Pennsylvania Department of Environmental Protection

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0087921**
Facility Type	**Municipal**	APS ID	**29344**
Major / Minor	**Minor**	Authorization ID	**1497117**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Berwick Township Adams County**	Facility Name	**Berwick Township STP**
Applicant Address	85 Municipal Road	Facility Address	111 Kelly Drive
	Hanover, PA 17331-8992		New Oxford, PA 17350
Applicant Contact	Peter Socks	Facility Contact	Ryan Swope
Applicant Phone	(717) 632-1829	Facility Phone	(717) 880-5738
Client ID	39497	Site ID	451736
Ch 94 Load Status	Not Overloaded	Municipality	Berwick Township
Connection Status	No Limitations	County	Adams
Date Application Received	August 28, 2024	EPA Waived?	Yes
Date Application Accepted	August 29, 2024	If No, Reason	

Purpose of Application: NPDES permit renewal.

Summary of Review

Berwick Township WWTF has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit. The permit was last reissued on February 24, 2020, and became effective on March 1, 2020. The permit expires on February 28, 2025.

This protection report has been developed for the sewage treatment facility for Berwick Township in Adams County. According to the most recent permit application, the facility receives 100% of its flow from Berwick Township.

This facility has a current hydraulic design capacity flow of 0.45 MGD and average annual design flow of 0.30 MGD. The organic BOD_5 is 600 lbs/day.

The original WQM Part II 0100401 was issued on June 19, 2000; and 0100401 A-1 amendment was issued on September 15, 2023.

Sludge use and disposal description and location(s): N/A because sludge hauling by Smith's Septic & Kline's Septic Services.

Changes from the previous permit: The 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	February 5, 2025
X		/s/ Daniel W. Martin, P.E. / Environmental Engineer Manager	February 14, 2025

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.3
Latitude	39º 52' 21.95"	Longitude	-77º 0' 54.51"
Quad Name	McSherrystown	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Pine Run (WWF)	Stream Code	08796
NHD Com ID	57473099	RMI	0.75
Drainage Area	0.76 mi.^{2}	Yield (cfs/mi^2)	0.081
Q_{7-10} Flow (cfs)	0.061	Q_{7-10} Basis	
Elevation (ft)	530	Slope (ft/ft)	
Watershed No.	7-F	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	Wrightsville Borough Municipal Authority, York County		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI	28.51 miles	Distance from Outfall (mi)	Approximate 58.27 miles

Changes Since Last Permit Issuance:

Drainage Area
The discharge is to Unnamed Tributary to Pine Run at RMI 0.75 mile. A drainage area upstream of the discharge is estimated to be 0.76 mi.^{2}, according to USGS PA StreamStats available at https://streamstats.usgs.gov/ss/.

Stream Flow
According to USGS StreamStats, the discharge point has a Q_{7-10} of 0.061 cfs and a drainage area of 0.76 mi.^{2}, which results in a Q_{7-10} low flow yield of 0.08 cfs/mi.^{2}. This information is used to obtain a chronic or 30-day (Q_{30-10}), and an acute or 1-day (Q_{1-10}) exposure stream flow for the discharge point as follows (Guidance No. 391-2000-023):

Q_{7-10} = 0.061 cfs
Low Flow Yield = 0.061 cfs / 0.76 mi.^{2} ≈ 0.08 cfs/mi.^{2}
Q_{30-10} = 1.36 * 0.061 cfs ≈ 0.083 cfs
Q_{1-10} = 0.64 * 0.061 cfs ≈ 0.040 cfs

The resulting Q_{7-10} dilution ratio is: Q_{stream} / $Q_{discharge}$ = 0.061 cfs / [0.300 MGD * (1.55 cfs/MGD)] = 0.13:1

Unnamed Tributary to Pine Run
25 Pa Code 93.9o classifies Pine Run as warm water fishes (WWF) surface water. Based on the 2024 Integrated Report, Pine Run, is not impaired. A TMDL currently does not exist for this stream segment, therefore, no TMDL has been taken into consideration during this review.

Public Water Supply
The nearest downstream public water supply intake is the Wrightsville Borough Municipal Authority on the Susquehanna River in York County, approximately 58.27 miles downstream of this discharge. Considering distance and dilution, the discharge is not expected to impact the water supply.

Treatment Facility Summary				
Treatment Facility Name: Berwick Township STP				
WQM Permit No.	**Issuance Date**			
0100401	6/19/2000			
0100401 A-1	9/15/2023			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Phosphorus Reduction	Sequencing Batch Reactor	Ultraviolet	0.3
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.45	600	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance:

Other Comments:

The WWTP train is as follows:

Fine Screen Press (1) ⇒ Sequencing Batch Reactor Unit (2) ⇒ Ultraviolet Disinfection Unit (1) ⇒ Discharge

Chemical used:
The system incorporates chemical addition in the form of aluminum sulfate (for phosphorus removal).

Biosolids:
The total sewage sludge/biosolids production within the facility for the previous year was 22 dry tons.

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

Compliance History	
Summary of DMRs:	DMRs reported last 12 months are summarized in the next page.
Summary of Inspections:	4/16/2024: Mr. Hoy, DEP WQS, conducted a compliance evaluation inspection. The discharge was clear. The field test results were within the permit limits. There were no violations noted during inspection. DEP's recommendations: 1. Completing and submitting current excel supplemental reports. 2. The NIST thermometers are replaced or calibrated annually. DEP's requests: 1. Ensuring the 7-day flow chart is operational as required by NPDES permit PA0087921 Part BI.E.2. 2. The influent sampling be collected before treatment occurs as required by NPDES PA0087921 Part A III.A.1. 3. Storing copies of sludge hauling receipts on-site and available for review during future inspections.
Other Comments:	There are currently no open violations associated with the permittee or the facility.

Other Comments:

Compliance History

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

Parameter	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24
Flow (MGD) Average Monthly	0.0476	0.0455	0.04707	0.0526	0.0591	0.0471913	0.0515133	0.0552497	0.120469	0.0800	0.0637	0.0665
Flow (MGD) Daily Maximum	0.0995	0.0711	0.06058	0.0750	0.1327	0.06546	0.07711	0.08068	0.87371	0.1970	0.0992	0.1636
pH (S.U.) Daily Minimum	6.97	6.98	7.22	7.14	7.18	7.06	6.99	6.97	6.88	7.00	6.89	6.91
pH (S.U.) Instantaneous Maximum	8.05	7.96	7.60	7.57	7.63	7.62	7.35	7.34	7.42	7.34	7.40	7.49
DO (mg/L) Daily Minimum	6.0	5.38	5.41	5.40	5.15	5.14	5.44	5.98	5.83	6.11	6.20	6.10
CBOD5 (lbs/day) Average Monthly	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.68	1.66	0.98
CBOD5 (lbs/day) Weekly Average	2.1	< 1.1	1.0	1.8	1.7	< 1.1	1.6	1.6	3.0	2.07	2.61	1.35
CBOD5 (mg/L) Average Monthly	< 3.0	< 2.0	< 3.0	< 3.0	< 3.0	< 2.0	< 3.0	< 3.0	< 3.0	< 2.65	3.30	2.63
CBOD5 (mg/L) Weekly Average	6.0	3.0	3.0	4.0	4.0	< 2.0	4.0	3.0	3.0	3.40	4.70	3.30
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	111	97	103	142	133	105	119	141	169	125.46	126.19	88.22
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	117	106	118	212	143	128	145	168	264	139.50	161.32	111.60
BOD5 (mg/L) Raw Sewage Influent Average Monthly	299	244	273	308	284	254	275	395	247	205.0	253.60	242.75
TSS (lbs/day) Average Monthly	0.5	0.6	0.5	0.6	0.7	1.0	0.8	1.0	1.0	1.53	0.88	1.09
TSS (lbs/day) Raw Sewage Influent Average Monthly	86	89	93	129	123	107	78	135	182	146.96	96.49	66.81
TSS (lbs/day) Raw Sewage Influent Daily Maximum	96	95	112	159	137	121	112	163	270	196.64	111.74	102.87
TSS (lbs/day) Weekly Average	0.8	0.9	0.7	1.0	1.0	1.3	1.1	3.0	2.4	2.00	1.38	1.63

TSS (mg/L) Average Monthly	1.0	2.0	1.0	1.0	1.0	3.0	2.0	3.0	2.0	2.50	1.80	3.00
TSS (mg/L) Raw Sewage Influent Average Monthly	232	225	242	281	262	253	176	282	268	232.0	194.40	182.00
TSS (mg/L) Weekly Average	2.0	2.0	2.0	2.0	2.0	3.0	2.0	6.0	3.0	3.00	3.00	4.00
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	< 1	< 1	< 1	< 1	< 5	< 1	< 1	< 1.00	< 1.00	< 1.00
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 1	1	< 1	2	2	1	105	1	4	< 1.00	< 1.00	< 1.00
UV Intensity (µw/cm²) Daily Minimum	0.25	0.45	0.6	0.8	0.5	0.7	0.7	0.65	0.45	0.6	0.5	0.5
UV Intensity (µw/cm²) Average Monthly	0.42	0.62	0.84	0.95	0.93	0.87	0.88	0.8	0.72	0.7	0.7	0.7
Nitrate-Nitrite (mg/L) Average Monthly	< 8.3	< 7	< 7.3	< 6.2	< 4.6	< 3.9	< 2.35	< 5.8	< 6	6.38	9.32	12.35
Nitrate-Nitrite (lbs) Average Monthly	< 3	< 3	< 86	< 84	< 67	< 2	< 1	< 3	< 4	4.05	4.62	140.88
Total Nitrogen (mg/L) Average Monthly	< 9.4	< 7.47	< 7.99	< 6.8	< 5.39	< 4.73	< 3.54	< 6.78	< 6.85	6.96	9.92	13.24
Total Nitrogen (lbs) Total Monthly	< 108	< 89	< 94	< 93	< 79	< 61	< 47	< 101	< 132	137.79	142.61	150.45
Total Nitrogen (lbs) Total Annual				1309.75								
Ammonia (lbs/day) Average Monthly	< 0.04	< 0.04	< 0.04	< 0.05	< 0.05	< 0.04	< 0.07	< 0.05	< 0.1	< 0.13	0.06	0.004
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.10	< 0.1	< 0.1	< 0.18	0.11	0.11
Ammonia (lbs) Total Monthly	< 1	< 1	< 1	< 1	< 1	< 1	< 2	< 1	< 4	< 4.03	1.65	1.19
Ammonia (lbs) Total Annual				20.84								
TKN (mg/L) Average Monthly	< 1.1	< 0.52	< 0.67	< 0.7	0.81	< 0.83	1.21	< 0.98	0.87	0.58	0.60	0.89
TKN (lbs) Total Monthly	< 13	< 6	< 8	< 9	12	< 11	16	< 14	20	12.27	8.65	9.56
Total Phosphorus (lbs/day) Average Monthly	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.4	0.16	0.44	0.20
Total Phosphorus (mg/L) Average Monthly	0.9	0.8	0.8	0.7	0.9	1.0	1.1	0.8	0.7	0.26	0.88	0.52

Total Phosphorus (lbs) Total Monthly	11	10	9	10	13	13	15	13	13	5.06	12.62	6.13
Total Phosphorus (lbs) Total Annual				147.56								

Existing Effluent Limitations and Monitoring Requirements

Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
$CBOD_5$	25.0	37.5 Wkly Avg	XXX	10	15	20	1/week	8-Hr Composite
BOD_5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids	25.0	37.5 Wkly Avg	XXX	10	15	20	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
UV Intensity ($\mu w/cm^2$)	XXX	XXX	Report	Report	XXX	XXX	1/day	Recorded
Ammonia-Nitrogen May 1 - Oct 31	3.8	XXX	XXX	1.5	XXX	3.0	1/week	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	11.3	XXX	XXX	4.5	XXX	9.0	1/week	8-Hr Composite
Total Phosphorus	5.0	XXX	XXX	2.0	XXX	4.0	1/week	8-Hr Composite

Existing Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are in the existing permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

Outfall 001

Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	1/week	8-Hr Composite
Kjeldahl---N	Report	XXX	XXX	Report	XXX	1/week	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	1/week	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	1/week	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.3
Latitude 39º 52' 21.95" **Longitude** -77º 0' 54.51"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

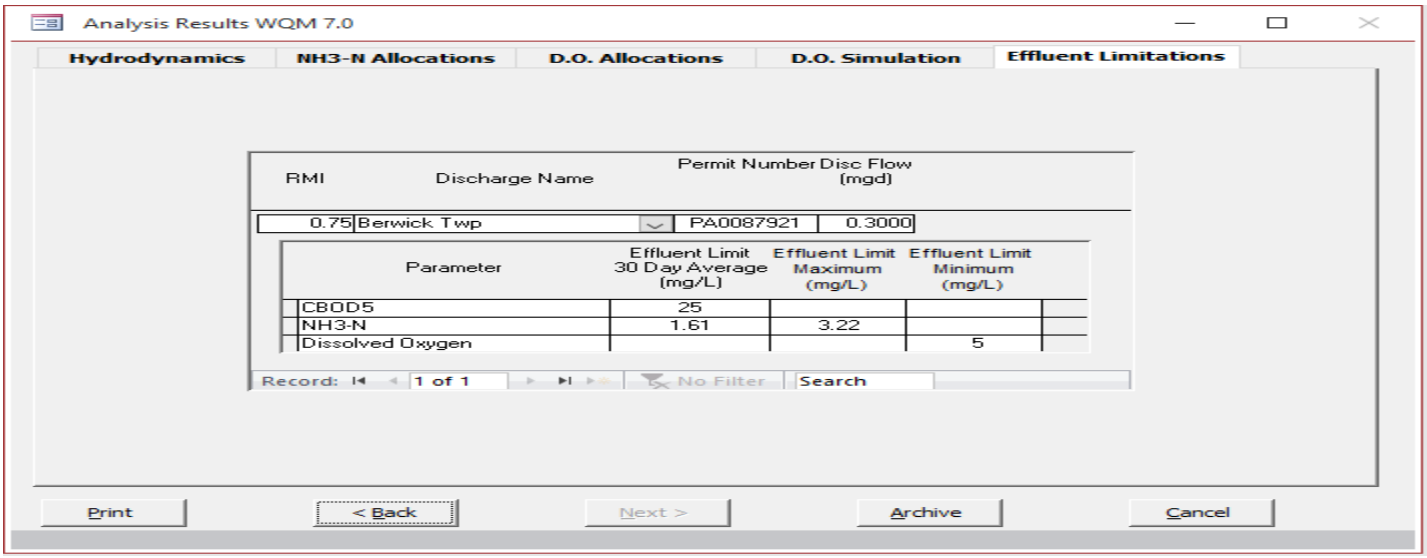
Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.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

Comments: The Total Residual Chlorine is not applied to this facility. Because the facility utilizes UV for disinfection.

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 = 25°C (Default)
- Stream pH = 7.0 (Default)
- Stream Temperature = 25ºC (Default for WWF)
- Background NH_3-N = 0 (Default)



The model input data and results are attached. The printout of the WQM 7.0 output indicates that at a discharge of 0.300 MGD, limits (rounded according to the NPDES Technical Guidance 362-0400-001) of 1.61 mg/L NH_3-N as a monthly average and 3.22 mg/L NH_3-N instantaneous maximum are necessary to protect the aquatic life from toxicity effects. The existing limits 1.5 mg/L AML & 3.0 mg/L IMAX are more stringent and remain in the proposed permit. The existing winter average monthly limit of 4.5 mg/L & IMAX limit of 9.0 mg/L will remain in place. Recent DMRs and inspection reports indicate that the facility has been consistently achieving these limits.

Summer average monthly mass limit: 1.5 mg/L x 0.30 MGD x 8.34 = 3.8 lbs/day
Winter average monthly mass limit: 4.5 mg/L x 0.30 MGD x 8.34 = 11.3 lbs/day

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) / Total Suspended Solids (TSS):

The original protection report for this facility, dated December 7, 1998, indicates the following:

> "*A point of first use (POFU) survey revealed that the stream is perennial and the POFU is at the point of discharge. However, the Q_{7-10} flow of the tributary is very low. To protect public health and to avoid nuisance, since there are times when there is no dilution, dry stream limits will be set according to the Implementation Guidance for Evaluating Wastewater Discharges to Drainage Ditches and Swales (ID #391-2000-014, 8/18/97), with the exception of ammonia which will be modeled at the point of first use with the Q_{7-10} based on the nearest gage station*."

This approach was used in the 2009 and 2014 renewals. The existing concentration limits for $CBOD_5$ and TSS (10 mg/L monthly average, 15 mg/L average weekly and 20 mg/L instantaneous maximum) will remain in effect.

As stated above, the dry stream limits will remain in effect. Recent DMRs and inspection reports show that the facility has been consistently achieving these limits.

$CBOD_5$:
Average monthly mass limit: 10 mg/L x 0.30 MGD x 8.34 = 25.0 lbs/day
Average weekly mass limit: 15 mg/L x 0.30 MGD x 8.34 = 37.5 lbs/day

TSS:
Average monthly mass limit: 10 mg/L x 0.30 MGD x 8.34 = 25.0 lbs/day
Average weekly mass limit: 15 mg/L x 0.30 MGD x 8.34 = 37.5 lbs/day

Dissolved Oxygen (DO):
A minimum D.O. of 5.0 mg/L is required per 25 Pa. Code § 93.7. This is consistent with the previous permit and current Department criteria.

pH:
The effluent discharge pH should remain above 6 and below 9 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 1,000/100 ml and 25 Pa Code § 92a.47.(a)(5) requires a winter limit of 2,000/100 ml as a geometric mean and an instantaneous maximum not greater than 10,000/100 ml.

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.

UV:
The UV system daily monitor and report the UV intensity (µw/cm²) disinfection system will be in the proposed permit.

Toxic:
DEP's current permit renewal application for minor sewage facilities greater than 0.1 MGD requires sampling of Total Copper, Total Lead, and Total Zinc. The application reported non-detect sample results for Total Lead. Total Copper and Total Zinc were detected in effluent, but the reported levels are below the current water quality criteria. No reasonable potential analysis is needed for this permit term based on the review of these sample results.

Chesapeake Bay Strategy:

The Department formulated a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). Sewage discharges have been prioritized by Central Office based on their delivered TN loadings to the Bay. The highest priority (Phases I, II, and III) dischargers will receive annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/L TN and 0.8 mg/L TP. These limits may be achieved through a combination of treatment technology, credits, or offsets. Phase IV (0.2 -0.4 MGD) will be required to monitor and report TN and TP during permit renewal monthly. However, any facility in Phases IV that undergoes expansion is subjected to cap load right away. This plant is classified as a phase IV, the existing TN and TP "Monitor & Report" requirements will remain in the proposed permit.

Influent BOD_5 and TSS Monitoring:

The permit will include influent BOD_5 and TSS monitoring at the same frequency as is done for effluent in order to implement Chapter 94.12 and assess percent removal requirements, per DEP policy.

Phosphorus:

Technology-based phosphorus limits of 2.0 mg/L average monthly and 4.0 mg/L instantaneous maximum were applied by the original 1998 protection report. The limits will remain in the proposed permit. Recent DMR data and inspection reports indicate consistent achievement.

Average monthly mass limit: 2.0 mg/L x 0.30 MGD x 8.34 = 5.0 lbs/day

Total Dissolved Solids:

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 <u>and upon issuance or reissuance of an individual NPDES permit</u>:

-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.

Berwick reported maximum concentrations of 452.0 mg/L for TDS and < 0.05 mg/L for Bromide. Accordingly, the requirement to monitor for these pollutants is not necessary.

<u>Additional Considerations</u>

Flow Monitoring

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

Monitoring Frequency and Sample Type

The facility currently is required to collect daily effluent grab samples for D.O., and pH; daily record UV Intensity ($\mu w/cm^2$); one per week effluent 8-hr composite samples of $CBOD_5$, and TSS; one per week effluent grab samples of fecal coliform; one per week influent 8-hr composite samples of BOD_5 and TSS; one per week effluent 8-hr composite samples of Ammonia-Nitrogen, and TP; one per week effluent 8-hr composite samples of Ammonia---N, Kjeldahl---N, Nitrate-Nitrite as N, and Total Phosphorus; and one per month effluent calculation samples of TN. Based on the best professional judgement of the author, the existing monitoring frequencies are sufficient and necessary. Therefore, the existing monitoring frequencies will remain the same as those specified in the proposed permit.

<u>Antidegradation (93.4)</u>

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.

303d LISTED STREAMS

This discharge is not located on a 303d listed stream segment.

Class A Wild Trout Fisheries

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

WQM 7.0:

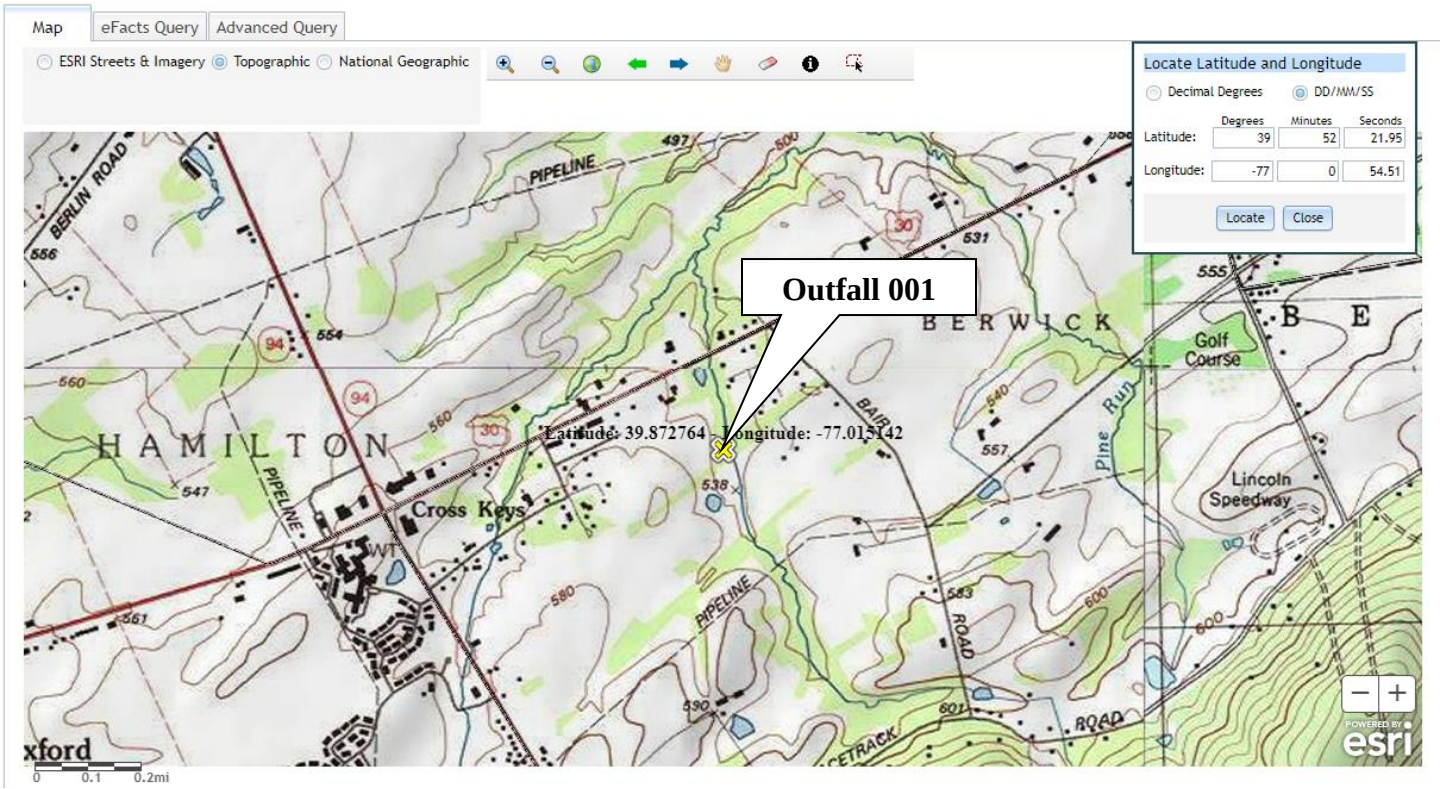
*	Discharge pH	=	7.0	(Default)
*	Discharge Temperature	=	25°C	(Default)
*	Stream pH	=	7.0	(Default)
*	Stream Temperature	=	25°C	(Default for WWF)
*	Background NH_3-N	=	0	(Default)

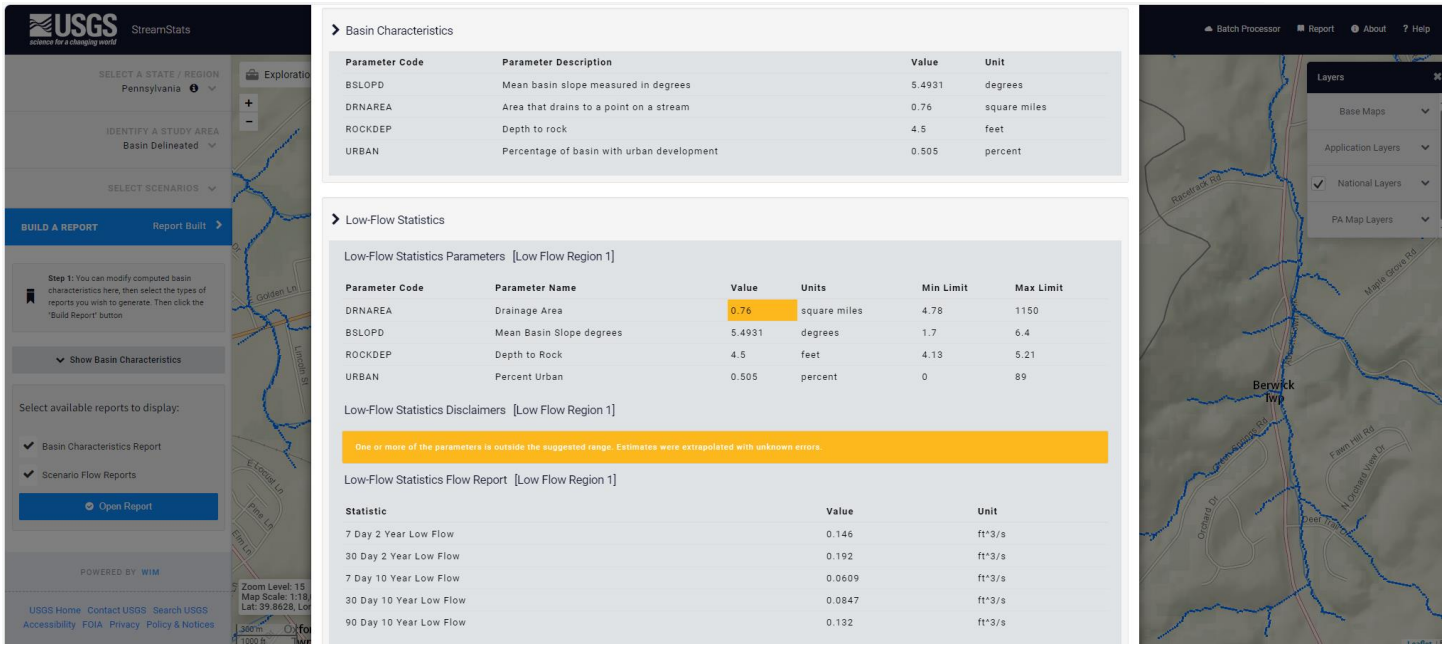
Node 1: Outfall 001 on UNT Pine Run (08796)

Elevation:	530 ft (USGS National Map Viewer)
Drainage Area:	0.76 $mi.^2$ (USGS PA StreamStats)
River Mile Index:	0.75 (PA DEP eMapPA)
Low Flow Yield:	0.08 $cfs/mi.^2$
Discharge Flow:	0.300 MGD (NPDES Application)

Node 2: Just before confluence with Pine Run (08789)

Elevation:	488 ft (USGS National Map Viewer)
Drainage Area:	1.66 $mi.^2$ (USGS PA StreamStats)
River Mile Index:	0.001 (PA DEP eMapPA)
Low Flow Yield:	0.08 $cfs/mi.^2$
Discharge Flow:	0.000 MGD




USGS
StreamStats
Basin Characteristics
Parameter Code | Parameter Description | Value | Unit
BSLOPD | Mean basin slope measured in degrees | 5.4931 | degrees
DRNAREA | Area that drains to a point on a stream | 0.76 | square miles
ROCKDEP | Depth to rock | 4.5 | feet
URBAN | Percentage of basin with urban development | 0.505 | percent
Low-Flow Statistics
Low-Flow Statistics Parameters [Low Flow Region 1]
Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit
DRNAREA | Drainage Area | 0.76 | square miles | 4.78 | 1150
BSLOPD | Mean Basin Slope degrees | 5.4931 | degrees | 1.7 | 6.4
ROCKDEP | Depth to Rock | 4.5 | feet | 4.13 | 5.21
URBAN | Percent Urban | 0.505 | percent | 0 | 89
Low-Flow Statistics Disclaimers [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 [Low Flow Region 1]
Statistic | Value | Unit
7 Day 2 Year Low Flow | 0.146 | ft^3/s
30 Day 2 Year Low Flow | 0.192 | ft^3/s
7 Day 10 Year Low Flow | 0.0609 | ft^3/s
30 Day 10 Year Low Flow | 0.0847 | ft^3/s
90 Day 10 Year Low Flow | 0.132 | ft^3/s
Batch Processor
Report
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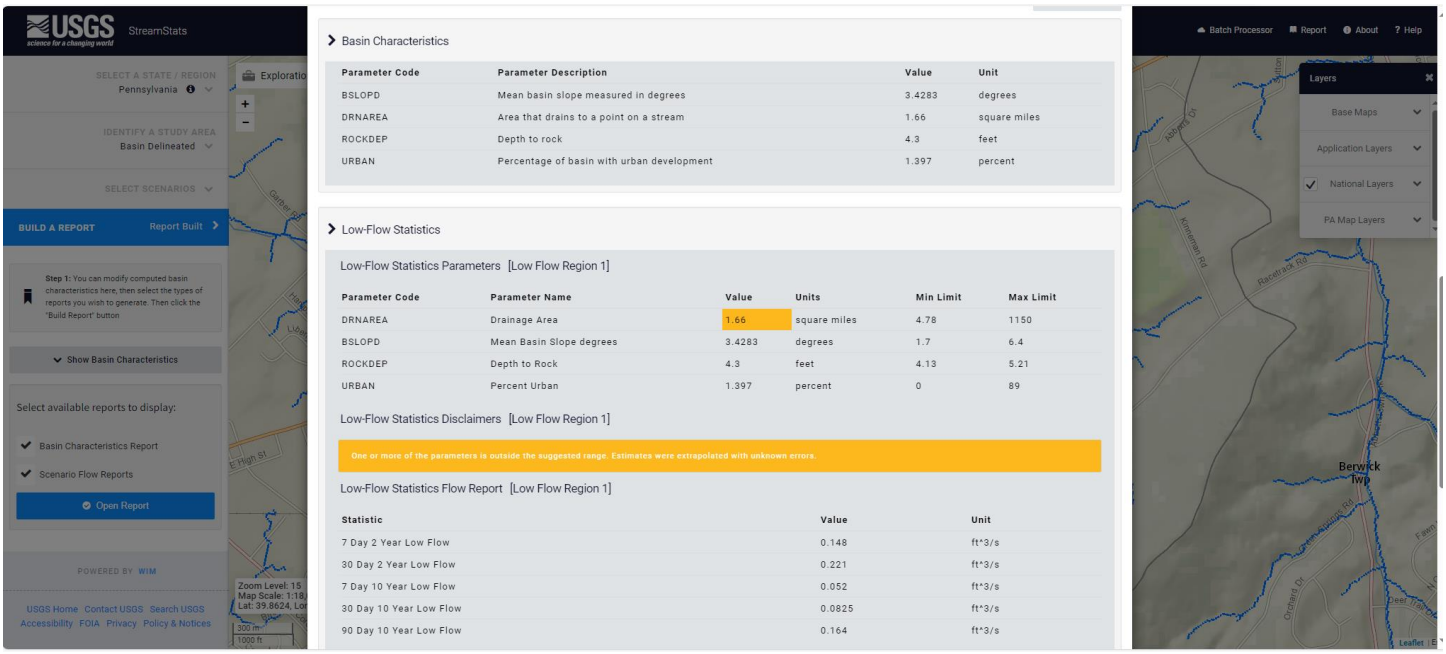
Layers
Base Maps
Application Layers
National Layers
PA Map Layers
Berwick Twp


USGS
StreamStats
Basin Characteristics
Parameter Code | Parameter Description | Value | Unit
BSLOPD | Mean basin slope measured in degrees | 3.4283 | degrees
DRNAREA | Area that drains to a point on a stream | 1.66 | square miles
ROCKDEP | Depth to rock | 4.3 | feet
URBAN | Percentage of basin with urban development | 1.397 | percent
Low-Flow Statistics
Low-Flow Statistics Parameters [Low Flow Region 1]
Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit
DRNAREA | Drainage Area | 1.66 | square miles | 4.78 | 1150
BSLOPD | Mean Basin Slope degrees | 3.4283 | degrees | 1.7 | 6.4
ROCKDEP | Depth to Rock | 4.3 | feet | 4.13 | 5.21
URBAN | Percent Urban | 1.397 | percent | 0 | 89
Low-Flow Statistics Disclaimers [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 [Low Flow Region 1]
Statistic | Value | Unit
7 Day 2 Year Low Flow | 0.148 | ft^3/s
30 Day 2 Year Low Flow | 0.221 | ft^3/s
7 Day 10 Year Low Flow | 0.052 | ft^3/s
30 Day 10 Year Low Flow | 0.0825 | ft^3/s
90 Day 10 Year Low Flow | 0.164 | ft^3/s
Batch Processor
Report
About
Help
Layers
Base Maps
Application Layers
National Layers
PA Map Layers
Berwick Twp

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)
0.75	Berwick Twp	PA0087921	0.3000

Parameter	Effluent Limit 30 Day Average (mg/L)	Effluent Limit Maximum (mg/L)	Effluent Limit Minimum (mg/L)
CBOD5	25		
NH3-N	1.61	3.22	
Dissolved Oxygen			5

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rptEffLimits

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07F	07796	Trib 08796 to Pine Run

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
0.750	Berwick Twp	PA0087921	0.300	CBOD5	25		
				NH3-N	1.61	3.22	
				Dissolved Oxygen			5

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rpt_WLA

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07F	07796	Trib 08796 to Pine Run

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.750	Berwick Twp	11.07	12	11.07	12	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.750	Berwick Twp	1.37	1.61	1.37	1.61	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
0.75	Berwick Twp	25	25	1.61	1.61	5	5	0	0

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rptDOSim

WQM 7.0 D.O. Simulation

SWP Basin	Stream Code	Stream Name
07F	08796	Trib 08796 to Pine Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.750	0.300	25.000	7.000
Reach Width (ft)	Reach Depth (ft)	Reach W/D Ratio	Reach Velocity (fps)
6.668	0.460	14.965	0.166
Reach CBOD5 (mg/L)	Reach Kc (1/days)	Reach NH3-N (mg/L)	Reach Kn (1/days)
22.34	1.460	1.42	1.029
Reach DO (mg/L)	Reach Kr (1/days)	Kr Equation	Reach DO Goal (mg/L)
5.376	30.775	Owens	5
Reach Travel Time (days)			
0.276			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.028	21.22	1.38	5.84
0.055	20.15	1.35	6.10
0.083	19.14	1.31	6.27
0.111	18.18	1.27	6.40
0.138	17.27	1.24	6.50
0.166	16.40	1.20	6.60
0.193	15.58	1.17	6.69
0.221	14.80	1.13	6.77
0.249	14.06	1.10	6.84
0.276	13.35	1.07	6.92

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rptModelSpecs

WQM 7.0 Modeling Specifications

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

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rptHydro

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07F	08796	Trib 08796 to Pine Run

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Dis Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
0.750	0.00	0.00	0.00	.4641	0.01062	.46	6.89	14.97	0.17	0.276	25.00	7.00
Q1-10 Flow												
0.750	0.01	0.00	0.01	.4641	0.01062	NA	NA	NA	0.16	0.283	25.00	7.00
Q30-10 Flow												
0.750	0.00	0.00	0.00	.4641	0.01062	NA	NA	NA	0.17	0.270	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
07F	08796	Trib 08796 to Pine Run	0.750	530.00	0.76	0.00000	0.00	☑

Stream Data

Design Cond	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	W/D Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.000	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
Berwick Twp	PA0087921	0.3000	0.3000	0.3000	0.000	25.00	7.00

Parameter Data

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

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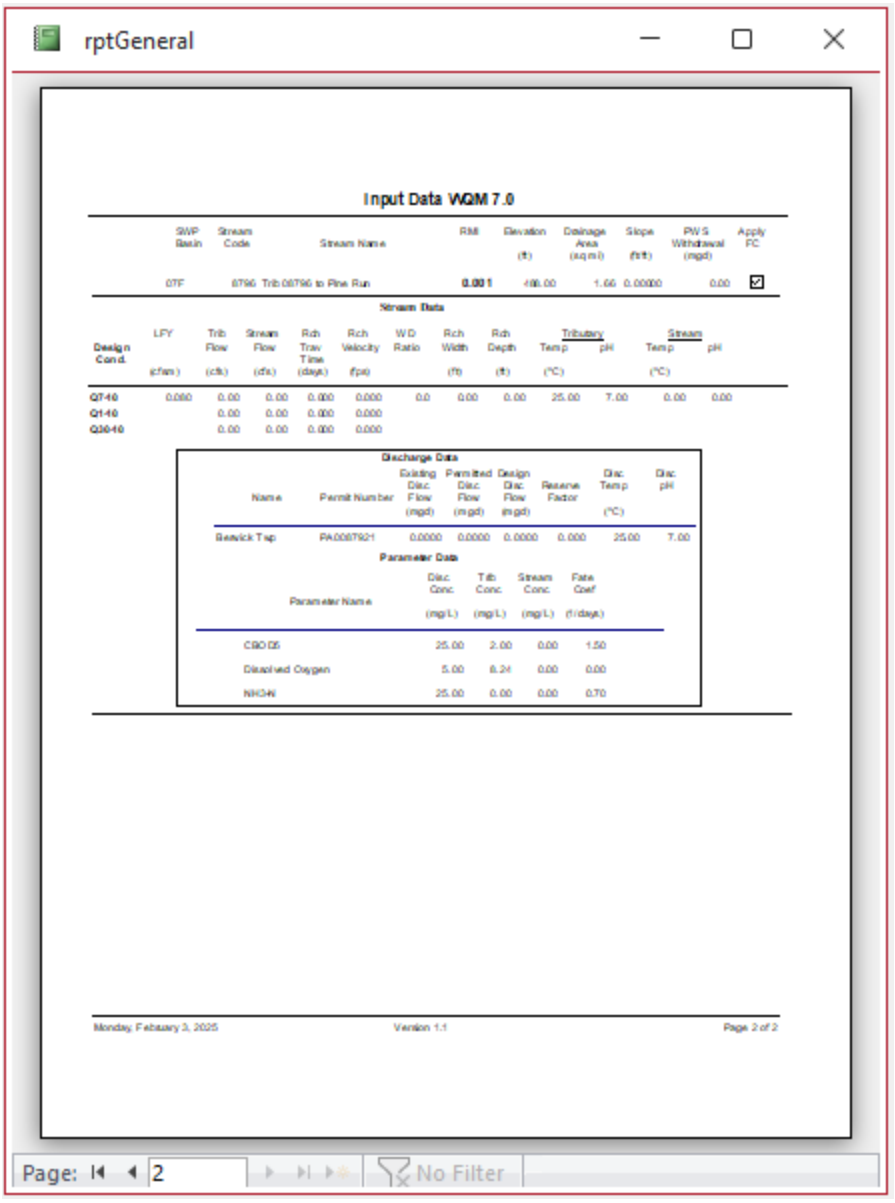
rptGeneral
Input Data WQM 7.0
SWP Basin
Stream Code
Stream Name
RMI
Elevation (ft)
Drainage Area (sq mi)
Slope (ft/ft)
PWS Withdrawal (mgd)
Apply FC
07F
07961
Trib 07961 to Pine Run
0.001
488.00
1.66
0.00000
0.00
Stream Data
Design Cond.
LFY (cfsm)
Trib Flow (cfs)
Stream Flow (cfs)
Rch Trav Time (days)
Rch Velocity (fps)
WD Ratio
Rch Width (ft)
Rch Depth (ft)
Tributary Temp (°C)
Tributary pH
Stream Temp (°C)
Stream pH
Q7-10
0.060
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
Berwick Twp
PA0087921
0.0000
0.0000
0.0000
0.000
25.00
7.00
Parameter Data
Parameter Name
Disc Conc (mg/L)
Trib Conc (mg/L)
Stream Conc (mg/L)
Fate Coef (1/days)
CBOD5
25.00
2.00
0.00
1.50
Dissolved Oxygen
5.00
8.24
0.00
0.00
NH3-N
25.00
0.00
0.00
0.70
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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	Daily 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 (µw/cm²)	XXX	XXX	Report	Report	XXX	XXX	1/day	Recorded
CBOD5	25.0	37.5	XXX	10.0	15.0	20.0	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	25.0	37.5	XXX	10.0	15.0	20.0	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ammonia Nov 1 - Apr 30	11.3	XXX	XXX	4.5	XXX	9.0	1/week	8-Hr Composite
Ammonia May 1 - Oct 31	3.8	XXX	XXX	1.5	XXX	3.0	1/week	8-Hr Composite
Total Phosphorus	5.0	XXX	XXX	2.0	XXX	4.0	1/week	8-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" (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
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Kjeldahl --N	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	1/week	8-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: BCW-PMT-033
☐	Other: