pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0023442**
Facility Type	**Municipal**	APS ID	**276360**
Major / Minor	**Minor**	Authorization ID	**1387727**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Wrightsville Borough Municipal Authority York County**	Facility Name	**Wrightsville STP**
Applicant Address	601 Water Street	Facility Address	723 Water Street
	Wrightsville, PA 17368-1646		Wrightsville, PA 17368-1648
Applicant Contact	Brian Lyle	Facility Contact	Brian Lyle
Applicant Phone	(717) 252-2768	Facility Phone	(717) 252-2768
Client ID	74724	Site ID	451705
Ch 94 Load Status	Existing Organic Overload	Municipality	Wrightsville Borough
Connection Status	No Exceptions Allowed	County	York
Date Application Received	March 4, 2022	EPA Waived?	No
Date Application Accepted	March 17, 2022	If No, Reason	Significant CB Discharge
Purpose of Application	NPDES permit renewal.		

Summary of Review

C.S. Davidson, Inc., on behalf of the Wrightsville Borough Municipal Authority (WBMA), applied to the Pennsylvania Department of Environmental Protection (DEP) for renewal and issuance of the NPDES permit. This permit renewal application was received on March 4, 2022. The permit was reissued on August 3, 2017 and became effective on August 1, 2018. The permit expired on August 31, 2022. The terms and conditions of the permit have been administratively extended.

The WQM Part II permit No. 6707406 was issued on 7/30/2007, and 6707406 A-1 amendment was issued on 3/10/2023. WQM Sewer Extension & Pumping Station No. 6702403 was issued on 6/4/2003. WQM Pump Station No. 6721404 was issued on 12/28/2021 to construction of a new pumping station.

Based on the WQM Part II Permit No. 6707406 A-1, the average annual design flow is 0.40 MGD; and hydraulic design capacity is increased from 0.4 MGD to 0.65 MGD) and the organic loading capacity is also increased from 864 lbs. BOD_5/day to 1,464 lbs. BOD_5/day. The renewal application indicated the WBMA currently serves Wrightsville Borough (80%) and Hellam Township (20%).

Sludge use and disposal description and location(s): N/A because sludge hauling is by Republic Service to Modern Landfill.

Changes from the previous permit: The E. Coli. monitoring and report requirements will add to the proposed permit. The hydraulic capacity flow changed from 0.4 MGD to 0.650 MGD. Organic capacity changed from 680 lbs/day to 1,464 lbs/day.

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	June 23, 2023
X		Maria D. Bebenek for Daniel W. Martin Daniel W. Martin, P.E. / Environmental Engineer Manager	July 18, 2023

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.4
Latitude	40º 1' 12.21"	Longitude	-76º 31' 13.37"
Quad Name	Columbia West	Quad Code	1833
Wastewater Description:	Sewage Effluent		
Receiving Waters	Susquehanna River (WWF)	Stream Code	06685
NHD Com ID		RMI	27.396 miles
Drainage Area	~ 26,000 sq.mi	Yield (cfs/mi^2)	0.13
Q_{7-10} Flow (cfs)	~ 3,210	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	236.30	Slope (ft/ft)	
Watershed No.	7-I	Chapter 93 Class.	WWF
Existing Use	none	Existing Use Qualifier	
Exceptions to Use	none	Exceptions to Criteria	
Assessment Status	Impaired (see comments below)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	Red Lion Municipal Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI	20.896 miles	Distance from Outfall (mi)	Approximate 6.5 miles

Changes Since Last Permit Issuance:

Drainage Area
The discharge is to Susquehanna River at RMI 27.396 miles. A drainage area upstream of the discharge is estimated to be 26,000 sq.mi, according to the USGS PA Stream Stats (http://water.usgs.gov/osw/streamstats/pennsylvania.html).

Streamflow
The USGS PA Stream Stats also produces a Q7-10 of 3,340 cfs at the discharge. This is a reasonable value as the USGS stream gauging station No. 01576000 just upstream of the discharge has a Q7-10 of 3,300 cfs.

$$Q_{7-10} = 3340 \text{ cfs}$$
$$\text{Low Flow Yield} = 3340 \text{ cfs} / 26000 \text{ mi.}^2 = 0.13 \text{ cfs/mi.}^2$$
$$Q_{30-10} = 1.36 * 3340 \text{ cfs} = 4{,}542 \text{ cfs}$$
$$Q_{1-10} = 0.64 * 3340 \text{ cfs} = 2{,}138 \text{ cfs}$$

Susquehanna River
According to the latest DEP water quality integrated report (formerly 303(d) list), Susquehanna River in the vicinity of the discharge is impaired for aquatic life use due to metals from unknown source(s). It is also impaired for recreational use due to pathogens from unknown source(s). A Total Maximum Daily Load (TMDL) is not yet developed for the lower Susquehanna River basin. Although no TMDL has been taken into consideration during this review, all permit requirements will be developed to ensure that the discharge will not contribute to the existing impairment nor cause additional impairment to the river.

Public Water Supply Intake
The WBMA's water supply intake is located about 0.8 miles upstream of the discharge. As a result, the intake is not expected to be impacted by the discharge. The nearest downstream water supply intake is the Red Lion Municipal Authority on the Susquehanna River located approximately 6.5 miles downstream of the discharge. Considering dilution and nature of the discharge, the discharge is not expected to significantly impact this water supply intake. Additionally, Red Lion Municipal Authority considers Susquehanna River as a "tertiary" water source and utilizes this intake only during drought conditions.

Treatment Facility Summary

Treatment Facility Name: Wrightsville STP

WQM Permit No.	Issuance Date
6707406	7/30/2007
6707406 A-1	3/10/2023
6702403	6/4/2003
6721404	12/28/2021

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage			Ultraviolet	0.4

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.65	1,464	Existing Organic Overload		

Changes Since Last Permit Issuance:

Other Comments: The WQM Part II No. 6707406 A-1 was issued on March 10, 2023 to upgrade and rerate the existing STP as follows.

- The hydraulic capacity is increasing from 0.4 MGD to 0.65 MGD;
- The organic design capacity is increasing from 834 lbs BOD_5/day to 1,464 lbs BOD_5/day;
- Replace the influent low meter recorder with a unit that can document inflow rates of up to 1.635 MGD;
- Administrative removal of the non-existent grit chamber from the WQM permit;
- Operation changes to the plant's existing Sequencing Batch Reactors (SBRs);
- Addition of one additional fine bubble diffuser rack to each SBR to facilitate higher organic loading; and
- Addition of one 30 HP positive-displacement blower to supply air to the proposed fine bubble diffusers

Per DEP's most recent visit to the treatment plant on June 24, 2019, the treatment plant consists of:

1. Influent channel
2. Fine screen
3. Influent Pump Station
4. Two SBRs
5. Clear well
6. UV system
7. Two Digesters
8. Centrifuge

An aerobic digester and centrifuge are available for solids handling. Sludge generated from this facility will be land applied.

Chemical used:
Poly-aluminum Chloride and Ferric Chloride are used for coagulation. Soda Ash is used for alkalinity control.

Industrial/Commercial Users:
The permit application indicated there are no commercial or industrial contributors to the treatment plant.

Biosolids:
The total sewage sludge /biosolids production within the facility for the previous year was 72.608 dry tons.

Compliance History	
Summary of DMRs:	A summary of the past 12-month DMR is presented on the pages 6, 7, & 8.
Summary of Inspections:	06/24/2019: Mr. Randecker, DEP Water Quality Specialist, conducted a compliance evaluation inspection. There were no violations identified during inspection. Recommendations were to maintain secondary thermometers in influent and effluent composite samplers and replace expired Chlorine standards. The field test results were within the permit limits. 1/13/2020: Mr. Shawn Fassl, DEP Environmental trainee, conducted an administrative review of Chesapeake Bay nutrient calculations for Compliance Year 2018-2019. With some minor issues, reports and data generally appeared to be properly calculated and accurate. There were no violations identified during inspection.
Other Comments:	There is one open violation against the facility or the permittee on safe Drinking Water dated 2/22/2023 due to failure of a Public Water System to obtain a permit.

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)	269 mg/L	200 mg/L
BOD_5 (lbs/day)	947 lbs/day	644 lbs/day
TSS (mg/L)	262 mg/L	194 mg/L
TSS (lbs/day)	947 lbs/day	481 lbs/day
TN (mg/L)	mg/L	29 mg/L
TN (lbs/day)	lbs/day	78 lbs/day
TP (mg/L)	mg/L	5.5 mg/L
TP (lbs/day)	lbs/day	15.0 lbs/day
NH_3-N (mg/L)	mg/L	21.0 mg/L
NH_3-N (lbs/day)	lbs/day	56.0 lbs/day
TDS (mg/L)	mg/L	348 mg/L
TDS (lbs/day)	lbs/day	932 lbs/day
TKN	mg/L	28 mg/L
NO_2-N + NO_3-N	mg/L	0.91 mg/L

Effluent Testing Results

Parameter	Min/Max Value	Average Value
pH (minimum)	6.8 S.U.	
pH (maximum)	8.0 S.U.	
D.O (minimum)	6.9 mg/L	8.27 mg/L
TRC	mg/L	mg/L
Fecal Coliform	194 No./100mL	1.49 No./100 mL
$CBOD_5$	4 mg/L	3.09 mg/L
TSS	8 mg/L	3.61 mg/L
NH_3-N	1.5 mg/L	0.22 mg/L
TN	6.98 mg/L	3.57 mg/L
TP	0.8 mg/L	0.42 mg/L
Temp	F	56 F
TKN	2.73 mg/L	0.98 mg/L
NO_2-N + NO_3-N	6.4 mg/L	2.75 mg/L
TDS	294 mg/L	294 mg/L
Chloride	65 mg/L	65 mg/L
Bromide	< 0.2mg/L	< 0.2mg/L
Sulfate	38 mg/L	38 mg/L
Oil and Grease	< 5 mg/L	< 5 mg/L
Total Copper	0.017 mg/L	0.017 mg/L
Total Lead	< 0.001 mg/L	< 0.001 mg/L
Total Zinc	0.053 mg/L	0.053 mg/L

Compliance History

DMR Data for Outfall 001 (from May 1, 2022 to April 30, 2023)

Parameter	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22
Flow (MGD) Average Monthly	0.315	0.347	0.318	0.321	0.330	0.320	0.333	0.333	0.340	0.331	0.323	0.354
Flow (MGD) Daily Maximum	0.407	0.437	0.413	0.387	0.441	0.364	0.394	0.383	0.389	0.389	0.360	0.484
pH (S.U.) Minimum	7.0	7.0	7.1	7.0	6.8	6.8	7.0	7.0	6.9	6.9	6.9	6.8
pH (S.U.) IMAX	7.3	7.5	7.3	7.4	7.3	7.6	7.4	7.5	7.6	7.4	7.2	7.3
DO (mg/L) Minimum	9.1	9.1	10.1	10.3	9.2	8.0	8.0	7.1	6.8	7.2	7.4	8.2
CBOD5 (lbs/day) Average Monthly	< 6	< 7	< 6	7	< 7	< 7	< 7	< 7	< 7	< 7	< 6	< 7
CBOD5 (lbs/day) Weekly Average	< 7	< 7	< 8	7	< 7	< 7	< 7	< 7	< 7	< 8	< 7	< 8
CBOD5 (mg/L) Average Monthly	< 2.4	< 2.4	< 2.4	2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4
CBOD5 (mg/L) Weekly Average	< 2.4	< 2.4	< 2.4	2.4	< 2.4	< 2.4	< 2.4	2.4	< 2.4	< 2.4	2.4	< 2.4
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	784	537	635	509	408	509	470	594	631	689	704	621
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	1503	694	903	750	598	586	525	953	750	762	1166	741
BOD5 (mg/L) Raw Sewage Influent Average Monthly	333	202	275	181	159	188	169	230	219	235	260	214
TSS (lbs/day) Average Monthly	5	7	6	5	3	5	6	6	9	8	7	10
TSS (lbs/day) Raw Sewage Influent Average Monthly	898	674	739	632	424	696	590	635	968	1031	825	721
TSS (lbs/day) Raw Sewage Influent Daily Maximum	1622	925	1506	796	623	778	722	677	1284	1165	935	841
TSS (lbs/day) Weekly Average	5	16	10	9	3	8	11	9	22	16	11	20
TSS (mg/L) Average Monthly	2.0	2.6	2.0	1.8	1.0	2.0	2.0	2.0	3.25	2.8	2.6	3.8

TSS (mg/L) Raw Sewage Influent Average Monthly	382	252	323	226	170	257	225	248	336	355	306	250
TSS (mg/L) Weekly Average	2.0	6.0	3.0	3.0	2.0	3.0	4.0	3.0	8.0	5.0	4.0	8.0
Fecal Coliform (CFU/100 ml) Geometric Mean	< 1	< 1	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1	1	< 2	< 1
Fecal Coliform (CFU/100 ml) IMAX	< 1	2.0	< 1.0	3.0	1	3.0	2.0	2	2.0	2	6	3.0
UV Intensity (mW/cm²) Minimum	1.5	2.0	2.0	1.6	2.0	2.3	2.2	1.9	1.8	1.9	2.1	2.5
Nitrate-Nitrite (mg/L) Average Monthly	< 2.5	< 2.5	< 2.5	< 2.9	< 2.5	< 2.46	< 2.8	< 2.3	< 2.0	< 1.8	< 1.75	< 2.6
Nitrate-Nitrite (lbs) Total Monthly	< 188	< 219	< 179	< 241	< 206	< 199	< 232	< 192	178	< 160	< 141	< 224
Total Nitrogen (mg/L) Average Monthly	< 3.62	< 3.8	< 4.6	< 4.7	< 3.93	< 3.38	< 3.35	< 2.9	2.57	< 2.4	< 2.33	< 3.6
Total Nitrogen (lbs) Effluent Net Total Monthly	< 273	< 332	< 331	< 396	< 322	< 272	< 282	< 242	< 225	208	188	< 311
Total Nitrogen (lbs) Total Monthly	< 273	< 332	< 331	< 396	< 322	< 272	282	< 242	225	208	< 188	< 311
Total Nitrogen (lbs) Effluent Net Total Annual								3191				
Total Nitrogen (lbs) Total Annual								3191				
Ammonia (lbs/day) Average Monthly	< 0.3	< 0.4	< 0.6	< 0.6	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.5
Ammonia (mg/L) Average Monthly	< 0.1	< 0.15	< 0.21	< 0.22	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.16
Ammonia (lbs) Total Monthly	< 8	< 13	< 16	< 19	< 8	8	< 8	< 8	< 9	9	< 8	< 14
Ammonia (lbs) Total Annual								137				
TKN (mg/L) Average Monthly	1.12	1.3	2.1	1.8	1.4	< 0.91	< 0.6	< 0.6	< 0.54	< 0.55	< 0.58	1.0
TKN (lbs) Total Monthly	85	113	151	155	115	< 73	< 51	< 51	< 47	< 49	< 44	116
Total Phosphorus (lbs/day) Average Monthly	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	2.0	0.6	0.7	0.9	0.7

Total Phosphorus (mg/L) Average Monthly	< 0.13	< 0.1	< 0.1	< 0.1	< 0.1	< 0.11	< 0.11	0.21	0.21	0.25	0.35	0.25
Total Phosphorus (lbs) Effluent Net Total Monthly	< 10	< 9	< 7	< 9	< 9	< 9	< 9	54	19	23	28	22
Total Phosphorus (lbs) Total Monthly	< 10	< 9	< 7	< 9	< 9	< 9	< 9	< 54	19	23	28	22
Total Phosphorus (lbs) Effluent Net Total Annual								186				
Total Phosphorus (lbs) Total Annual								186				

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.4
Latitude 40º 1' 12.21" **Longitude** -76º 31' 13.37"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Comments: Total Residual Chlorine is not applied.

Water Quality-Based Limitations

Ammonia (NH_3-N):
NH_3-N calculations were 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 computer model of the stream:

*	Discharge pH	7.0	(Default per 391-2000-007)
*	Discharge Temperature	20°C	(Default per 391-2000-007)
*	Stream pH	7.0	(Default per 391-2000-006)
*	Stream Temperature	25°C	(Default for WWF per 391-2000-003)
*	Background NH_3-N	0 mg/L	(Assumed since no nearby upstream WWTPs)

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 NH_3-N as a monthly average (AML) and 50.0 mg/L NH_3-N instantaneous maximum (IMAX) are necessary to protect the aquatic life from toxicity effects. Recent DMR data show that the plant is discharging NH_3-N well below 25.0 mg/l year-round. Therefore, no NH_3-N limits are proposed in the proposed permit. However, the minimum monitoring frequency report average monthly concentration and mass average monthly will remain the same as 2/week.

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 (AML) of 25.0 mg/L, 40.0 mg/L average weekly limit (AWL), & 50.0 mg/L IMAX 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 0.4 MGD x 8.34 = 83.4 lbs/day
Average weekly mass limit: 40.0 mg/L x 0.4 MGD x 8.34 = 133.4 lbs/day

The average monthly and average weekly mass loadings were calculated as 83.4 lbs/day and 133.4 lbs/day respectively. These values are rounded down to 80.0 lbs/day and 130.0 lbs/day, respectively. The minimum monitoring frequency will remain the same as 1/week.

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. BPNPSM-PMT-033 and has been applied to other point source dischargers throughout the state.

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

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 25 Pa. Code § 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 1.9 revised March 22, 2021, a routine monitoring for E. Coli will be included in the 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.

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 0.4 MGD x 8.34 = 100.08 lbs/day
Average weekly mass limit: 45.0 mg/L x 0.4 MGD x 8.34 = 150.12 lbs/day

The average monthly and weekly average mass loadings will be rounded down to 100.0 lbs/day and 150.0 lbs/day, respectively.

Toxics:
The data was analyzed based on the guidelines found in DEP's Water Quality Toxics Management Strategy (Document No. 361-0100-003) 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 (2022) 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.

UV:
The UV system monitor and report the UV light intensity (mW/cm^2) will remain in the proposed permit.

Chesapeake Bay:
In the Phase 3 WIP Wastewater Supplement revised on July 29, 2022, Table 5 of this document shows that Wrightsville Borough Municipal Authority has been allocated 7,306 lbs/year of TN and 974 lbs/year of TP.

Phase 3 WIP Wastewater Supplement
Revised, July 29, 2022

NPDES Permit No.	Phase	Facility	Latest Permit Issuance Date	Permit Expiration Date	Cap Load Compliance Start Date	TN Cap Load (lbs/yr)	TN Offsets Included in Cap Load (lbs/yr)	TP Cap Load (lbs/yr)	TN Delivery Ratio	TP Delivery Ratio
PA0023442	3	Wrightsville Borough Municipal Authority	8/3/2017	8/31/2022	10/1/2011	7,306	-	974	0.805	0.387
PA0023531	1	Danville Municipal Authority	2/26/2021	2/28/2026	10/1/2011	66,118	-	8,816	0.802	0.459
PA0023558	3	Ashland Borough	4/23/2012	4/30/2017	10/1/2013	23,744	-	3,166	0.793	0.458
PA0023736	3	Tri-Boro Municipal Authority	7/13/2021	7/31/2026	10/1/2013	9,132	-	1,218	0.515	0.372
PA0023744	1	Northeastern York County Sewer Authority	7/12/2022	7/31/2027	10/1/2010	33,485	-	4,627	0.836	0.486
PA0024040	1	Highspire Borough	2/24/2022	2/28/2027	10/1/2010	36,529	-	4,871	0.830	0.503
PA0024139	3	Cumberland Township Municipal Authority (North)	11/13/2019	11/30/2024	10/1/2013	9,132	-	1,218	0.563	0.720
PA0024147	3	Cumberland Township Municipal Authority (South)	11/13/2019	11/30/2024	10/1/2013	11,872	-	1,583	0.681	0.720
PA0024384	2	North Middleton Township Authority	5/10/2022	5/31/2027	10/1/2012	16,895	-	2,253	0.748	0.444
PA0024406	2	Mt. Carmel Municipal Sewage Authority	10/25/2017	10/31/2022	10/1/2010	41,095	-	5,479	0.792	0.517
PA0024431	1	Dillsburg Borough Authority	12/29/2021	12/31/2026	10/1/2011	27,945	-	3,726	0.635	0.408
PA0024708	3	Union Township	5/11/2022	5/31/2027	10/1/2012	11,872	-	1,583	0.705	0.416
PA0024759	3	Curwensville Municipal Authority	5/8/2018	5/31/2023	10/1/2014	13,698	-	1,826	0.630	0.386
PA0024902	3	Upper Allen Township	8/6/2020	10/31/2022	10/1/2012	20,091	-	2,679	0.682	0.410
PA0025381	3	Saxton Borough Municipal Authority	8/17/2017	8/31/2022	10/1/2011	7,306	-	974	0.641	0.200
PA0025933	1	Lock Haven Borough	9/16/2016	9/30/2021	10/1/2011	68,492	-	9,132	0.772	0.428
PA0026051	1	Chambersburg Borough	6/27/2022	6/30/2027	10/1/2012	124,199		16,560	0.997	0.742
PA0026077	1	Carlisle Borough	10/13/2017	10/31/2022	10/1/2008	127,852	-	17,047	0.748	0.444
PA0026107	1	Wyoming Valley Sewer Authority	2/4/2008	2/28/2013	10/1/2010	584,467	-	77,929	0.813	0.512
PA0026191	1	Huntingdon Borough	2/16/2017	2/28/2022	10/1/2011	73,058	-	9,741	0.796	0.373
PA0026239	1	University Area Joint Authority	9/11/2019	9/30/2024	10/1/2010	164,381	-	21,918	0.641	0.323

- 8 -

These cap loads calculated based on the design flow of 0.4 MGD with TN concentration of 6.0 mg/L and TP concentration of 0.8 mg/L will remain in the draft permit. As specified in DEP's Wastewater Supplement to the Phase 3 WIP, the upgrade project will not result in any increase in cap loads. Accordingly, these cap loads will still be in effect following the upgrade.

This approach, consistent with the Chesapeake Bay TMDL, was based on the actual performance data previously evaluated by the Department. Since the permittee is easily capable of achieving compliance with these loads, the Department determines that no "compliance schedule" for the requirements associated with the Chesapeake Bay Strategy is necessary. Accordingly, the Chesapeake Bay nutrient existing limitations and monitoring requirements will remain in the proposed permit.

Total Phosphorus:
For Total Phosphorus (TP), the current NPDES permit requires the permittee to comply with average monthly and instantaneous maximum (IMAX) limits of 2.0 mg/L and 4.0 mg/L, respectively. These limits were previously established based upon the fact that the loading from this facility likely exceeds the minimum 0.25% contribution requirement per DEP's technical guidance no. 391-2000-018. Total Phosphorus (TP) is still a parameter of concern for all sewage treatment facilities in the Chesapeake Bay watershed and these limits are still necessary to protect both local receiving water and Chesapeake Bay watershed. The relaxation or removal of these limits is also prohibited by EPA's anti-backsliding regulation found in 40 CFR § 122.44(l)(1).

2.0 mg/L x 0.4 MGD x 8.34 = 6.672 lbs/day + (6.672 x 0.25%) = 8.34 lbs/day (8.0 lbs/day)

Additional Considerations

Flow Monitoring
Flow monitoring is recommended by the permit guidance and is also required by 25 Pa. Code §§ 92a.27 and 92a.61.

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 be included in the draft permit. A 24-hr composite sample type will be required to be consistent with the proposed sampling frequency for TSS and $CBOD_5$ in the effluent.

Total Dissolved Solids (TDS)
Total Dissolved Solids and its major constituents including Bromide, Chloride, and Sulfate have become statewide pollutants of concern and threats to DEP's mission to prevent violations of water quality standards. The requirement to monitor these pollutants is necessary under the following 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 1.0 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.*

The facility has no record of monitoring these pollutants. However, the application shows a maximum influent concentration of 348.0 mg/L for TDS. The effluent concentration is not expected to exceed 1,000 mg/L. No monitoring is necessary.

Stormwater Outfalls:
There are no stormwater outfalls associated with this WWTP.

303d Listed Streams:
The discharge from this facility is to Juniata River which is assessed as attaining its designated uses.

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.

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

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

• Discharge pH	7.0	(Default per 391-2000-007)
• Discharge Temperature	20°C	(Default per 391-2000-013)
• Stream pH	7.0	(Default per 392-2000-013)
• Stream Temperature	25°C	(Default per 392-2000-013)

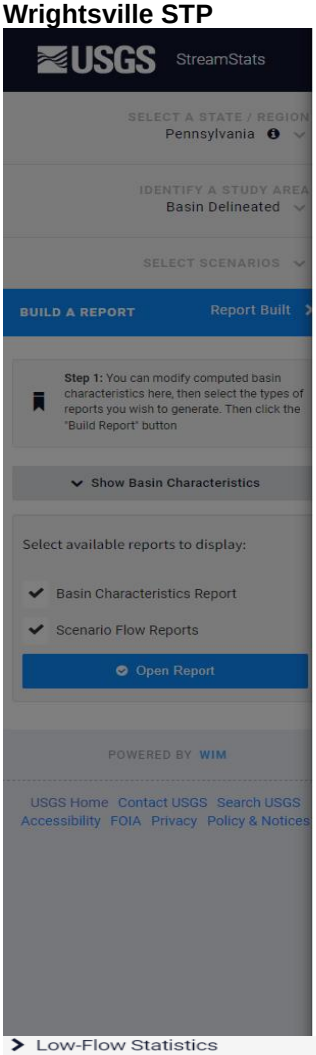
The following two nodes were used in modeling:

Node 1: Outfall 001 to Susquehanna River (06685)

Elevation:	236.30 ft (USGS National Map Viewer)
Drainage Area:	26,000 mi^2 (USGS PA StreamStats)
River Mile Index:	27.396 (PA DEP eMapPA)
Low Flow Yield:	0.13 cfs/mi^2
Discharge Flow:	0.4 MGD

Node 2: At 06685 confluence with Canadochly Creek

Elevation:	226.71 ft (USGS National Map Viewer)
Drainage Area:	26,100 mi^2 (USGS PA StreamStats)
River Mile Index:	23.765 (PA DEP eMapPA)
Low Flow Yield:	0.13 cfs/mi^2
Discharge Flow:	0.0 MGD



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	8.1356	degrees
CARBON	Percentage of area of carbonate rock	6.68	percent
DRNAREA	Area that drains to a point on a stream	26000	square miles
ELEV	Mean Basin Elevation	1328	feet
FOREST	Percentage of area covered by forest	67.7622	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	45.3718	percent
PRECIP	Mean Annual Precipitation	40	inches
ROCKDEP	Depth to rock	4.5	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.76	miles per square mile
URBAN	Percentage of basin with urban development	2.8921	percent

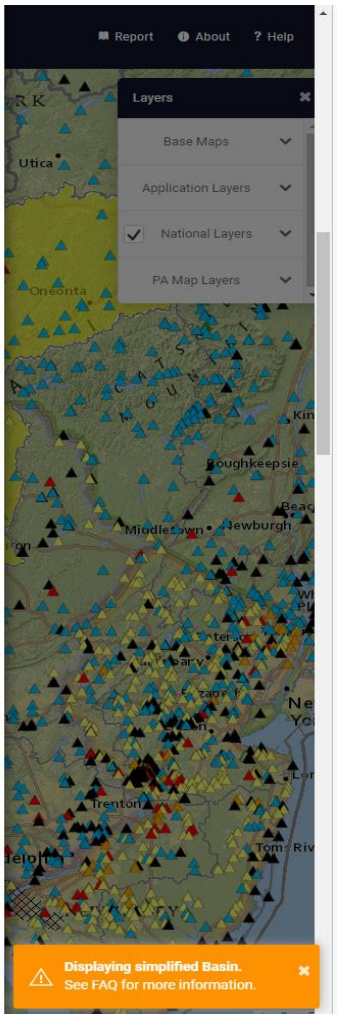
Low-Flow Statistics

Low-Flow Statistics Parameters [3.9 Percent (1020 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26000	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	8.1356	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.5	feet	4.13	5.21
URBAN	Percent Urban	2.8921	percent	0	89

Low-Flow Statistics Parameters [42.5 Percent (11100 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26000	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	40	inches	35	50.4
STRDEN	Stream Density	1.76	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	6.68	percent	0	99



Low-Flow Statistics

Low-Flow Statistics Parameters [3.8 Percent (982 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26000	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	8.1397	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.5	feet	4.13	5.21
URBAN	Percent Urban	2.8813	percent	0	89

Low-Flow Statistics Parameters [42.6 Percent (11100 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26000	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	40	inches	35	50.4
STRDEN	Stream Density	1.76	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	6.64	percent	0	99

Low-Flow Statistics Parameters [6.2 Percent (1610 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26000	square miles	2.33	1720
ELEV	Mean Basin Elevation	1329	feet	898	2700
PRECIP	Mean Annual Precipitation	40	inches	38.7	47.9

Low-Flow Statistics Parameters [47.3 Percent (12300 square miles) Low Flow Region 5]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26000	square miles	4.84	982
PRECIP	Mean Annual Precipitation	40	inches	33.1	47.1
GLACIATED	Percent of Glaciation	45.4321	percent	0	100
FOREST	Percent Forest	67.8129	percent	41	100

Low-Flow Statistics Disclaimers [3.8 Percent (982 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 [3.8 Percent (982 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	9290	ft^3/s
30 Day 2 Year Low Flow	10300	ft^3/s
7 Day 10 Year Low Flow	7270	ft^3/s
30 Day 10 Year Low Flow	7650	ft^3/s
90 Day 10 Year Low Flow	8160	ft^3/s

Low-Flow Statistics Disclaimers [42.6 Percent (11100 square miles) Low Flow Region 2]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [42.6 Percent (11100 square miles) Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	5970	ft^3/s
30 Day 2 Year Low Flow	7050	ft^3/s
7 Day 10 Year Low Flow	4460	ft^3/s
30 Day 10 Year Low Flow	5250	ft^3/s
90 Day 10 Year Low Flow	6520	ft^3/s

Low-Flow Statistics Disclaimers [6.2 Percent (1610 square miles) Low Flow Region 3]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [6.2 Percent (1610 square miles) Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	2410	ft^3/s
30 Day 2 Year Low Flow	2980	ft^3/s
7 Day 10 Year Low Flow	1450	ft^3/s
30 Day 10 Year Low Flow	1810	ft^3/s
90 Day 10 Year Low Flow	2480	ft^3/s

Low-Flow Statistics Disclaimers [47.3 Percent (12300 square miles) Low Flow Region 5]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [47.3 Percent (12300 square miles) Low Flow Region 5]

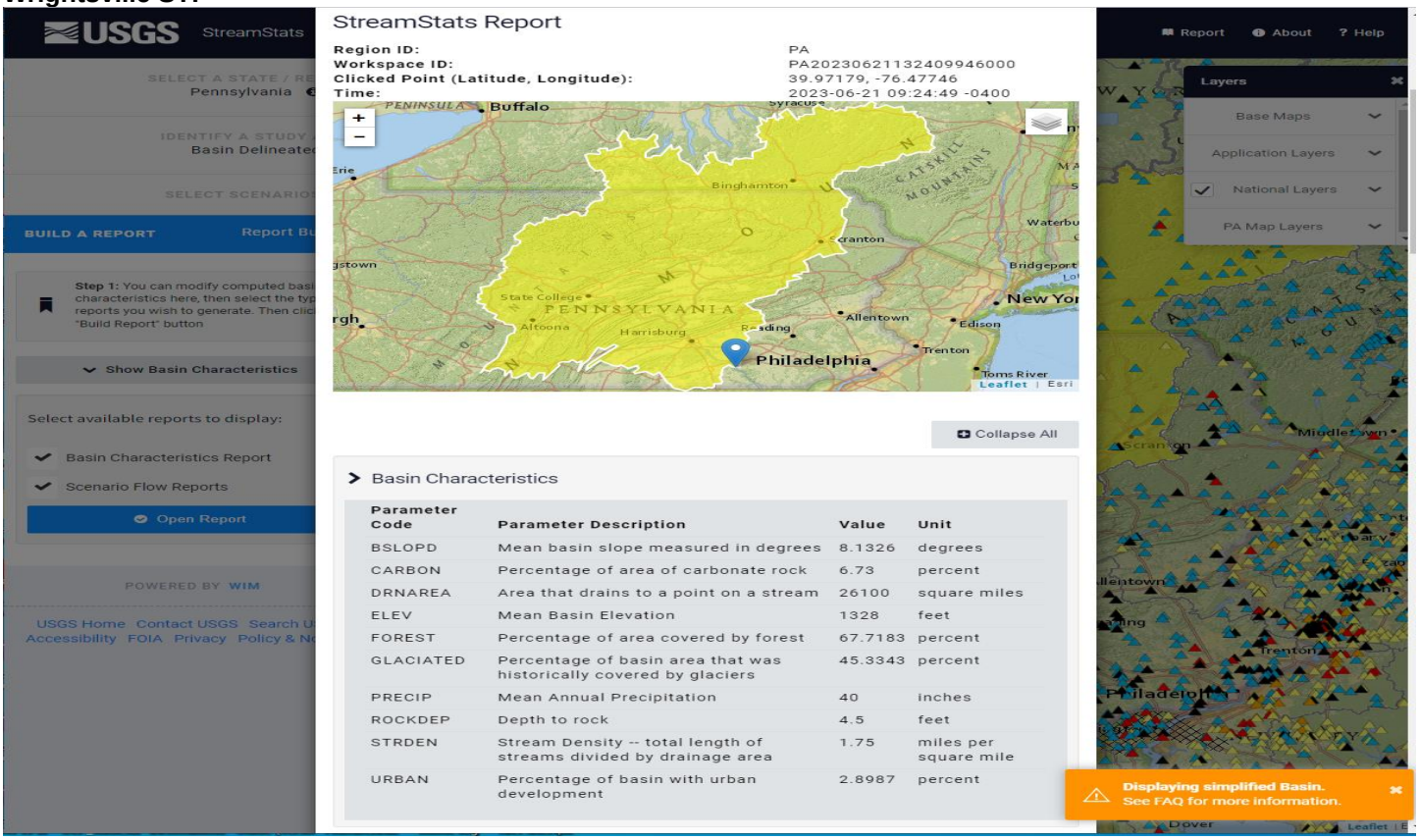
Statistic	Value	Unit
7 Day 2 Year Low Flow	3530	ft^3/s
30 Day 2 Year Low Flow	4460	ft^3/s
7 Day 10 Year Low Flow	2270	ft^3/s
30 Day 10 Year Low Flow	2980	ft^3/s
90 Day 10 Year Low Flow	3840	ft^3/s

Low-Flow Statistics Flow Report [Area-Averaged]

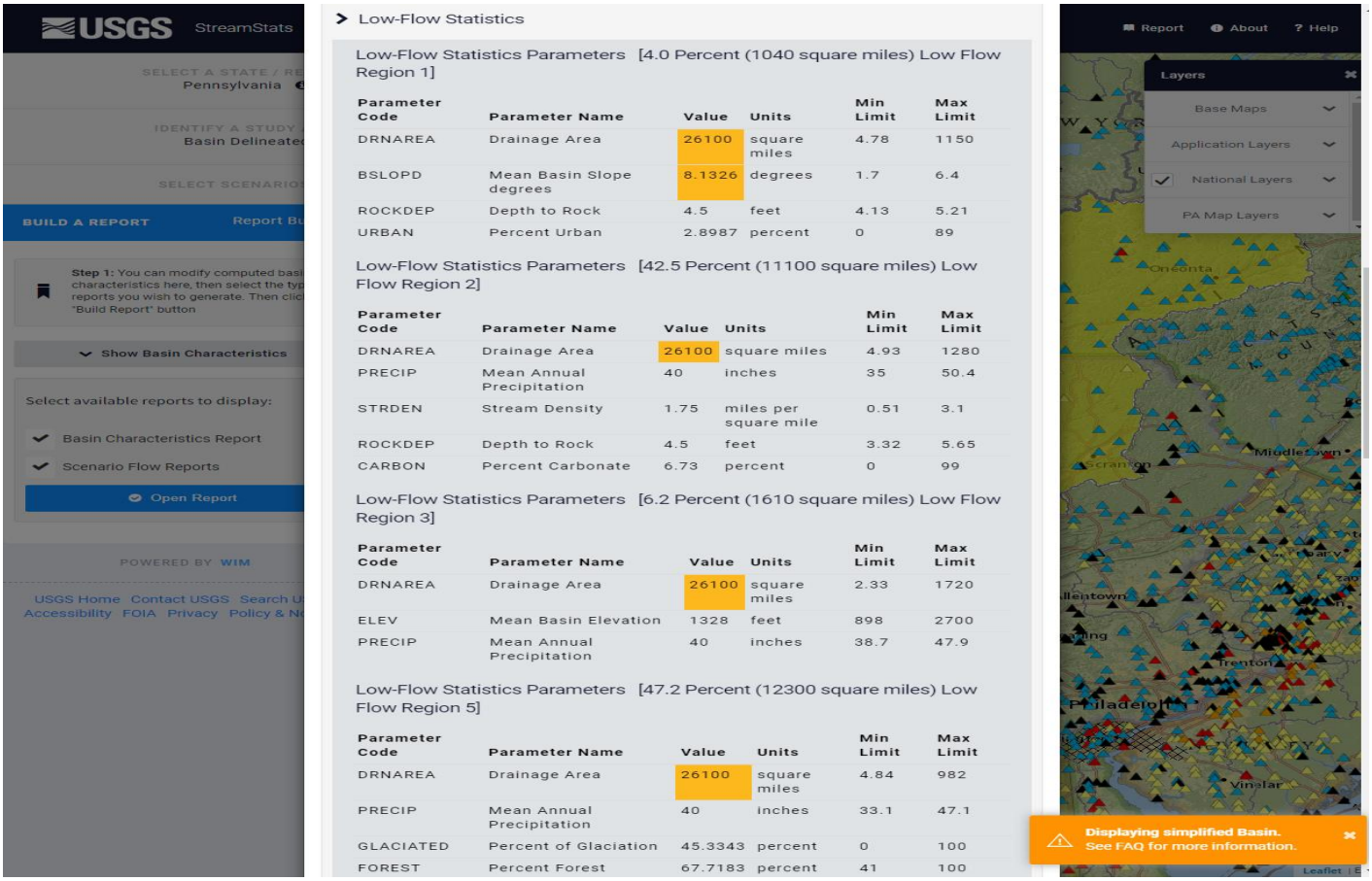
Statistic	Value	Unit
7 Day 2 Year Low Flow	4710	ft^3/s
30 Day 2 Year Low Flow	5680	ft^3/s
7 Day 10 Year Low Flow	3340	ft^3/s
30 Day 10 Year Low Flow	4050	ft^3/s
90 Day 10 Year Low Flow	5050	ft^3/s

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.



Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	8.1326	degrees
CARBON	Percentage of area of carbonate rock	6.73	percent
DRNAREA	Area that drains to a point on a stream	26100	square miles
ELEV	Mean Basin Elevation	1328	feet
FOREST	Percentage of area covered by forest	67.7183	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	45.3343	percent
PRECIP	Mean Annual Precipitation	40	inches
ROCKDEP	Depth to rock	4.5	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.75	miles per square mile
URBAN	Percentage of basin with urban development	2.8987	percent



Low-Flow Statistics Parameters [4.0 Percent (1040 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26100	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	8.1326	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.5	feet	4.13	5.21
URBAN	Percent Urban	2.8987	percent	0	89

Low-Flow Statistics Parameters [42.5 Percent (11100 square miles) Low Flow Region 2]

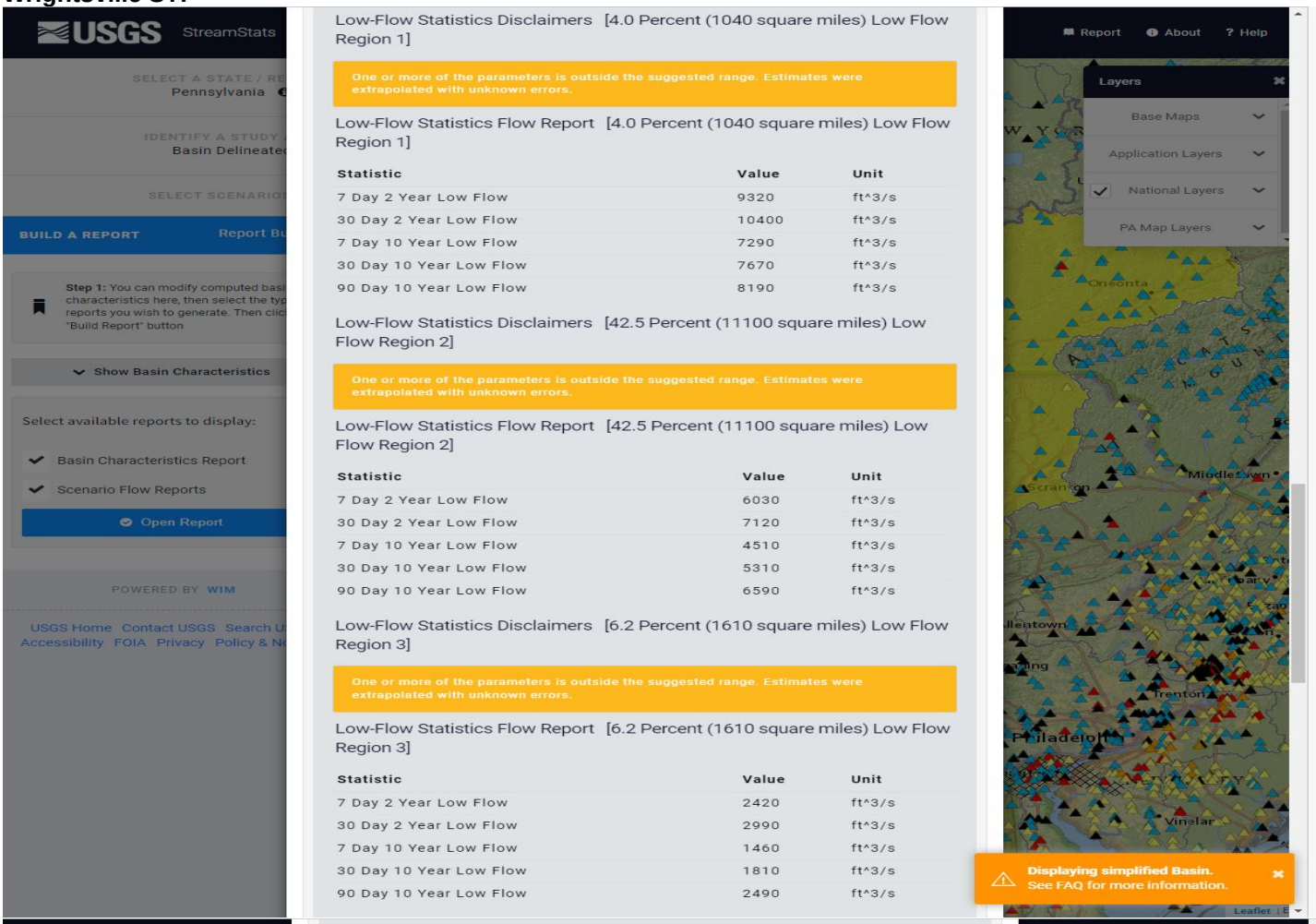
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26100	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	40	inches	35	50.4
STRDEN	Stream Density	1.75	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	6.73	percent	0	99

Low-Flow Statistics Parameters [6.2 Percent (1610 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26100	square miles	2.33	1720
ELEV	Mean Basin Elevation	1328	feet	898	2700
PRECIP	Mean Annual Precipitation	40	inches	38.7	47.9

Low-Flow Statistics Parameters [47.2 Percent (12300 square miles) Low Flow Region 5]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26100	square miles	4.84	982
PRECIP	Mean Annual Precipitation	40	inches	33.1	47.1
GLACIATED	Percent of Glaciation	45.3343	percent	0	100
FOREST	Percent Forest	67.7183	percent	41	100


USGS StreamStats
Pennsylvania
Basin Delineated
BUILD A REPORT
Show Basin Characteristics
Select available reports to display:
Basin Characteristics Report
Scenario Flow Reports
Open Report
Low-Flow Statistics Disclaimers [4.0 Percent (1040 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 [4.0 Percent (1040 square miles) Low Flow Region 1]
Statistic Value Unit
7 Day 2 Year Low Flow 9320 ft^3/s
30 Day 2 Year Low Flow 10400 ft^3/s
7 Day 10 Year Low Flow 7290 ft^3/s
30 Day 10 Year Low Flow 7670 ft^3/s
90 Day 10 Year Low Flow 8190 ft^3/s
Low-Flow Statistics Disclaimers [42.5 Percent (11100 square miles) Low Flow Region 2]
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.
Low-Flow Statistics Flow Report [42.5 Percent (11100 square miles) Low Flow Region 2]
Statistic Value Unit
7 Day 2 Year Low Flow 6030 ft^3/s
30 Day 2 Year Low Flow 7120 ft^3/s
7 Day 10 Year Low Flow 4510 ft^3/s
30 Day 10 Year Low Flow 5310 ft^3/s
90 Day 10 Year Low Flow 6590 ft^3/s
Low-Flow Statistics Disclaimers [6.2 Percent (1610 square miles) Low Flow Region 3]
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.
Low-Flow Statistics Flow Report [6.2 Percent (1610 square miles) Low Flow Region 3]
Statistic Value Unit
7 Day 2 Year Low Flow 2420 ft^3/s
30 Day 2 Year Low Flow 2990 ft^3/s
7 Day 10 Year Low Flow 1460 ft^3/s
30 Day 10 Year Low Flow 1810 ft^3/s
90 Day 10 Year Low Flow 2490 ft^3/s
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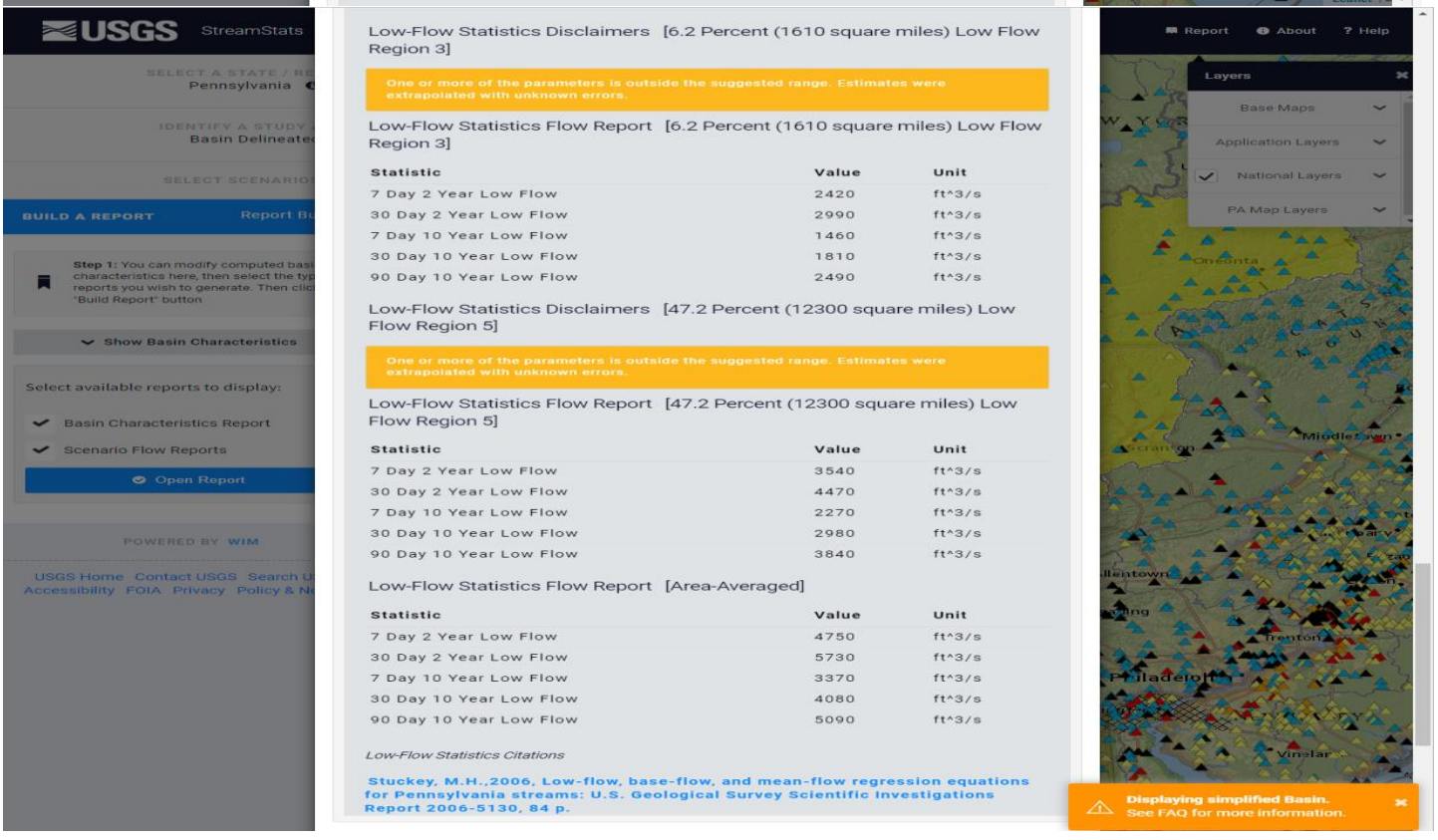
PA Map Layers
Displaying simplified Basin.
See FAQ for more information.


USGS StreamStats
Pennsylvania
Basin Delineated
BUILD A REPORT
Show Basin Characteristics
Select available reports to display:
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Open Report
Low-Flow Statistics Disclaimers [6.2 Percent (1610 square miles) Low Flow Region 3]
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.
Low-Flow Statistics Flow Report [6.2 Percent (1610 square miles) Low Flow Region 3]
Statistic Value Unit
7 Day 2 Year Low Flow 2420 ft^3/s
30 Day 2 Year Low Flow 2990 ft^3/s
7 Day 10 Year Low Flow 1460 ft^3/s
30 Day 10 Year Low Flow 1810 ft^3/s
90 Day 10 Year Low Flow 2490 ft^3/s
Low-Flow Statistics Disclaimers [47.2 Percent (12300 square miles) Low Flow Region 5]
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.
Low-Flow Statistics Flow Report [47.2 Percent (12300 square miles) Low Flow Region 5]
Statistic Value Unit
7 Day 2 Year Low Flow 3540 ft^3/s
30 Day 2 Year Low Flow 4470 ft^3/s
7 Day 10 Year Low Flow 2270 ft^3/s
30 Day 10 Year Low Flow 2980 ft^3/s
90 Day 10 Year Low Flow 3840 ft^3/s
Low-Flow Statistics Flow Report [Area-Averaged]
Statistic Value Unit
7 Day 2 Year Low Flow 4750 ft^3/s
30 Day 2 Year Low Flow 5730 ft^3/s
7 Day 10 Year Low Flow 3370 ft^3/s
30 Day 10 Year Low Flow 4080 ft^3/s
90 Day 10 Year Low Flow 5090 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.
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PA Map Layers
Displaying simplified Basin.
See FAQ for more information.

Analysis Results WQM 7.0

Hydrodynamics | NH3-N Allocations | D.O. Allocations | D.O. Simulation | Effluent Limitations

RMI	Discharge Name	Permit Number	Disc Flow (mgd)
27.40	Wrightsville MA	PA0023442	0.4000

Parameter	Effluent Limit 30 Day Average (mg/L)	Effluent Limit Maximum (mg/L)	Effluent Limit Minimum (mg/L)
CBOD5	25		
NH3-N	25	50	
Dissolved Oxygen			5

Record: 1 of 1 | No Filter | Search

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rptEffLimits

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA 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)
27.398	Wrightsville MA	PA0023442	0.400	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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rpt_WLA

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA 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
27.398	Wrightsville MA	11.07	50	11.07	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
27.398	Wrightsville MA	1.37	25	1.37	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5 Baseline (mg/L)	CBOD5 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
27.40	Wrightsville MA	25	25	25	25	5	5	0	0

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rptDOSim

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
27.398	0.400	24.999	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WD Ratio**	**Reach Velocity (fps)**
2338.485	0.872	3434.013	2.178
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.00	0.003	0.00	1.026
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.242	5.723	Tsivoglou	6
Reach Travel Time (days)			
0.102			

Subreach Results

Trav Time (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.010	2.00	0.00	7.54
0.020	2.00	0.00	7.54
0.031	2.00	0.00	7.54
0.041	2.00	0.00	7.54
0.051	2.00	0.00	7.54
0.061	2.00	0.00	7.54
0.071	2.00	0.00	7.54
0.081	2.00	0.00	7.54
0.092	2.00	0.00	7.54
0.102	2.00	0.00	7.54

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rptModelSpecs

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	0.84	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.38	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

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rptHydro

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA 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												
27.398	3380.00	0.00	3380.00	.6188	0.00050	.872	2308.45	3434.01	2.18	0.102	25.00	7.00
Q1-10 Flow												
27.398	2163.20	0.00	2163.20	.6188	0.00050	NA	NA	NA	1.70	0.131	25.00	7.00
Q30-10 Flow												
27.398	4598.80	0.00	4598.80	.6188	0.00050	NA	NA	NA	2.59	0.086	25.00	7.00

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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
07K	6685	SUSQUEHANNA RIVER	27.398	236.30	26000.00	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)	Trib Temp (°C)	Trib pH	Stream Temp (°C)	Stream pH
Q7-10	0.130	0.00	0.00	0.000	0.000	0.0	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

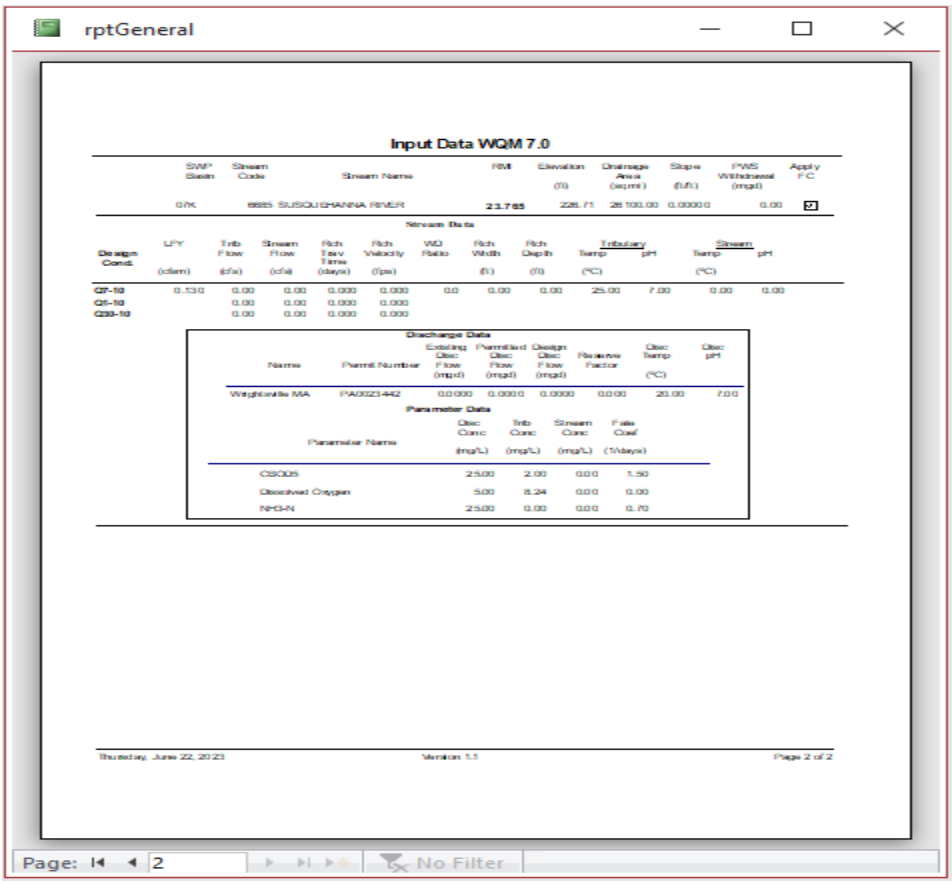
Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Wrightsville MA	PA0023442	0.4000	0.4000	0.4000	0.00	20.00	7.00

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, June 22, 2023 Version 1.1 Page 1 of 2

Page: 1 No Filter



Toxic:
The following data were used in the attached computer model DEP's Toxic Management Spreadsheet, version 1.4, May 2023 of the stream:

• Discharge pH	7.0	(Default)
• Discharge Hardness	100	(Default)
• Stream pH	7.0	(Default)
• Stream Hardness	100	(Default)

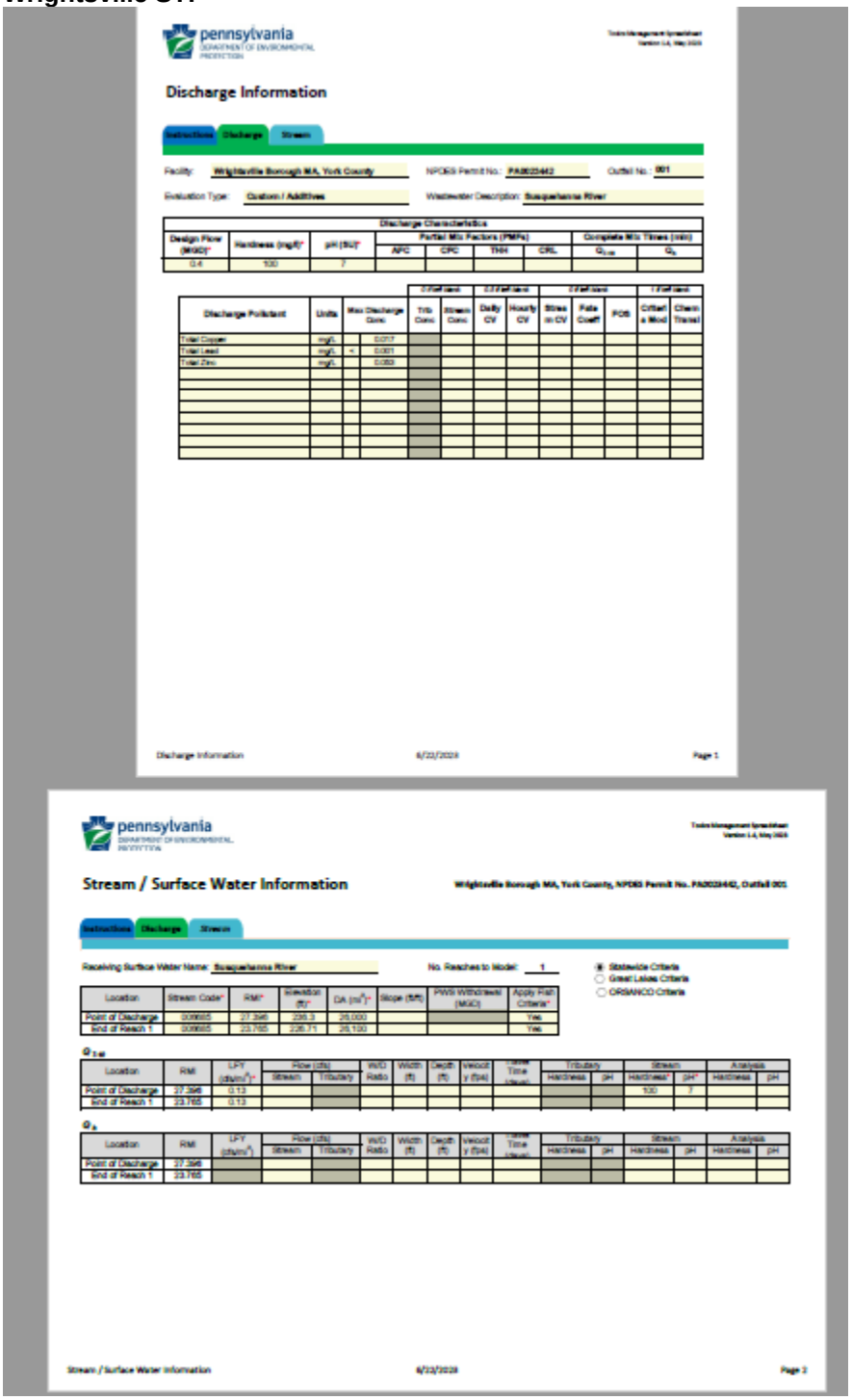
The following two nodes were used in modeling:

Node 1: Outfall 001 to Susquehanna River (06685)

Elevation:	236.30 ft (USGS National Map Viewer)
Drainage Area:	26,000 mi^2 (USGS PA StreamStats)
River Mile Index:	27.396 (PA DEP eMapPA)
Low Flow Yield:	0.13 cfs/mi^2
Discharge Flow:	0.4 MGD

Node 2: At 06685 confluence with Canadochly Creek

Elevation:	226.71 ft (USGS National Map Viewer)
Drainage Area:	26,100 mi^2 (USGS PA StreamStats)
River Mile Index:	23.765 (PA DEP eMapPA)
Low Flow Yield:	0.13 cfs/mi^2
Discharge Flow:	0.0 MGD



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Discharge Information

Instructions | Discharge | Stream

Facility: Wrightsville Borough MA, York County NPDES Permit No.: PA0023442 Outfall No.: 001

Evaluation Type: Custom / Additives Wastewater Description: Susquehanna River

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			APC	CPC	THH	CRL	Q_{7-10}	Q_h
0.4	100	7						

Discharge Pollutant	Units	Max Discharge Conc	Trib Conc	Stream Conc	0.3 Ref.Stand. Daily CV	0.3 Ref.Stand. Hourly CV	0.3 Ref.Stand. Strss ox CV	0.3 Ref.Stand. Fate Coeff	0.3 Ref.Stand. FOS	1 Ref.Stand. Criteri a Mod	1 Ref.Stand. Chem Transl
Total Copper	mg/L	0.017									
Total Lead	mg/L	< 0.001									
Total Zinc	mg/L	0.053									

Discharge Information 6/22/2023 Page 1

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Stream / Surface Water Information

Wrightsville Borough MA, York County, NPDES Permit No. PA0023442, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: Susquehanna River No. Reaches to Model: 1

◉ Statewide Criteria
○ Great Lakes Criteria
○ ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	009665	27.396	236.3	26,000			Yes
End of Reach 1	009665	23.765	226.71	26,100			Yes

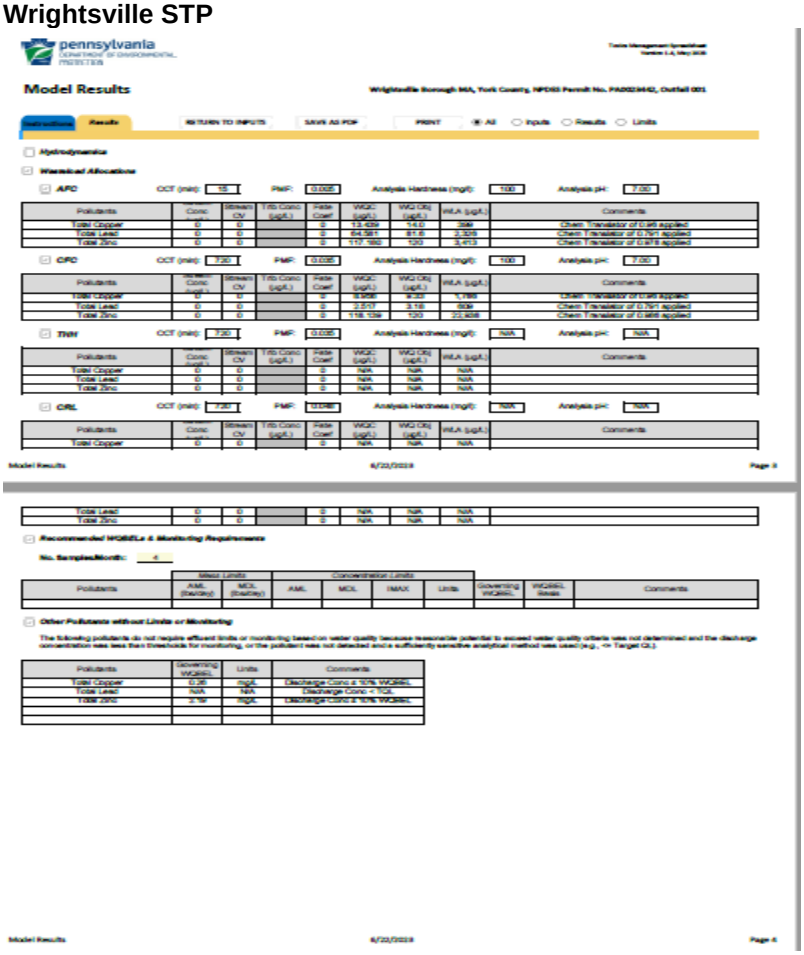
Q_{7-10}

Location	RMI	LFY (cfs/mi²)*	Flow (cfs) Stream	Flow (cfs) Tributary	W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary Hardness	Tributary pH	Stream Hardness*	Stream pH*	Analysis Hardness	Analysis pH
Point of Discharge	27.396	0.13										100	7		
End of Reach 1	23.765	0.13													

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs) Stream	Flow (cfs) Tributary	W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary Hardness	Tributary pH	Stream Hardness	Stream pH	Analysis Hardness	Analysis pH
Point of Discharge	27.396														
End of Reach 1	23.765														

Stream / Surface Water Information 6/22/2023 Page 2



Model Results

Wrightsville Borough MA, York County, NPDES Permit No. PA0023442, Outfall 001

RETURN TO INPUTS SAVE AS PDF PRINT All Inputs Results Limits

Hydrodynamics

Wasteload Allocations

AFC CCT (min): 15 PMF: 0.035 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	13.439	14.0	399	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.561	81.6	2,326	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.160	120	3,413	Chem Translator of 0.978 applied

CFC CCT (min): 7.00 PMF: 0.035 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	8.958	9.20	1,789	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	636	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.104	120	23,408	Chem Translator of 0.978 applied

THH CCT (min): 7.00 PMF: 0.035 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
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): 7.00 PMF: 0.035 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	N/A	N/A	N/A	

Model Results 6/22/2018 Page 3

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

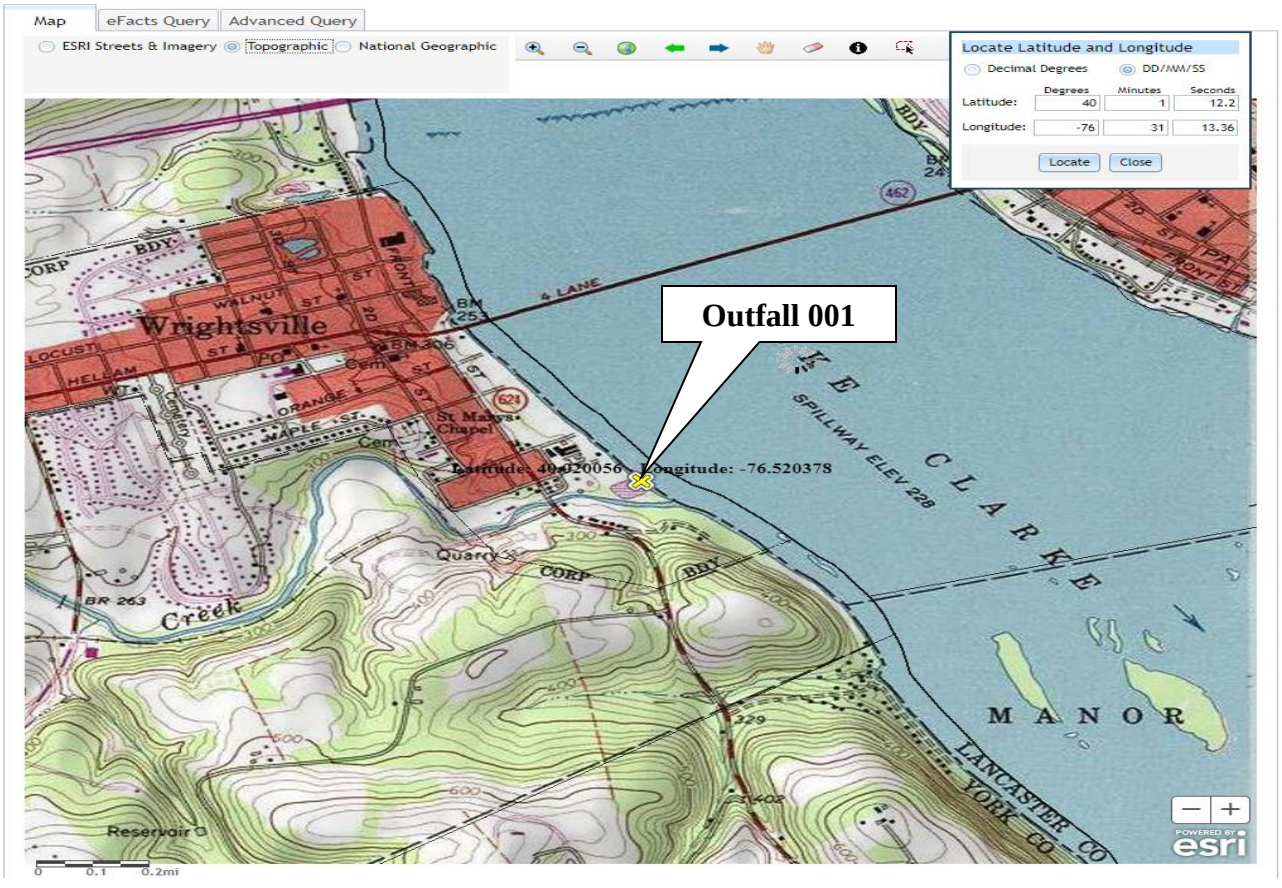
Pollutants	Mass Limits AML (lbs/day)	Mass Limits MDL (lbs/day)	Concentration Limits AML	Concentration Limits MDL	Concentration Limits IMAX	Concentration Limits Units	Governing WQBEL	WQBEL Basis	Comments

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 Copper	0.96	mg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	N/A	N/A	Discharge Conc < TQL
Total Zinc	2.1M	mg/L	Discharge Conc ≤ 10% WQBEL

Model Results 6/22/2018 Page 4



Existing Effluent Limitations and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instantaneous 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
D.O.	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
UV Intensity (mW/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
$CBOD_5$	80	130	XXX	25.0	40.0	50	1/week	24-Hr Composite
BOD_5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	100	150	XXX	30.0	45.0	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Ammonia	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Phosphorus	8.0	XXX	XXX	2.0	XXX	4	2/week	24-Hr Composite

Existing Effluent Limitations and Monitoring Requirements

Chesapeake Bay Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia --N	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen (lbs) Effluent Net	Report	7,306	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs) Effluent Net	Report	974	XXX	XXX	XXX	XXX	1/month	Calculation

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	Weekly Average	Instantaneous 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
D.O.	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
UV Intensity (mW/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
CBOD5	80.0	130.0	XXX	25.0	40.0	50.0	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	100.0	150.0	XXX	30.0	45.0	60.0	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ammonia	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Phosphorus	8.0	XXX	XXX	2.0	XXX	4.0	2/week	24-Hr Composite

Compliance Sampling Location:

Other Comments:

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
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia --N	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen (lbs) Effluent Net	Report	7,306	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs) Effluent Net	Report	974	XXX	XXX	XXX	XXX	1/month	Calculation

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, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☒	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☒	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 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, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 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, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: BCW-PMT-033
☐	Other: