDs 18577 & 13022, is not impaired. A TMDL currently does not exist for this stream segment, therefore, no TMDL has been taken into consideration during this review. The surface waters are an attaining stream that supports aquatic life. The surface waters are also impaired for pathogens from an unknown source.

Treatment Facility Summary

Treatment Facility Name: Possum Valley STP

WQM Permit No.	Issuance Date
WQG02012102	2/09/2022

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage			Hypochlorite	0.12

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.12	325	Not Overloaded		

Changes Since Last Permit Issuance: none

Other Comments:

Per DEP's recent visit to the WWTP on August 30, 2023; the treatment facility consists of the following units:

- One influent screen
- One equalization tank/basin
- Two aeration basins
- Two clarifiers
- Two chlorine contact tanks
- Two post aerations
- Two sludge holding tanks

Chemical used:
Hypochlorite is used for disinfection at a rate of 1.0 lb/day. Sodium Aluminate is used for pH builder and coagulation at a rate of 8 gpd.

Biosolids:
The total sewage sludge/biosolids production within the facility for the previous year was 17.991 dry tons.

Industrial/Commercial Users:
The permit application indicated there is no industrial/commercial contributor to the treatment plant.

Compliance History	
Summary of DMRs:	A summary of the past 12-month DMR data is presented on the pages 6 & 7.
Summary of Inspections:	**08/30/2023**: Mr. Hoy, DEP Water Quality Specialist, conducted compliance evaluation inspection. There were no violations noted during inspection. The field sample test results were within permit limits. *Recommendations*: 1. NIST thermometers should be calibrated or replaced on an annual basis. 2. Maintaining a sample storage temperature of <= 6 ^{o}C. 3. Completing the laboratories section of the daily effluent supplemental report. 4. Keeping a complete copy of the current permit on-site for reference. *Requests*: 1. Revising the December 2022 sewage sludge supplemental report and ensuring the box is unchecked when hauling does occur. 2. The TRC sample is left to react for three minutes before recording the result. **07/13/2021**: Mr. Bettinger, DEP Water Quality Specialist, conducted compliance evaluation inspection. The field sample test results were within permit limits. Effluent appeared clear. *Recommendations*: 1. Revising the July 2020 Daily Supplemental Form to reflect the laboratory sampling result for total Phosphorus on 7/7/2020 and submit the revision on Greenport. 2. Utilizing NIST traceable thermometer in the influent and effluent composite samples to verify sampler refrigerator temperature. 3. Cleaning and Maintaining a path to outfall 001.
Other Comments:	There are currently no open violations associated with the permittee or the facility.

Other Comments:

The table below summarizes the influent/effluent testing results submitted along with the application.

Influent Testing Results

Parameter	Min/Max Value	Average Value
BOD_5 (mg/L)	95/265 mg/L	172 mg/L
BOD_5 (lbs/day)	66/233 lbs/day	124 lbs/day
TSS (mg/L)	34/232 mg/L	116 mg/L
TSS (lbs/day)	18/153 lbs/day	79 lbs/day
TN (mg/L)	32.5 mg/L	32.5 mg/L
TN (lbs/day)	22.7 lbs/day	22.7 lbs/day
TP (mg/L)	2.9 mg/L	2.9 mg/L
TP (lbs/day)	2.0 lbs/day	2.0 lbs/day
NH_3-N (mg/L)	16 mg/L	16.0 mg/L
NH_3-N (lbs/day)	11.2 lbs/day	11.2 lbs/day
TDS (mg/L)	214 mg/L	214 mg/L
TDS (lbs/day)	150 lbs/day	150 lbs/day
TKN	31 mg/L	31 mg/L
NO_2-N + NO_3-N	1.9 mg/L	1.9 mg/L

Effluent Testing Results

Parameter	Min/Max Value	Average Value
pH (minimum)	6.2 S.U.	
pH (maximum)	7.4 S.U.	
D.O (minimum)	7.6 mg/L	8.86 mg/L
TRC	0.28/0.49 mg/L	0.38 mg/L
Fecal Coliform	<1/1986 No./100mL	75 No./100 mL
$CBOD_5$	<2/6.9 mg/L	4.1 mg/L
TSS	1/13 mg/L	3.9 mg/L
NH_3-N	<0.1/0.67 mg/L	0.13 mg/L
TN	<0.4/55 mg/L	34 mg/L
TP	<0.1/1.4 mg/L	0.37 mg/L
Temp	38/40 F	39 F
TKN	<0.3/0.5 mg/L	0.4 mg/L
NO_2-N + NO_3-N	<0.3/50 mg/L	28 mg/L
TDS	264/510 mg/L	382 mg/L
Chloride	44/60 mg/L	51 mg/L
Bromide	< 0.5 mg/L	< 0.5 mg/L
Sulfate	27/34 mg/L	30 mg/L
Oil and Grease	<5/11 mg/L	< 5 mg/L
Total Copper	0.0015/0.0021 mg/L	0.0018 mg/L
Total Lead	< 0.001 mg/L	< 0.001 mg/L
Total Zinc	0.045/0.061 mg/L	0.052 mg/L

Compliance History

DMR Data for Outfall 001 (from February 1, 2023 to January 31, 2024)

Parameter	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23
Flow (MGD) Average Monthly	0.111	0.088	0.071	0.072	0.074	0.071	0.071	0.069	0.076	0.072	0.086	0.075
Flow (MGD) Daily Maximum	0.195	0.166	0.123	0.105	0.116	0.091	0.087	0.082	0.152	0.171	0.16	0.086
pH (S.U.) Instantaneous Minimum	6.5	6.3	6.6	6.7	6.6	6.7	6.5	6.5	6.4	6.6	6.5	6.5
pH (S.U.) Instantaneous Maximum	7.0	7.1	7.0	7.3	7.1	7.0	7.1	7.1	7.1	7.0	6.9	7.1
DO (mg/L) Instantaneous Minimum	9.8	7.7	7.6	7.3	7.1	6.9	6.7	7.6	8.0	7.8	9.8	9.1
TRC (mg/L) Average Monthly	0.32	0.34	0.34	0.35	0.33	0.33	0.34	0.33	0.39	0.37	0.35	0.35
TRC (mg/L) Instantaneous Maximum	0.40	0.43	0.48	0.48	0.37	0.46	0.48	0.4	0.53	0.53	0.60	0.48
CBOD5 (lbs/day) Average Monthly	< 2	< 2	< 2	< 1	< 1	< 1	< 9	< 1	< 1	1.0	< 2	< 2
CBOD5 (lbs/day) Weekly Average	< 2	< 2	< 2	< 1	< 2	2	16	< 1	< 1	1.0	3	< 2
CBOD5 (mg/L) Average Monthly	< 3	< 2	< 2	< 2	< 2	< 3	< 16	< 2	< 2	3.0	< 4	< 2
CBOD5 (mg/L) Weekly Average	3	< 2	< 2	< 2	< 2	3	30	< 3	< 2	3.0	5	3
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	< 76	77	108	68	7	80	100	128	172	186	88	103
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	93	93	153	70	93	80	113	146	212	209	95	115
BOD5 (mg/L) Raw Sewage Influent Average Monthly	< 99	105	147	123	125	136	163	234	290	322	130	163
TSS (lbs/day) Average Monthly	2.0	1.3	1.4	2.2	2.1	1.8	5.3	1.9	2.0	1.8	2.8	1.9

TSS (lbs/day) Raw Sewage Influent Average Monthly	49	37	65	39	49	44	58	108	160	183	42	47
TSS (lbs/day) Raw Sewage Influent Daily Maximum	55	44	102	49	54	47	78	110	207	237	50	58
TSS (lbs/day) Weekly Average	2	2	2	3	4	3	10	3	2.0	2	4	2
TSS (mg/L) Average Monthly	3	2	2	4.0	4	3	10	4	4	3	4	3
TSS (mg/L) Raw Sewage Influent Average Monthly	60	46	84	70	80	74	92	198	268	312	58	74
TSS (mg/L) Weekly Average	3	2	2	6	6	5	19	5	4	4	5	3
Fecal Coliform (No./100 ml) Geometric Mean	5	6	7	< 2	5	< 3	2	1	1	23	4	29
Fecal Coliform (No./100 ml) Instantaneous Maximum	9	34	11	3	15	8	2	2	2	23	8	79
Nitrate-Nitrite (mg/L) Annual Average		55										
Total Nitrogen (mg/L) Annual Average		55										
Ammonia (lbs/day) Average Monthly	< 0.08	< 0.08	< 0.07	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05	< 0.06	< 0.3	< 0.07	< 0.06
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1
TKN (mg/L) Annual Average		< 1										
Total Phosphorus (lbs/day) Average Monthly	0.2	0.2	< 0.09	0.1	0.2	0.2	< 0.3	0.1	0.1	0.2	0.3	0.1
Total Phosphorus (mg/L) Average Monthly	0.21	0.21	< 0.12	0.20	0.26	0.30	< 0.60	0.25	0.18	0.35	0.36	0.22

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.12
Latitude 39º 58' 30.71" **Longitude** -77º 13' 28.58"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

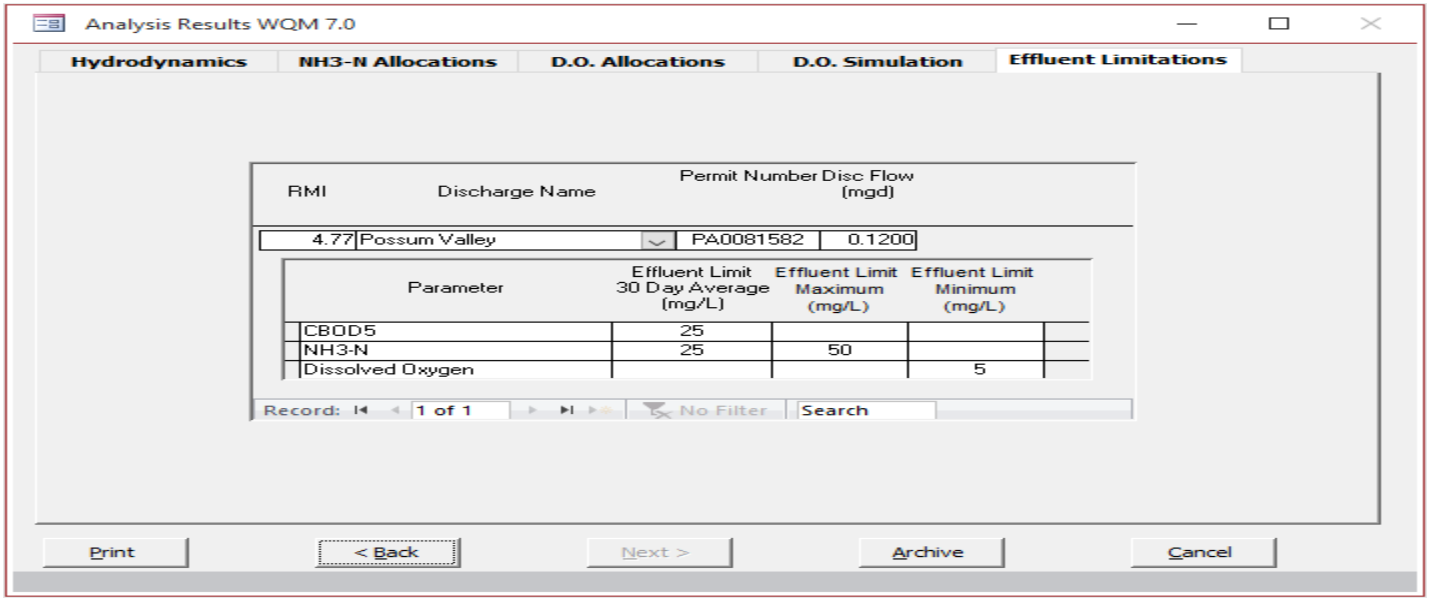
The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

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

Ammonia (NH_3-N):
NH_3N calculations are based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the in-stream NH_3-N criteria used in the attached WQM 7.0 computer model of the stream:

*	Discharge pH	=	7.0	(Default)
*	Discharge Temperature	=	20°C	(Default)
*	Stream pH	=	7.0	(Default)
*	Stream Temperature	=	20ºC	(Default)
*	Background NH_3-N	=	0 mg/L	(Default)



Regarding NH_3-N limits, the attached computer printout of the WQM 7.0 stream model (version 1.1) indicates that a limit of 25.0 mg/L as a monthly average and 50.0 mg/L instantaneous maximum (IMAX) are necessary to protect the aquatic life from toxicity effects at the point of discharge. However, the existing summer limits of 6.0 mg/L monthly average, & 12.0 mg/L IMAX are more stringent and will remain in the proposed permit. Per anti-backsliding policy, the existing winter average monthly limit of 18.0 mg/L & IMAX limit of 36.0 mg/L will remain in place. Recent DMRs and inspection reports show that the facility has been consistently achieving these limits. Mass limits are calculated as follows:

Summer average monthly mass limit: 6.0 mg/L x 0.12 MGD x 8.34 = 6.00 lbs/day
Winter average monthly mass limit: 18.0 mg/L x 0.12 MGD x 8.34 = 18.01 (18.0) lbs/day

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$):
The attached computer printout of the WQM 7.0 stream model (ver. 1.1) indicates that a monthly average limit of 25.0 mg/L, or secondary treatment, is adequate to protect the water quality of the stream. However, the existing permit 25.0 mg/L as AML, 40.0 mg/L as weekly average limit (AWL), & 50.0 mg/L as IMAX for all year round will remain in the proposed permit. Recent DMRs and inspection reports show that the facility has typically been achieving concentrations below this limit. Mass limits are calculated as follows:

Average monthly mass limit: 25.0 mg/L x 0.12 MGD x 8.34 = 25.02 (25.0) lbs/day
Average weekly mass limit: 40.0 mg/L x 0.12 MGD x 8.34 = 40.03 (40.0) lbs/day

Dissolved Oxygen (D.O.):
The D.O. goal is 6.0 mg/L. However, a minimum D.O. of 5.0 mg/L is required per 25 Pa. Code § 93.7. It is recommended that this limit be maintained in the proposed permit to ensure the protection of water quality standards. This approach is consistent with DEP's current Standard Operating Procedure (SOP) No. BCW-PMT-033, version 2.0 revised February 5, 2024, and has been applied to other point source dischargers throughout the state.

Fecal Coliform:
The recent coliform guidance in 25 Pa. Code § 92a.47.(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean and an instantaneous maximum not greater than 1,000/100ml and § 92a.47.(a)(5) requires a winter limit of 2,000/100ml as a geometric mean and an instantaneous maximum not greater than 10,000/100ml.

E. Coli:
As recommended by DEP's SOP No. BCW-PMT-033, version 2.0 revised February 5, 2024, a routine monitoring for E. Coli will be included in the proposed permit under 25 Pa. Code § 92a.61. This requirement applies to all sewage dischargers greater than 0.002 MGD in their new and reissued permits. A monitoring frequency of 1/quarter will be included in the permit to be consistent with the recommendation from this SOP.

Flow Monitoring
The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii).

pH:
The effluent discharge pH should remain above 6.0 and below 9.0 standard units according to 25 Pa. Code § 95.2(1).

Total Suspended Solids (TSS):
The existing technology-based limits of 30.0 mg/L average monthly, 45.0 mg/L weekly average, and 60.0 mg/L IMAX will remain in the proposed permit based on the minimum level of effluent quality attainable by secondary treatment based on 25 Pa. Code § 92a.47. Recent DMRs and inspection reports show that the facility has been consistently achieving these limits. Mass limits are calculated as follows:

Average monthly mass limit: 30.0 mg/L x 0.12 MGD x 8.34 = 30.02 (30.0) lbs/day
Average weekly mass limit: 45.0 mg/L x 0.12 MGD x 8.34 = 45.04 (45.0) lbs/day

Raw Sewage Influent Monitoring:
As a result of negotiation with EPA, influent monitoring of TSS and BOD_5 are required for any POTWs; therefore, influent sampling of BOD_5 and TSS will remain in the proposed permit. A 24-hr composite sample type will be required to be consistent with the proposed sampling frequency for TSS and BOD_5 in the effluent.

Total Residual Chlorine (TRC):
The attached computer printout utilizes the equation and calculations as presented in the Department's 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID#391-2000-015) for developing chlorine limitations. The average monthly limit of 0.5 mg/L and IMAX limit of 1.64 mg/L. However, the existing permit 0.4 mg/L as AML, & 1.4

mg/L as IMAX are more stringent and will remain in the proposed permit. Recent DMRs and inspection reports show that the facility has typically been achieving concentrations below this limit.

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

1.32	= Q stream (cfs)	0.5	= CV Daily
0.12	= 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 = 2.287	1.3.2.iii	WLA cfc = 2.222
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.852	5.1d	LTA_cfc = 1.292

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)

Toxics:
The data was analyzed based on the guidelines found in DEP's Water Quality Toxics Management Strategy (Document No. 361-0100-003, version 1.4, revised 5/2023) and DEP's SOP No. BPNPSM-PMT-033. Spreadsheet results are attached to this fact sheet. The Toxics Management Spreadsheet uses the following logic:

a. Establish average monthly and IMAX limits in the draft permit where the maximum reported concentration exceeds 50% of the WQBEL.
b. For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.
c. For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10%-50% of the WQBEL.

Pollutant testing results on the current (2023) application were reviewed in comparison with DEP's Toxic Management Spreadsheet, version 1.4, May 2023, output recommends no routine monitoring requirements. Therefore, no monitoring requirements are added in the proposed permit.

☑ *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

Total Phosphorus:
The existing monthly average of 2.0 mg/L & IMAX of 4.0 mg/L limits will be carried over in the proposed permit. The mass-based limit is 2.0 lbs./day as average monthly which will be carried over as well. Minimum monitoring frequency will remain the same as 2/month.

Average monthly mass limit: 2.0 mg/L x 0.12 MGD x 8.34 = 2.0 (2.0) lbs/day

Total Dissolved Solids (TDS):
TDS and its associated solids including Bromide, Chloride, and Sulfate have become statewide pollutants of concern. The requirement to monitor these pollutants must be considered under the criteria specified in 25 Pa. Code § 95.10 and the following January 23, 2014 DEP Central Office Directive:

> *For point source discharges and upon issuance or reissuance of an individual NPDES permit:*
>
> *-Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.*
>
> *-Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.*
>
> *-Where the concentration of 1,4-dioxane (CAS 123-91-1) in a discharge exceeds 10 µg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for 1,4-dioxane. Discharges of 0.1 MGD or less should monitor and report for 1,4-dioxane if the concentration of 1,4-dioxane in the discharge exceeds 100 µg/L.*

The sample result shows that effluent contains a maximum TDS concentration of 510.0 mg/L and Bromide concentration of < 0.5 mg/l. Accordingly, the requirement to monitor these pollutants is not necessary. The resulting TDS load would be 510.4 lbs/day: 510 mg/L TDS x 0.12 MGD x 8.34 c.f.

Chesapeake Bay Strategy:
According to DEP's Chesapeake Bay Phase II Watershed Implementation Plan (WIP) Wastewater Supplement, this facility is considered a phase 5 non-significant sewage discharger with design flow less than 0.2 MGD but greater than 0.002 MGD. In general, DEP will issue permits for all phase 5 facilities with monitoring and reporting for Total Nitrogen (TN) and Total Phosphorus (TP) throughout the permit term at a frequency no less than annually. Furthermore, DEP's SOP No. BPNPSM-PMT-033 states that in general, at a minimum, monitoring for TN and TP should be included in new and reissued permits for sewage discharges with design flows > 2,000 gpd. At this time, the Department is not requiring a total maximum annual nitrogen or phosphorus loading cap. Nitrate-Nitrite as N, Total Kjeldahl Nitrogen, and TN monitoring is already included in the existing permit and will remain in the proposed renewal.

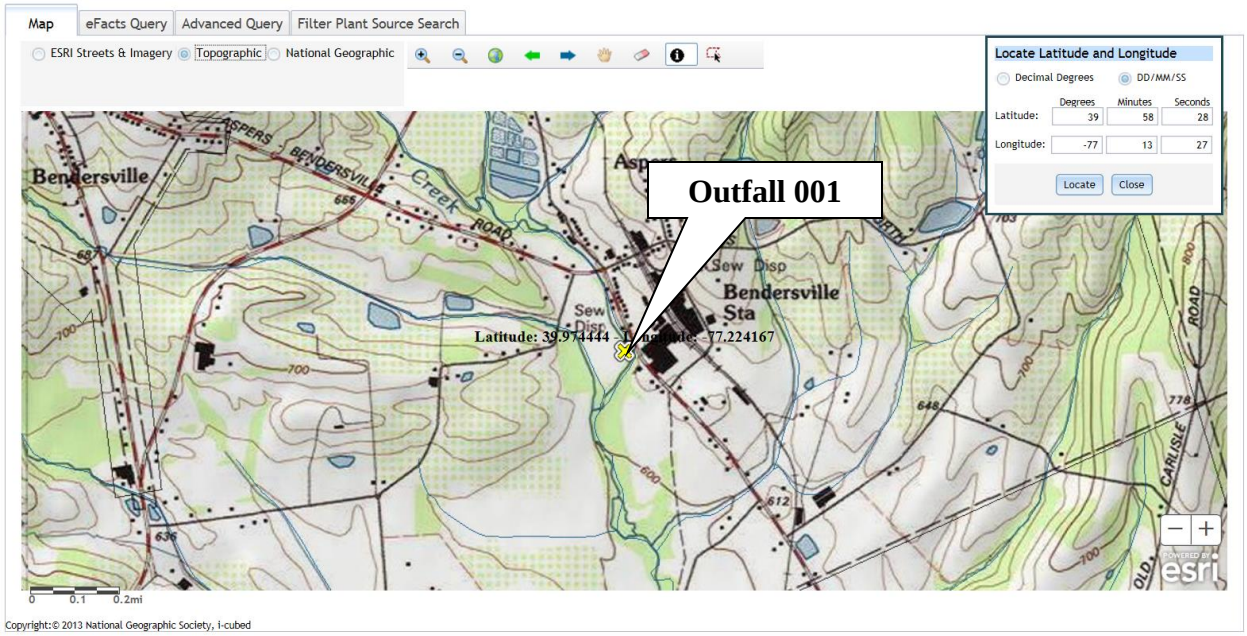
Stormwater:
There is no known stormwater outfall associated with this facility.

WETT:
Minor facilities and facilities without a formal EPA approved pretreatment program are exempted from WETT.

Antidegradation (93.4):
The effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

Anti-Backsliding
Anti-backsliding is a federal regulation which prohibits a permit from being renewed, reissued, or modified containing effluent limitations which are less stringent than the comparable effluent limitations in the previous permit (40 CFR 122.l.1 and 40 CFR 122.l.2). A review of the existing permit limitations with the proposed permit limitations confirm that the facility is consistent with anti-backsliding requirements. The facility has proposed effluent limitations that are as stringent as the existing permit.

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


Map
eFacts Query
Advanced Query
Filter Plant Source Search
ESRI Streets & Imagery
Topographic
National Geographic
Locate Latitude and Longitude
Decimal Degrees
DD/MM/SS
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Latitude: 39 58 28
Longitude: -77 13 27
Locate
Close
Outfall 001
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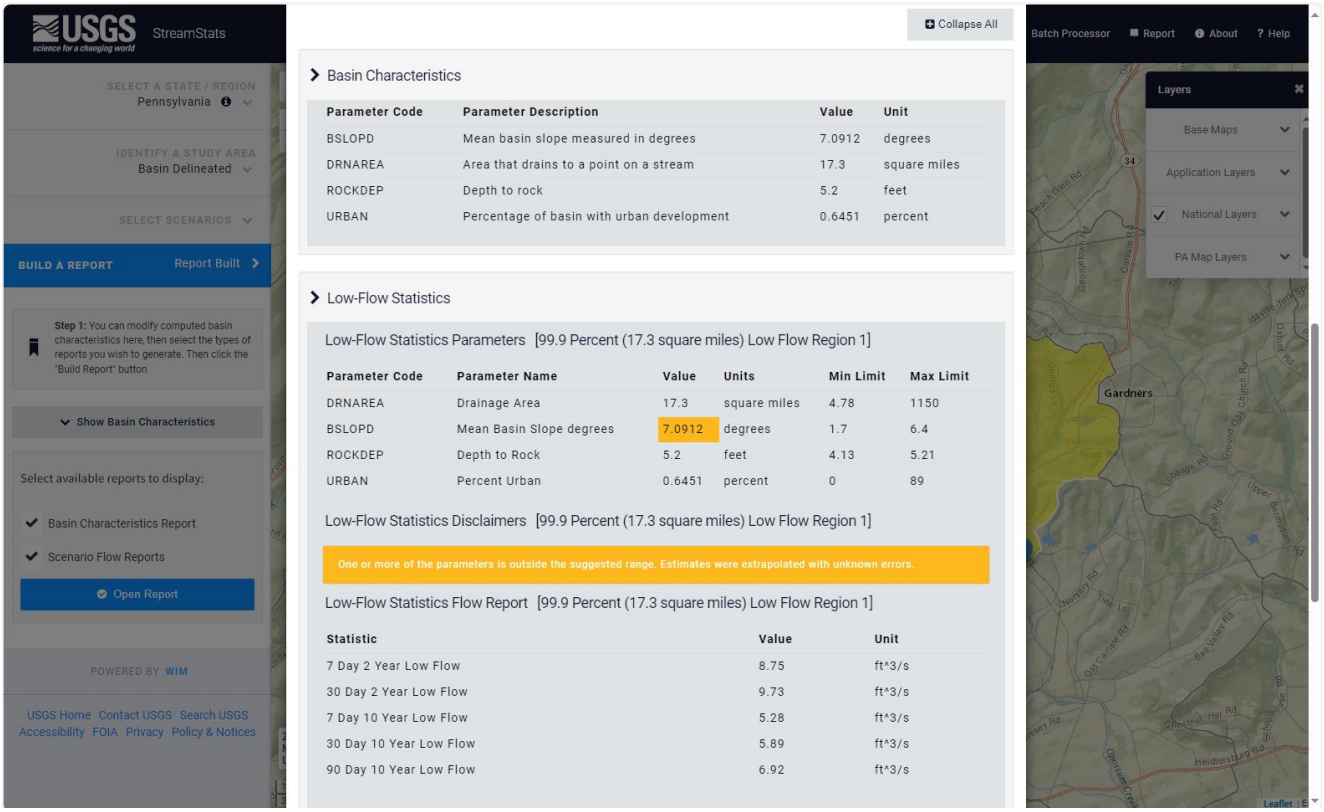
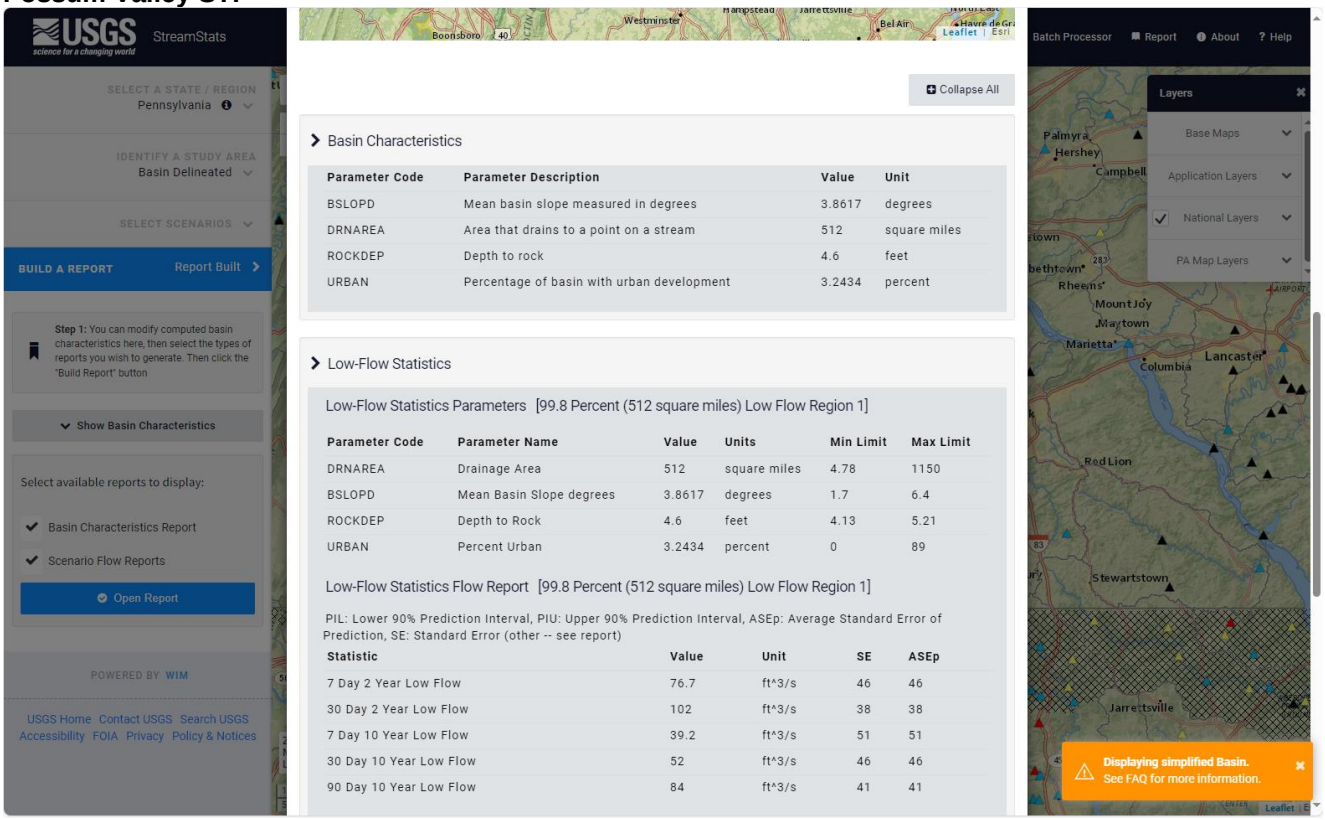
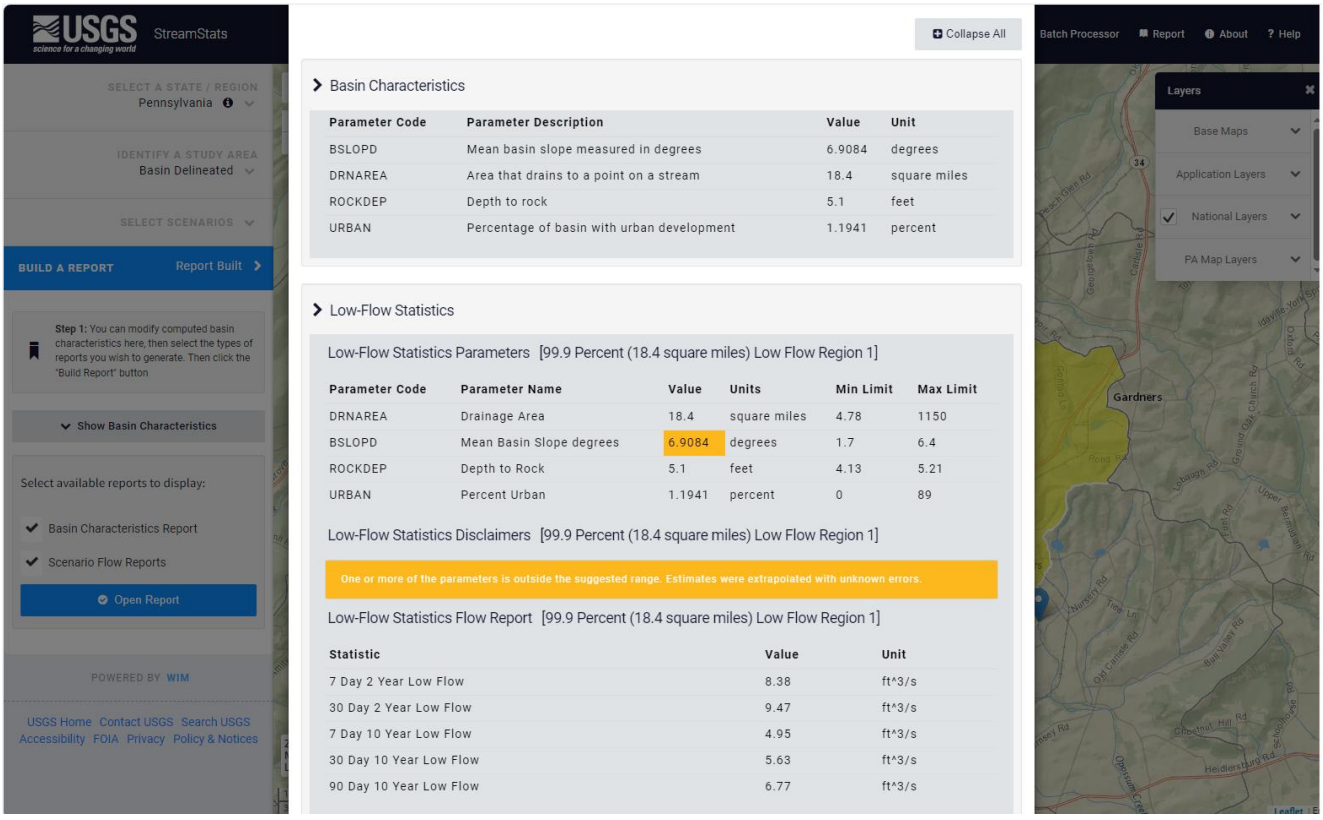

USGS StreamStats
Collapse All
Batch Processor
Report
About
Help
Basin Characteristics
Parameter Code Parameter Description Value Unit
BSLOPD Mean basin slope measured in degrees 7.0912 degrees
DRNAREA Area that drains to a point on a stream 17.3 square miles
ROCKDEP Depth to rock 5.2 feet
URBAN Percentage of basin with urban development 0.6451 percent
Low-Flow Statistics
Low-Flow Statistics Parameters [99.9 Percent (17.3 square miles) Low Flow Region 1]
Parameter Code Parameter Name Value Units Min Limit Max Limit
DRNAREA Drainage Area 17.3 square miles 4.78 1150
BSLOPD Mean Basin Slope degrees 7.0912 degrees 1.7 6.4
ROCKDEP Depth to Rock 5.2 feet 4.13 5.21
URBAN Percent Urban 0.6451 percent 0 89
Low-Flow Statistics Disclaimers [99.9 Percent (17.3 square miles) Low Flow Region 1]
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.
Low-Flow Statistics Flow Report [99.9 Percent (17.3 square miles) Low Flow Region 1]
Statistic Value Unit
7 Day 2 Year Low Flow 8.75 ft^3/s
30 Day 2 Year Low Flow 9.73 ft^3/s
7 Day 10 Year Low Flow 5.28 ft^3/s
30 Day 10 Year Low Flow 5.89 ft^3/s
90 Day 10 Year Low Flow 6.92 ft^3/s
SELECT A STATE / REGION
Pennsylvania
IDENTIFY A STUDY AREA
Basin Delineated
SELECT SCENARIOS
BUILD A REPORT
Report Built
Show Basin Characteristics
Select available reports to display:
Basin Characteristics Report
Scenario Flow Reports
Open Report
POWERED BY WIM
USGS Home Contact USGS Search USGS
Accessibility FOIA Privacy Policy & Notices
Layers
Base Maps
Application Layers
National Layers
PA Map Layers
Gardners


USGS StreamStats
SELECT A STATE / REGION
Pennsylvania
IDENTIFY A STUDY AREA
Basin Delineated
SELECT SCENARIOS
BUILD A REPORT
Report Built
Step 1: You can modify computed basin characteristics here, then select the types of reports you wish to generate. Then click the "Build Report" button
Show Basin Characteristics
Select available reports to display:
Basin Characteristics Report
Scenario Flow Reports
Open Report
POWERED BY WIM
USGS Home Contact USGS Search USGS
Accessibility FOIA Privacy Policy & Notices
Collapse All
Basin Characteristics
Parameter Code | Parameter Description | Value | Unit
BSLOPD | Mean basin slope measured in degrees | 3.8617 | degrees
DRNAREA | Area that drains to a point on a stream | 512 | square miles
ROCKDEP | Depth to rock | 4.6 | feet
URBAN | Percentage of basin with urban development | 3.2434 | percent
Low-Flow Statistics
Low-Flow Statistics Parameters [99.8 Percent (512 square miles) Low Flow Region 1]
Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit
DRNAREA | Drainage Area | 512 | square miles | 4.78 | 1150
BSLOPD | Mean Basin Slope degrees | 3.8617 | degrees | 1.7 | 6.4
ROCKDEP | Depth to Rock | 4.6 | feet | 4.13 | 5.21
URBAN | Percent Urban | 3.2434 | percent | 0 | 89
Low-Flow Statistics Flow Report [99.8 Percent (512 square miles) Low Flow Region 1]
PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)
Statistic | Value | Unit | SE | ASEp
7 Day 2 Year Low Flow | 76.7 | ft^3/s | 46 | 46
30 Day 2 Year Low Flow | 102 | ft^3/s | 38 | 38
7 Day 10 Year Low Flow | 39.2 | ft^3/s | 51 | 51
30 Day 10 Year Low Flow | 52 | ft^3/s | 46 | 46
90 Day 10 Year Low Flow | 84 | ft^3/s | 41 | 41
Batch Processor
Report
About
Help
Layers
Base Maps
Application Layers
National Layers
PA Map Layers
Displaying simplified Basin.
See FAQ for more information.
Leaflet


USGS StreamStats
SELECT A STATE / REGION
Pennsylvania
IDENTIFY A STUDY AREA
Basin Delineated
SELECT SCENARIOS
BUILD A REPORT
Report Built
Step 1: You can modify computed basin characteristics here, then select the types of reports you wish to generate. Then click the "Build Report" button
Show Basin Characteristics
Select available reports to display:
Basin Characteristics Report
Scenario Flow Reports
Open Report
POWERED BY WIM
USGS Home Contact USGS Search USGS
Accessibility FOIA Privacy Policy & Notices
Collapse All
Basin Characteristics
Parameter Code | Parameter Description | Value | Unit
BSLOPD | Mean basin slope measured in degrees | 6.9084 | degrees
DRNAREA | Area that drains to a point on a stream | 18.4 | square miles
ROCKDEP | Depth to rock | 5.1 | feet
URBAN | Percentage of basin with urban development | 1.1941 | percent
Low-Flow Statistics
Low-Flow Statistics Parameters [99.9 Percent (18.4 square miles) Low Flow Region 1]
Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit
DRNAREA | Drainage Area | 18.4 | square miles | 4.78 | 1150
BSLOPD | Mean Basin Slope degrees | 6.9084 | degrees | 1.7 | 6.4
ROCKDEP | Depth to Rock | 5.1 | feet | 4.13 | 5.21
URBAN | Percent Urban | 1.1941 | percent | 0 | 89
Low-Flow Statistics Disclaimers [99.9 Percent (18.4 square miles) Low Flow Region 1]
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.
Low-Flow Statistics Flow Report [99.9 Percent (18.4 square miles) Low Flow Region 1]
Statistic | Value | Unit
7 Day 2 Year Low Flow | 8.38 | ft^3/s
30 Day 2 Year Low Flow | 9.47 | ft^3/s
7 Day 10 Year Low Flow | 4.95 | ft^3/s
30 Day 10 Year Low Flow | 5.63 | ft^3/s
90 Day 10 Year Low Flow | 6.77 | ft^3/s
Batch Processor
Report
About
Help
Layers
Base Maps
Application Layers
National Layers
PA Map Layers
Gardners
Leaflet

WQM 7.0:

The following data were used in the attached computer model (WQM 7.0) of the stream:

*	Discharge pH	7.0	(Default)
*	Discharge Temperature	20°C	(Default per 391-2000-013)
*	Stream pH	7.0	(Default per 391-2000-013)
*	Stream Temperature	20°C	(Default per 391-2000-013)

The following two nodes were used in modeling:

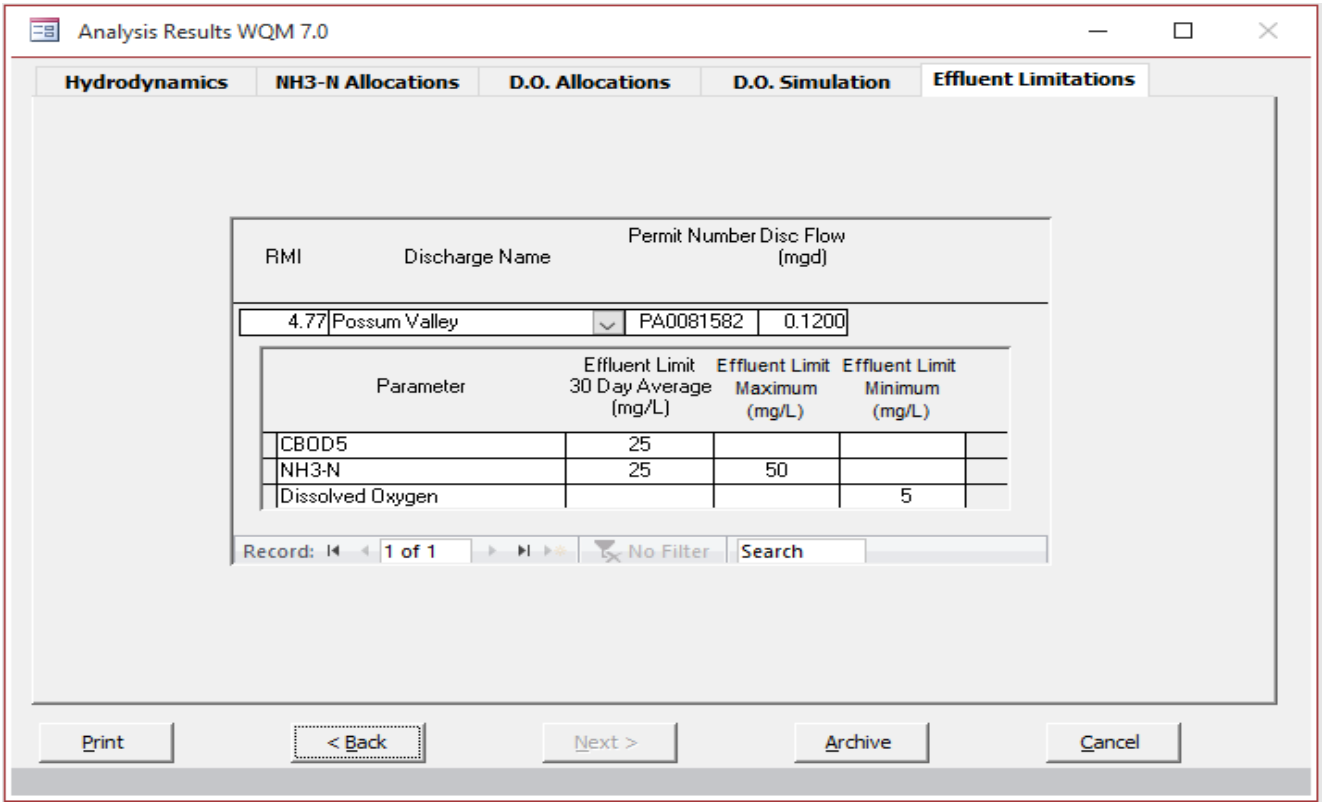
Node 1: Outfall 001 at Opossum Creek (09057)

Elevation:	602.37 ft (USGS National Map)
Drainage Area:	17.3 mi^2 (USGS StreamStats)
River Mile Index:	4.77 (PA DEP eMapPA)
Low Flow Yield:	0.27 cfs/mi^2
Discharge Flow:	0.12 MGD

Node 2: At the confluence UNT to 09097

Elevation:	592.50 ft (USGS National Map)
Drainage Area:	18.4 mi^2 (USGS StreamStats)
River Mile Index:	4.24 (PA DEP eMapPA)
Low Flow Yield:	0.27 cfs/mi^2
Discharge Flow:	0.00 MGD

Node	Distance (miles)	Q_{7-10} (cfs)	Drainage Area ($mi.^2$)	LFY ($cfs/mi.^2$)	Elevation (ft)
Modeling Point #1	4.77	5.28	17.3	0.3052	602.37
Modeling Point #2	4.24	4.95	18.4	0.269	592.50
Modeling Point #3	4.14	5.09	19.5	0.261	588.16
Modeling Point #4	3.14	5.04	20.1	0.251	567.01
	Average			0.27	



rptEffLimits

WQM 7.0 Effluent Limits

SWP Basin: 07F | Stream Code: 90ST | Stream Name: OPOSSUM CREEK

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)
4.770	Possum Valley	PA0081582	0.120	CBODS	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

Thursday, March 7, 2024 Version 1.1 Page 1 of 1

Page: 1 No Filter

rpt_WLA

WQM 7.0 Wasteload Allocations

SWP Basin: 07F | Stream Code: 90ST | Stream Name: OPOSSUM 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
4.770	Possum Valley	16.76	50	16.76	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
4.770	Possum Valley	1.69	25	1.69	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBODS Baseline (mg/L)	CBODS Multiple (mg/L)	NH3-N Baseline (mg/L)	NH3-N Multiple (mg/L)	Dissolved Oxygen Baseline (mg/L)	Dissolved Oxygen Multiple (mg/L)	Critical Reach	Percent Reduction
4.77	Possum Valley	25	25	25	25	5	5	0	0

Thursday, March 7, 2024 Version 1.1 Page 1 of 1

Page: 1 No Filter

rptDOSim

WQM 7.0 D.O. Simulation

SWP Basin: 07F | Stream Code: 90ST | Stream Name: OPOSSUM CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
4.770	0.120	20.000	7.000
Reach Width (ft)	Reach Depth (ft)	Reach WDRatio	Reach Velocity (fps)
28.371	0.618	45.791	0.264
Reach CBODS (mg/L)	Reach Kc (1/days)	Reach NH3-N (mg/L)	Reach Kn (1/days)
2.88	0.466	0.90	0.700
Reach DO (mg/L)	Reach Kr (1/days)	Kr Equation	Reach DO Goal (mg/L)
8.119	8.852	Tsivoglou	8
Reach Travel Time (days)			
0.123			

Subreach Results

TravTime (days)	CBODS (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.012	2.86	0.90	8.17
0.025	2.85	0.91	8.21
0.037	2.83	0.93	8.24
0.049	2.81	0.92	8.24
0.061	2.80	0.92	8.24
0.074	2.78	0.91	8.24
0.086	2.77	0.90	8.24
0.098	2.75	0.89	8.24
0.110	2.73	0.88	8.24
0.123	2.72	0.88	8.24

Thursday, March 7, 2024 Version 1.1 Page 1 of 1

Page: 1 No Filter

rptModelSpecs

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted WD 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	8		

Thursday, March 7, 2024 Version 1.1 Page 1 of 1

Page: 1 No Filter

rptHydro

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07F	9057	OPOSSUM CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Tav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
4.770	4.67	0.00	4.67	.1650	0.00353	.648	28.37	43.77	0.26	0.123	20.00	7.00
Q1-10 Flow												
4.770	2.99	0.00	2.99	.1650	0.00353	NA	NA	NA	0.21	0.156	20.00	7.00
Q30-10 Flow												
4.770	6.35	0.00	6.35	.1650	0.00353	NA	NA	NA	0.31	0.104	20.00	7.00

Thursday, March 7, 2024 Version 1.1 Page 1 of 1

Page: 1 No Filter

rptGeneral

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07F	9057	OPOSSUM CREEK	4.770	602.37	17.30	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	0.270	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
Possum Valley	PA0081582	0.1200	0.1200	0.1200	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	25.00	0.00	0.00	0.70

Thursday, March 7, 2024 Version 1.1 Page 1 of 2

Page: 1 No Filter

rptGeneral

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07F	9057	OPOSSUM CREEK	4.240	592.50	18.40	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	0.270	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
Possum Valley	PA0081582	0.0000	0.0000	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	25.00	0.00	0.00	0.70

Thursday, March 7, 2024 Version 1.1 Page 2 of 2

Page: 2 No Filter

Toxics Data:

The following input data were used for Toxic Management Spreadsheet (TMS) Analysis:

* Discharge pH = 7.0 (Application)
* Stream pH = 7.0 (Default)
* Discharge Hardness = 100 mg/L
* Stream Hardness = 100 mg/L (downstream hardness)

The following two nodes were used in modeling:

Node 1: Outfall 001 at Opossum Creek (09057)
Elevation: 602.37 ft (USGS National Map)
Drainage Area: 17.3 mi^2 (USGS StreamStats)
River Mile Index: 4.77 (PA DEP eMapPA)
Low Flow Yield: 0.27 cfs/mi^2
Discharge Flow: 0.12 MGD

Node 2: At the confluence UNT to 09097
Elevation: 592.50 ft (USGS National Map)
Drainage Area: 18.4 mi^2 (USGS StreamStats)
River Mile Index: 4.24 (PA DEP eMapPA)
Low Flow Yield: 0.27 cfs/mi^2
Discharge Flow: 0.00 MGD

Node	Distance (miles)	Q_{7-10} (cfs)	Drainage Area ($mi.^2$)	LFY ($cfs/mi.^2$)	Elevation (ft)
Modeling Point #1	4.77	5.28	17.3	0.3052	602.37
Modeling Point #2	4.24	4.95	18.4	0.269	592.50
Modeling Point #3	4.14	5.09	19.5	0.261	588.16
Modeling Point #4	3.14	5.04	20.1	0.251	567.01
	Average			0.27	

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: Possum Valley MA NPDES Permit No.: PA0081582 Outfall No.: 001

Evaluation Type: Custom / Additives Wastewater Description: Opossum Creek

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
0.12	100	7						

				0 if left blank		0.6 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
Total Dissolved Solids (PWS)	mg/L		510									
Chloride (PWS)	mg/L		60									
Bromide	mg/L	<	0.5									
Sulfate (PWS)	mg/L		34									
Total Copper	mg/L		0.0021									
Total Lead	mg/L	<	0.001									
Total Zinc	mg/L		0.061									

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Possum Valley MA, NPDES Permit No. PA0081582, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: Opossum Creek

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	009057	4.77	602.37	17.3			Yes
End of Reach 1	009057	4.24	592.5	18.4			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	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	4.77	0.27										100	7		
End of Reach 1	4.24	0.27										100	7		

Q_h

Location	RMI	LFY (cfs/mi^2)	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	4.77														
End of Reach 1	4.24														

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Possum Valley MA, NPDES Permit No. PA0081582, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.675 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

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 Copper	0	0		0	13.439	14.0	252	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	1,468	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	2,154	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 32.933 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

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 Copper	0	0		0	8.956	9.33	244	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	83.2	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	3,135	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 32.933 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 Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 10.864 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 Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	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 Copper	0.16	mg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	N/A	N/A	Discharge Conc < TQL
Total Zinc	1.38	mg/L	Discharge Conc ≤ 10% WQBEL

Existing Effluent Limitations and Monitoring Requirements

Outfall 001,

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	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.4	XXX	1.4	1/day	Grab
CBOD5	25	40	XXX	25	40	50	2/month	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TSS	30	45	XXX	30	45	60	2/month	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
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
Nitrate-Nitrite	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	2/year	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	2/year	Calculation
Ammonia Nov 1 - Apr 30	18	XXX	XXX	18	XXX	36	2/month	24-Hr Composite
Ammonia May 1 - Oct 31	6.0	XXX	XXX	6.0	XXX	12	2/month	24-Hr Composite
TKN	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	2/year	24-Hr Composite
Total Phosphorus	2.0	XXX	XXX	2.0	XXX	4	2/month	24-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	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.4	XXX	1.4	1/day	Grab
CBOD5	25.0	40.0	XXX	25.0	40.0	50.0	2/month	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TSS	30.0	45.0	XXX	30.0	45.0	60.0	2/month	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ammonia May 1 - Oct 31	6.0	XXX	XXX	6.0	XXX	12.0	2/month	24-Hr Composite
Ammonia Nov 1 - Apr 30	18.0	XXX	XXX	18.0	XXX	36.0	2/month	24-Hr Composite
Total Phosphorus	2.0	XXX	XXX	2.0	XXX	4.0	2/month	24-Hr Composite
Nitrate-Nitrite	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	2/year	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	2/year	Calculation

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		
TKN	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	2/year	24-Hr Composite

Compliance Sampling Location:

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: BPNPSM-PMT-033
☐	Other: