pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0024147**
Facility Type	**Municipal**	APS ID	**1960**
Major / Minor	**Minor**	Authorization ID	**1485375**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Cumberland Township Authority Adams County**	Facility Name	**Cumberland Township South STP**
Applicant Address	1370 Fairfield Road	Facility Address	985 Old Mill Road
	Gettysburg, PA 17325-7267		Gettysburg, PA 17325-1809
Applicant Contact	Todd Williams	Facility Contact	Todd Williams
Applicant Phone	(717) 334-6485	Facility Phone	(717) 339-0612
Client ID	77638	Site ID	250963
Ch 94 Load Status	Not Overloaded	Municipality	Cumberland Township
Connection Status	No Limitations	County	Adams
Date Application Received	May 15, 2024	EPA Waived?	No
Date Application Accepted	May 20, 2024	If No, Reason	Significant CB Discharge
Purpose of Application	NPDES Permit Renewal.		

Summary of Review

KPI Technology, on behalf of the Cumberland Township Municipal Authority North (Authority/Permittee), applied to the Pennsylvania Department of Environmental Protection (DEP) for issuance of the NPDES permit. The permit was reissued on November 13, 2019 and became effective on December 1, 2019. The permit expires on November 30, 2024.

The average annual design flow and hydraulic design capacity is 0.65 MGD, and the organic loading capacity is 1,355 lbs BOD_5/day. The renewal application indicated the STP receives its 100% from the Cumberland Township.

The WQM Part II permit No. 0111401 was issued on 6/8/2011. The WQM Part II permit No. 0110402 was issued on 6/8/2011, & 0110402 pump station amendment was issued on 2/29/2024. The WQM Part II No. 0101402 was issued on 7/31/2001, & 0101402 A-1 amendment was issued on 8/31/2022.

Sludge use and disposal description and location(s): N/A

Changes from the previous permit: E. Coli monitoring and report requirements will add to the proposed permit. The NH_3-N winter monthly average mass limit corrected to 32.0 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	August 12, 2024
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	August 28, 2024

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.65
Latitude	39º 49' 22.23"	Longitude	-77º 15' 38.90"
Quad Name	Fairfield	Quad Code	2027
Wastewater Description:	Sewage Effluent		
Receiving Waters	Willoughby Run (WWF)	Stream Code	58925
NHD Com ID	53320294	RMI	2.74
Drainage Area	5.23 mi.^{2}	Yield (cfs/mi^2)	0.022
Q_{7-10} Flow (cfs)	0.117	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)		Slope (ft/ft)	
Watershed No.	13-D	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	Frederick City, MD		
PWS Waters	Monocacy River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	Approximate 41.0 miles

Changes Since Last Permit Issuance:

Drainage Area
The discharge is to Willoughby Run at RMI 2.74. A drainage area upstream of the point of discharge is estimated to be 5.23 sq.mi using USGS StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
USGS StreamStats produced a Q7-10 flow of 0.117 cfs at the point of discharge. (0.117 cfs / 5.23 mi2 = 0.022 cfs/mi.2)

Willoughby Run
The receiving water, Willoughby Run, is designated as warm water fishes and supports migratory fishes according to 25 Pa Code §93.9z. Willoughby Run is a tributary of Marsh Creek which is designated as cold-water fishes and supports migratory fishes as well. No special protection water is therefore impacted by this discharge. DEP's latest integrated water quality report prepared in 2024 indicates that the discharge is located within a stream segment listed as attaining use(s).

Public Water Supply Intake
The fact sheet prepared for the last permit renewal indicates that the nearest downstream public water supply intake is located on the Monocacy River at Fredrick MD approximately 41.0 miles from the discharge. Given the distance, the discharge is not expected to impact the water supply.

Treatment Facility Summary

Treatment Facility Name: Cumberland Township South STP

WQM Permit No.	Issuance Date
0111401	06/08/2011
0110402	6/8/2011
0110402 A-1	2/29/2024
0101402	7/31/2001
0101402 A-1	8/31/2022

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia Reduction	Sequencing Batch Reactor	Ultraviolet	0.65

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.65	1355	Not Overloaded	Aerobic Digestion	Land Application

Changes Since Last Permit Issuance:

Other Comments:
The process, according to the application, is as follows:
Screening → Influent Pump Station → SBRs (2) → UV Disinfection → Outfall 001 to Willoughby Run

The facility utilizes a sludge waste holding tank, aerobic digesters (2) for sludge processing. Any waste generated from this facility is land applied under the NPDES Permit No. PAG083524 which was last issued on August 8, 2018.

The facility utilizes aerobic digesters (4) and sludge holding tank for sludge processing. Any waste generated from this facility is sent to CTA's South STP for further treatment.

Chemical used:
Sodium Aluminate is used for phosphorus removal at a rate of 5.0 gpd.

Industrial/Commercial Users:
The application lists a number of commercial/industrial users contributing wastewater to the existing sewer system. Based on the review of this list, it does not appear that industrial wastewater from these users, if any, contributes more than 5% of the existing hydraulic design capacity (i.e., 0.025 MGD). The facility does not have an EPA-approved pretreatment program at this time.

Compliance History	
Summary of DMRs:	A summary of past 12-month DMR data is presented on the next page.
Summary of Inspections:	1/24/2024: Mr. Hoy, DEP Water Quality Specialist, conducted a compliance evaluation inspection. The outfall was observed and appeared clear upstream and downstream. The field test results were within permit limits. There were violations noted during inspection. Recommendations: 1. Monitoring and recording temperature using NIST traceable thermometers in the composite sampler and sample storage refrigerator, 2. Calibrating or replacing NIST traceable thermometers annually, 3. Sealing containers when not in use and placing on secondary containment, and 4. Notifying Mr. Hoy by email when the new valve actuator has been installed. Requests: 1. Notification when aeration is shut off to prevent loss of solids as required by NPDES Permit No. PA0024147 Part A. III.C.4.a.i. 2. The sampling is conducted when aeration is shut off to prevent loss of solids as required by NPDES Permit No. PA0024147 Part A. Additional Requirements # 4, and 3. The composite samples are flow proportional to ensure samples are collected during discharges. 6/29/2022: Mr. Sweeney, DPE Soil Scientist, conducted a process compliance evaluation inspection. There were no violations noted during inspection. Recommendations: 1- For the STP - Prior to any future land application of biosolids in 2022, collect samples for pollutants, pathogen reduction, and vector attraction reduction. Please forward copies of these results upon receipt. 2. For the Waybright Farm – a. Update the landowner consent form, b. agronomic loading rates should be calculated prior to each year's land application activities and available on site, c. Verify the soil pH for the fields used is 6.0 or greater. Soil Fertility samples should be collected once every 2-3 years.
Other Comments:	There was one open violation associated with this facility or permittee. - 9/12/2023 – CSL-Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth.

Other Comments:

Compliance History

DMR Data for Outfall 001 (from July 1, 2023 to June 30, 2024)

Parameter	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23
Flow (MGD) Average Monthly	0.248	0.384	0.471	0.492	0.439	0.582	0.466	0.280	0.249	0.294	0.219	0.220
Flow (MGD) Daily Maximum	0.572	0.662	1.832	1.074	0.572	1.640	1.332	0.914	0.536	0.816	0.462	0.325
pH (S.U.) Instantaneous Minimum	6.4	7.2	7.1	7.1	7.0	7.1	7.2	7.2	7.3	7.3	7.1	7.2
pH (S.U.) Instantaneous Maximum	7.7	7.6	7.7	7.4	7.4	7.7	7.7	8.0	7.8	7.8	7.5	7.6
DO (mg/L) Instantaneous Minimum	5.6	5.3	5.2	6.5	6.2	7.1	6.5	5.4	5.1	6.2	6.6	6.4
CBOD5 (lbs/day) Average Monthly	8.0	18.0	24.0	24.0	22.0	22.0	44.0	14.0	15.0	< 11.0	< 5.0	< 5.0
CBOD5 (lbs/day) Weekly Average	12.0	21.0	46.0	28.0	24.0	30.0	103.0	21.0	18.0	10.0	< 9.0	< 5.0
CBOD5 (mg/L) Average Monthly	3.8	5.4	7.0	6.3	7.2	5.2	7.0	7.0	6.8	6.6	< 2.4	< 2.4
CBOD5 (mg/L) Weekly Average	5.4	7.9	7.7	7.5	9.0	6.9	9.3	8.2	8.1	< 3.6	< 2.4	< 2.4
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	317	325	343	356	280	733	597	279	404	372	394	313
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	398	465	459	468	339	1125	1255	436	570	519	524	474
BOD5 (mg/L) Raw Sewage Influent Average Monthly	168	95	111	91	91	187	104	143	188	146	216	168
TSS (lbs/day) Average Monthly	8.0	16.0	15.0	17.0	65.0	15.0	66.0	8.0	11.0	11.0	5.0	5.0
TSS (lbs/day) Raw Sewage Influent Average Monthly	283	302	345	201	220	929	801	185	326	363	372	324
TSS (lbs/day) Raw Sewage Influent Daily Maximum	393	447	716	299	240	1572	2044	386	451	763	402	562

TSS (lbs/day) Weekly Average	14.0	30.0	30.0	21.0	221.0	22.0	211.0	21.0	11.0	32.0	15.0	7.0
TSS (mg/L) Average Monthly	4.0	5.0	4.0	4.0	24.0	4.0	8.0	7.0	5.0	4.0	2.0	2.0
TSS (mg/L) Raw Sewage Influent Average Monthly	148	89	106	50	72	244	125	88	148	124	203	177
TSS (mg/L) Weekly Average	6.0	9.0	5.0	6.0	84.0	5.0	19.0	8.2	5.0	11.0	4.0	4.0
Fecal Coliform (No./100 ml) Geometric Mean	25	78	81	8	33	7	57	24	31	236	< 2.0	2.0
Fecal Coliform (No./100 ml) Instantaneous Maximum	214	548	196	19	136	13	1986	33	345	< 30	8	4.0
UV Transmittance (%) Instantaneous Minimum	65	65	65	65	65	65	65	65	65	65	65	65
Nitrate-Nitrite (mg/L) Average Monthly	< 3.75	< 5.63	< 1.22	< 1.85	< 1.46	< 4.3	< 4	< 3.4	< 2.65	< 4.56	< 6.3	< 4.5
Nitrate-Nitrite (lbs) Total Monthly	< 208	< 552	< 112	< 257	< 131	< 559	< 562	< 182	< 185	< 315	< 328	< 239
Total Nitrogen (mg/L) Average Monthly	< 6.31	< 8.13	< 10.33	< 7.54	< 4.88	< 7.4	< 7.4	< 6.9	< 7.08	< 7.96	< 7.3	< 5.75
Total Nitrogen (lbs) Total Monthly	< 356	< 833	< 901	< 853	< 431	< 1055	< 1166	< 370	< 479	< 688	< 384	< 309
Total Nitrogen (lbs) Effluent Net Total Annual										< 4989		
Total Nitrogen (lbs) Total Annual										< 4989		
Ammonia (lbs/day) Average Monthly	2.0	5.0	21.0	15.0	7.0	9.0	9.0	4.0	8.0	< 9.0	< 0.6	< 0.3
Ammonia (mg/L) Average Monthly	0.9	1.2	7.3	4.1	2.0	1.6	2.4	2.1	3.9	< 2.2	< 0.3	< 0.1
Ammonia (lbs) Total Monthly	55.0	141	637	467	189	268	280	117	256	< 270	< 19	< 8.0
Ammonia (lbs) Total Annual										< 873		
TKN (mg/L) Average Monthly	2.6	2.5	9.1	5.69	3.4	3.1	3.4	3.5	4.4	3.4	1.01	< 1.28
TKN (lbs) Total Monthly	148	251	790	596	299	496	604	188	294	373	56	< 70

Total Phosphorus (mg/L) Average Monthly	1.17	1.8	0.82	0.53	0.6	4.0	1.04	2.0	0.82	1.33	1.5	1.6
Total Phosphorus (lbs) Total Monthly	73	200	73	64	53	137	153	67	56	92	78	95
Total Phosphorus (lbs) Effluent Net Total Annual										926		
Total Phosphorus (lbs) Total Annual										926		

Existing Effluent Limits and Monitoring Requirements

Tables below summarize effluent limits and monitoring requirements specified in the current permit.

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
$CBOD_5$	54.0	81.0 Wkly Avg	XXX	10.0	15.0	20.0	1/week	24-Hr Composite
BOD_5 Influent	Report	Report	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids	54.0	81.0 Wkly Avg	XXX	10.0	15.0	20.0	1/week	24-Hr Composite
Total Suspended Solids Influent	Report	Report	XXX	Report	XXX	XXX	1/week	24-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
Ammonia-Nitrogen May 1 - Oct 31	11.0	XXX	XXX	2.0	XXX	4.0	1/week	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	12.0	XXX	XXX	6.0	XXX	12.0	1/week	24-Hr Composite

Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	1/week	24-Hr Composite
Kjeldahl---N	Report	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	1/week	4-Hr Composite
Net Total Nitrogen	Report	11,872	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	1,583	XXX	XXX	XXX	1/month	Calculation

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.65
Latitude 39º 49' 22.23" **Longitude** -77º 15' 38.90"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

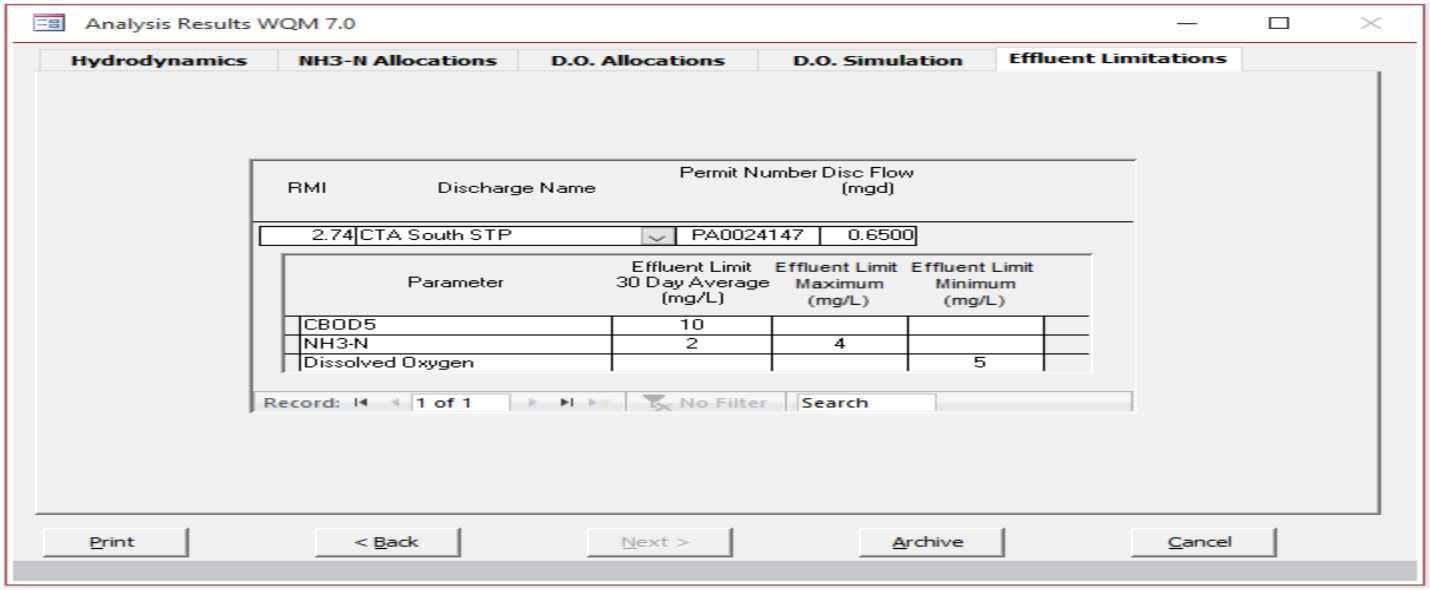
Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	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)

Comments:

Water Quality-Based Limitations

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

*	Discharge pH	=	7.0	(Default)
*	Discharge Temperature	=	20°C	(Default)
*	Stream pH	=	7.0	(Default)
*	Stream Temperature	=	25ºC	(Default)
*	Background NH_3-N	=	0 mg/L	(Default)



Regarding NH_3-N limits, the attached computer printout of the WQM 7.0 stream model (version 1.1) indicates that a limit of 2.0 mg/L as a monthly average and 4.0 mg/L instantaneous maximum (IMAX) are necessary to protect the aquatic life from toxicity effects at the point of discharge. Therefore, the existing limits of 2.0 mg/L monthly average & 4.0 mg/L IMAX are same and will remain in the proposed permit. The existing winter average monthly limit of 6.0 mg/L & IMAX limit of 12.0 mg/L will remain in place. Recent DMRs and inspection reports show that the facility has been consistently achieving these limits. Mass limits are calculated as follows:

Summer average monthly mass limit: 2.0 mg/L x 0.65 MGD x 8.34 = 10.84 (11.0) lbs/day
Winter average monthly mass limit: 6.0 mg/L x 0.65 MGD x 8.34 = 32.53 (32.0) lbs/day

The winter average monthly mass limit is corrected from 12.0 lbs/day to 32.0 lbs/day.

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$):
The attached computer printout of the WQM 7.0 stream model (ver. 1.1) indicates that a monthly average limit of 10.0 mg/L, or secondary treatment, is adequate to protect the water quality of the stream. Therefore, the existing permit 10.0 mg/L as AML, 15.0 mg/L as weekly average limit (AWL), & 20.0 mg/L as IMAX are more stringent and will remain in the proposed permit. Recent DMRs and inspection reports show that the facility has typically been achieving concentrations below this limit. Mass limits are calculated as follows:

Average monthly mass limit: 10.0 mg/L x 0.65 MGD x 8.34 = 54.21 (54.0) lbs/day
Average weekly mass limit: 15.0 mg/L x 0.65 MGD x 8.34 = 81.3 (81.0) lbs/day

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

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

Total Suspended Solids (TSS):
The existing technology-based limits of 10.0 mg/L average monthly, 15.0 mg/L weekly average, and 20.0 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: 10.0 mg/L x 0.65 MGD x 8.34 = 54.21 (54.0) lbs/day
Average weekly mass limit: 15.0 mg/L x 0.65 MGD x 8.34 = 81.3 (81.0) lbs/day

The average monthly and weekly average mass loadings will be rounded down to 54.0 lbs/day and 81.0 lbs/day, respectively.

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

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

Toxics:
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 TMDL:

In the Phase 3 WIP Wastewater Supplement revised on July 29, 2022, Table 5 (page 8) of this document shows that Cumberland Township Authority South has been allocated 11,872 lbs/year of TN and 1,583 lbs/year of TP. This approach is consistent with the Chesapeake Bay TMDL, based on the actual performance data previously evaluated by the Department.

This facility is currently a significant discharger. Therefore, the facility's waste load allocation (WLA) will be tracked under an individual WLA as a significant discharger in the Phase 3 WIP Wastewater Supplement. Monitoring frequency for TN constituents will remain in the proposed permit. The Chesapeake Bay nutrient existing limitations and monitoring requirements will remain in the proposed permit.

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 -

Best Professional Judgment (BPJ) Limitations

Total Phosphorus / Total Nitrogen

DEP's current SOP no. BPNPSM-PMT-033 recommends a routine monitoring of Total Phosphorus and Total Nitrogen for all sewage dischargers with a design flow greater than 0.002 MGD. Since CTA already has been performing nutrient monitoring under DEP's Chesapeake Bay TMDL implementation strategy, no additional monitoring requirement is needed.

Additional Considerations

Flow Monitoring

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

Influent BOD & TSS Monitoring

As a result of negotiation with EPA, the existing influent monitoring reporting requirement for TSS and BOD5 will be maintained in the draft permit. This requirement has been consistently assigned to all municipal wastewater treatment facilities.

Ultraviolet (UV) Monitoring

DEP's Standard Operating Procedure (SOP no. BPNPSM-PMT-033) recommends a routine monitoring of Ultraviolet (UV) transmittance or intensity when the facility is utilizing an UV disinfection system in lieu of chlorination. This is a reasonable approach and has been assigned to other facilities equipped with similar technology. Accordingly, the requirement to monitor for UV output transmittance (%) will be included in the permit.

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 and upon issuance or reissuance of an individual NPDES permit:

-Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.

- Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.

CTA reported maximum concentrations of 378 mg/L for TDS and < 0.5 mg/L for Bromide. Accordingly, the requirement to monitor for these pollutants is not necessary.

WETT:

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

Anti-Backsliding:

The proposed limits are at least as stringent as are in existing permit; therefore, anti-backsliding is not applicable

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:

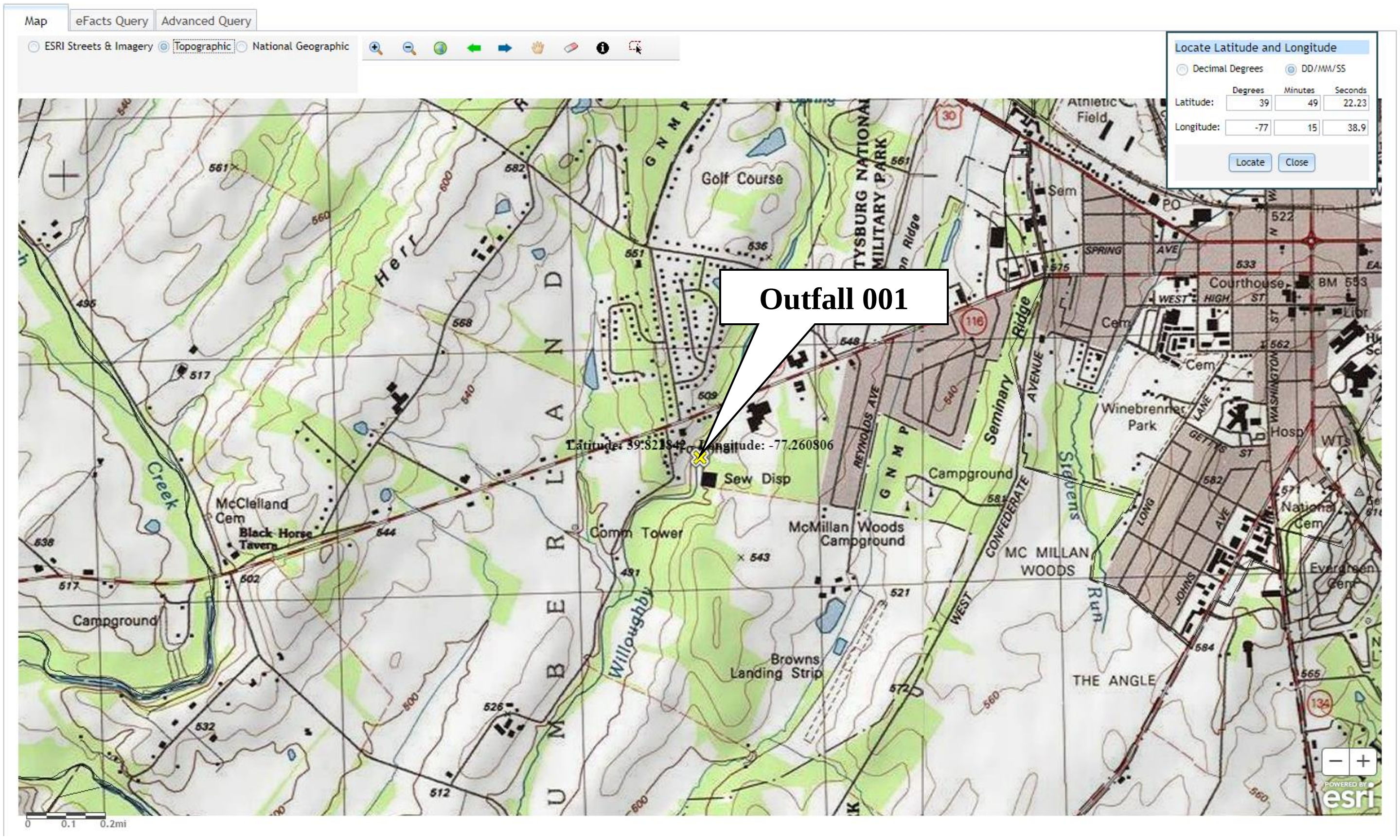
*	Discharge pH	=	7.0	(Default)
*	Discharge Temperature	=	20°C	(Default)
*	Stream pH	=	7.0	(Default)
*	Stream Temperature	=	25°C	(Default)
*	Background NH_3-N	=	0 mg/L	(Default)

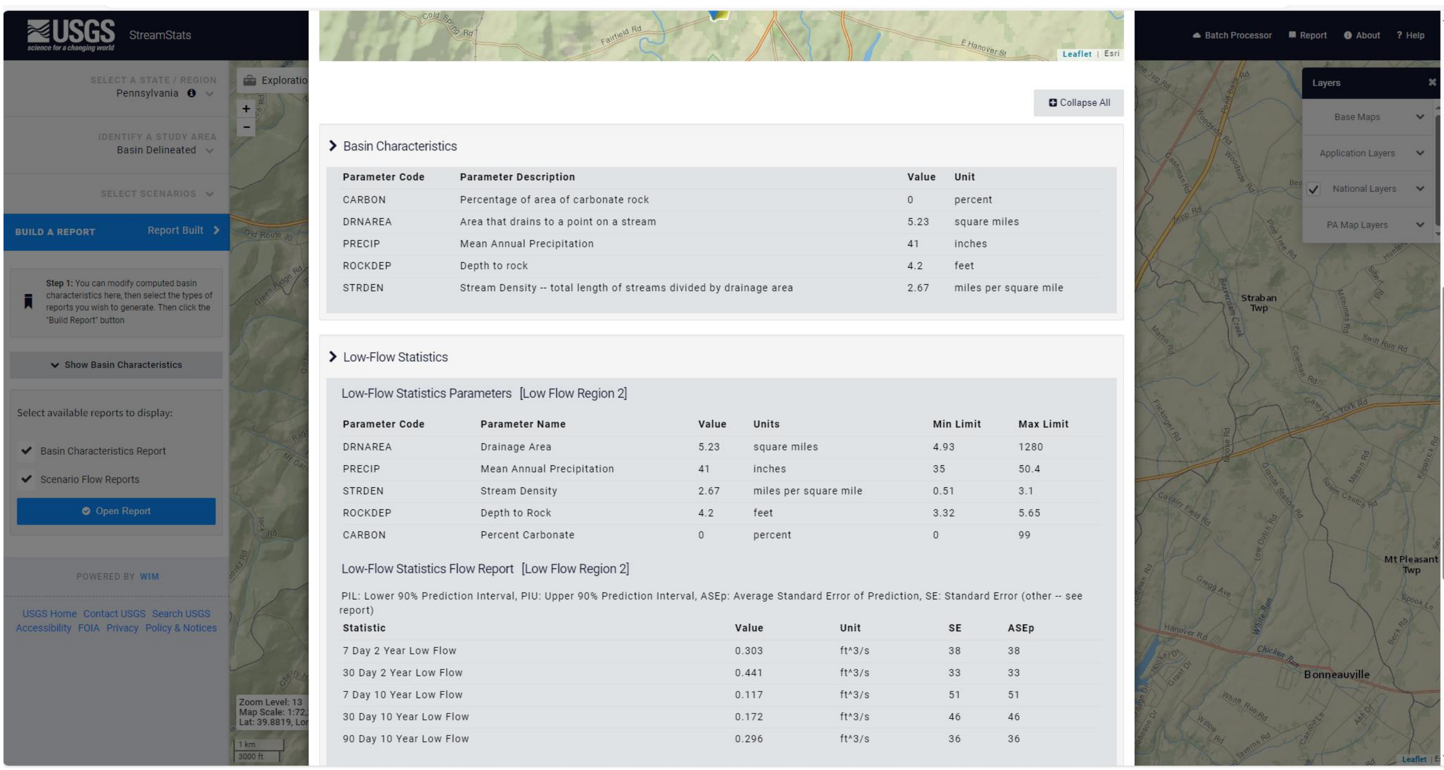
Node 1: Outfall 001 Willoughby Run (58925)

Elevation:	500 ft (USGS National Map Viewer)
Drainage Area:	5.23 mi^2 (USGS PA StreamStats)
River Mile Index:	2.740 (PA DEP eMapPA)
Low Flow Yield:	0.022 cfs/mi^2
Discharge Flow:	0.65 MGD

Node 2: At confluence with Unnamed Tributary 58930

Elevation:	487 ft (USGS National Map Viewer)
Drainage Area:	5.40 mi^2 (USGS PA StreamStats)
River Mile Index:	2.704 (PA DEP eMapPA)
Low Flow Yield:	0.022 cfs/mi^2
Discharge Flow:	0.0 MGD





Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	0	percent
DRNAREA	Area that drains to a point on a stream	5.23	square miles
PRECIP	Mean Annual Precipitation	41	inches
ROCKDEP	Depth to rock	4.2	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	2.67	miles per square mile

Low-Flow Statistics

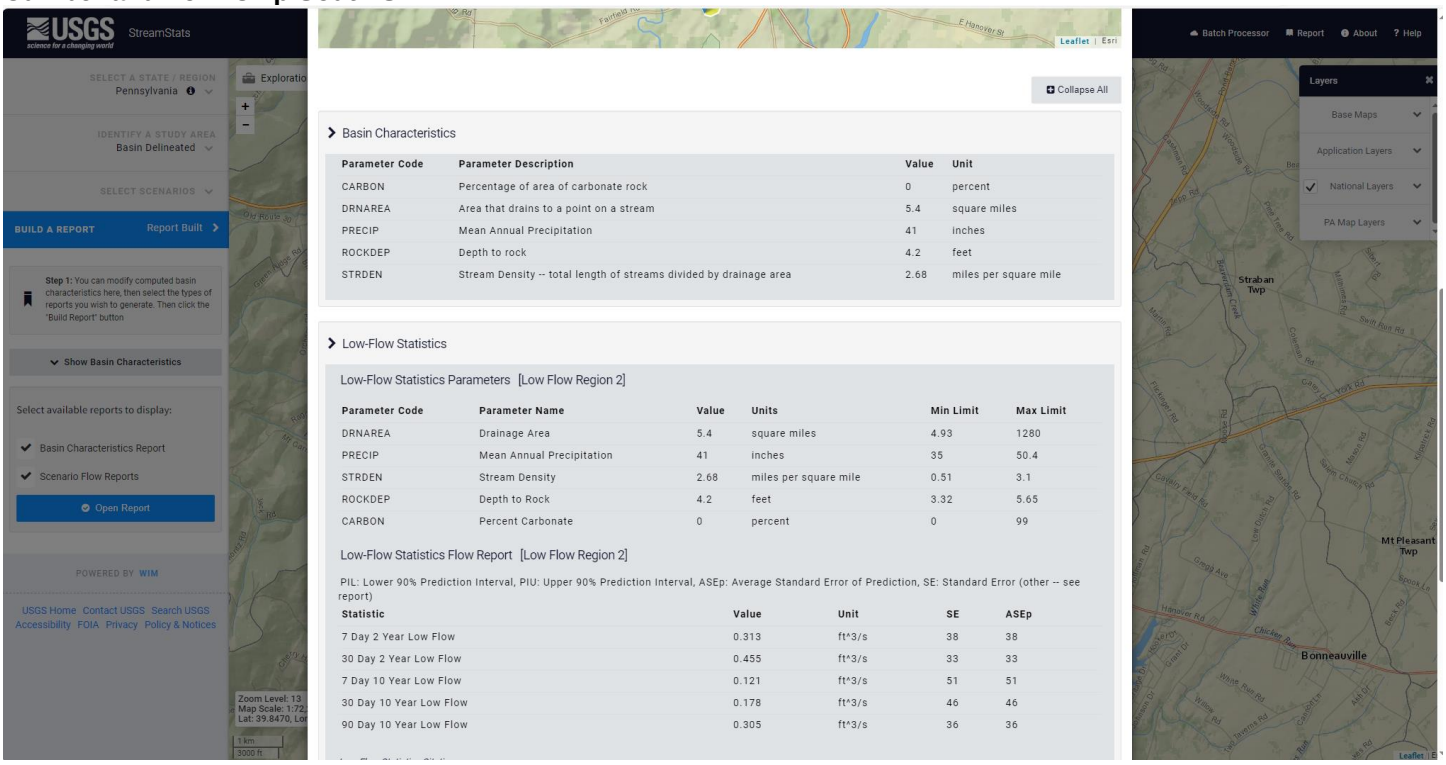
Low-Flow Statistics Parameters [Low Flow Region 2]

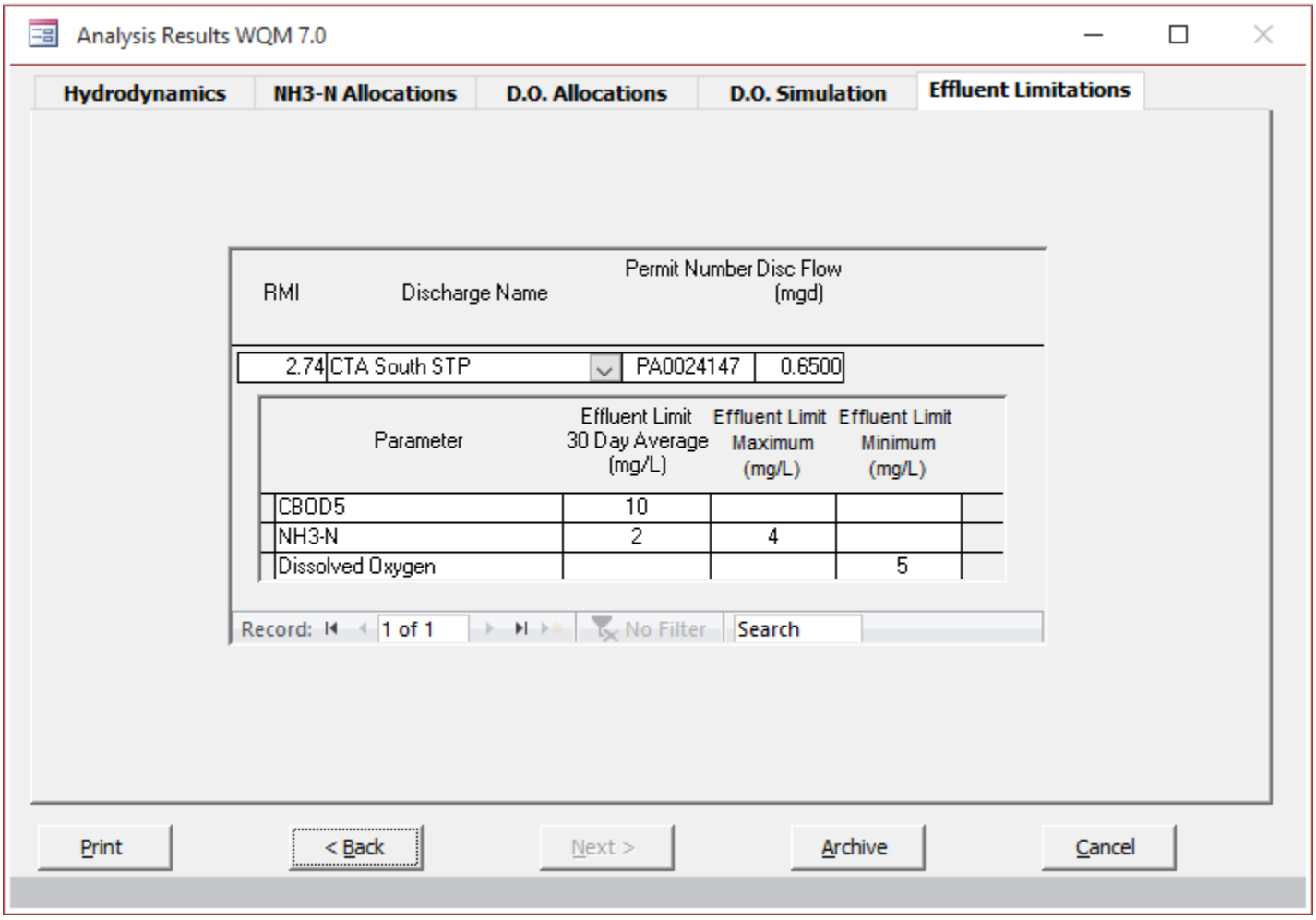
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.23	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	41	inches	35	50.4
STRDEN	Stream Density	2.67	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.2	feet	3.32	5.65
CARBON	Percent Carbonate	0	percent	0	99

Low-Flow Statistics Flow Report [Low Flow Region 2]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.303	ft^3/s	38	38
30 Day 2 Year Low Flow	0.441	ft^3/s	33	33
7 Day 10 Year Low Flow	0.117	ft^3/s	51	51
30 Day 10 Year Low Flow	0.172	ft^3/s	46	46
90 Day 10 Year Low Flow	0.296	ft^3/s	36	36


USGS StreamStats
Collapse All
Basin Characteristics
Parameter Code | Parameter Description | Value | Unit
CARBON | Percentage of area of carbonate rock | 0 | percent
DRNAREA | Area that drains to a point on a stream | 5.4 | square miles
PRECIP | Mean Annual Precipitation | 41 | inches
ROCKDEP | Depth to rock | 4.2 | feet
STRDEN | Stream Density -- total length of streams divided by drainage area | 2.68 | miles per square mile
Low-Flow Statistics
Low-Flow Statistics Parameters [Low Flow Region 2]
Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit
DRNAREA | Drainage Area | 5.4 | square miles | 4.93 | 1280
PRECIP | Mean Annual Precipitation | 41 | inches | 35 | 50.4
STRDEN | Stream Density | 2.68 | miles per square mile | 0.51 | 3.1
ROCKDEP | Depth to Rock | 4.2 | feet | 3.32 | 5.65
CARBON | Percent Carbonate | 0 | percent | 0 | 99
Low-Flow Statistics Flow Report [Low Flow Region 2]
PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)
Statistic | Value | Unit | SE | ASEp
7 Day 2 Year Low Flow | 0.313 | ft^3/s | 38 | 38
30 Day 2 Year Low Flow | 0.455 | ft^3/s | 33 | 33
7 Day 10 Year Low Flow | 0.121 | ft^3/s | 51 | 51
30 Day 10 Year Low Flow | 0.178 | ft^3/s | 46 | 46
90 Day 10 Year Low Flow | 0.305 | ft^3/s | 36 | 36
Straban Twp
Mt Pleasant Twp
Bonneauville


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)
2.74
CTA South STP
PA0024147
0.6500
Parameter
Effluent Limit 30 Day Average (mg/L)
Effluent Limit Maximum (mg/L)
Effluent Limit Minimum (mg/L)
CBOD5 | 10
NH3-N | 2 | 4
Dissolved Oxygen | 5
Record: 1 of 1
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rptEffLimits

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
13D	58925	WILLOUGHBY RUN

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)
2.740	CTA South STP	PA0024147	0.650	CBOD5	10		
				NH3-N	2	4	
				Dissolved Oxygen			5

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rpt_WLA

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
13D	58925	WILLOUGHBY 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
2.740	CTA South STP	16.28	4	16.28	4	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
2.740	CTA South STP	1.61	2	1.61	2	0	0

Dissolved Oxygen Allocations

		CBOD5		NH3-N		Dissolved Oxygen			
RMI	Discharge Name	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Critical Reach	Percent Reduction
2.74	CTA South STP	10	10	2	2	5	5	0	0

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rptDOSim

WQM 7.0 D.O. Simulation

SWP Basin	Stream Code	Stream Name
13D	58925	WILLOUGHBY RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.740	0.650	20.525	7.000
Reach Width (ft)	Reach Depth (ft)	Reach W/D Ratio	Reach Velocity (fps)
9.271	0.626	14.812	0.194
Reach CBOD5 (mg/L)	Reach Kc (1/days)	Reach NH3-N (mg/L)	Reach Kn (1/days)
9.16	1.465	1.79	0.729
Reach DO (mg/L)	Reach Kr (1/days)	Kr Equation	Reach DO Goal (mg/L)
5.341	127.407	Tsivoglou	5
Reach Travel Time (days)			
0.011			

Subreach Results

Trav Time (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.001	9.14	1.79	5.82
0.002	9.13	1.79	6.23
0.003	9.11	1.79	6.58
0.005	9.10	1.78	6.89
0.006	9.08	1.78	7.15
0.007	9.07	1.78	7.38
0.008	9.05	1.78	7.58
0.009	9.04	1.78	7.76
0.010	9.02	1.78	7.91
0.011	9.00	1.78	8.03

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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	0.64	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: 13D | Stream Code: 58925 | Stream Name: WILLOUGHBY RUN

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												
2.740	0.12	0.00	0.12	1.0055	0.006639	.626	9.27	14.81	0.19	0.011	20.53	7.00
Q1-10 Flow												
2.740	0.08	0.00	0.08	1.0055	0.006639	NA	NA	NA	0.19	0.012	20.35	7.00
Q30-10 Flow												
2.740	0.16	0.00	0.16	1.0055	0.006639	NA	NA	NA	0.20	0.011	20.69	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
13D	58925	WILLOUGHBY RUN	2.740	507.00	5.23	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)	T4butary Temp (°C)	T4butary pH	Stream Temp (°C)	Stream pH
Q7-10	0.022	0.00	0.12	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
CTA South STP	PA0024147	0.6500	0.6500	0.6500	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	10.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	2.00	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
13D	58925	WILLOUGHBY RUN	2.740	487.00	5.40	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	T4butary Temp (°C)	T4butary pH	Stream Temp (°C)	Stream pH
Q7-10	0.022	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
CTA South STP	PA0024147	0.0000	0.0000	0.0000	0.000	20.00	7.00

Parameter Data

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

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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	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 Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
CBOD5	54.0	81.0	XXX	10.0	15.0	20.0	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	54.0	81.0	XXX	10.0	15.0	20.0	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) 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	32.0	XXX	XXX	6.0	XXX	12.0	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	11.0	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" (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	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
Net Total Nitrogen	XXX	11,872	XXX	XXX	XXX	XXX	1/year	Calculation
Net Total Phosphorus	XXX	1,583	XXX	XXX	XXX	XXX	1/year	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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☒	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☒	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: BPNPSM-PMT-033
☐	Other: