pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0085740**
Facility Type	**Municipal**	APS ID	**20614**
Major / Minor	**Minor**	Authorization ID	**1289405**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Mill Creek Borough Area Municipal Authority Huntingdon County**	Facility Name	**Mill Creek Area STP**
Applicant Address	PO Box 4	Facility Address	Route 444
	Mill Creek, PA 17060-0004		Mill Creek, PA 17060
Applicant Contact	David Reed	Facility Contact	Keith Bollinger
Applicant Phone	(814) 643-5666	Facility Phone	(814) 388-4167
Client ID	44561	Site ID	451899
Ch 94 Load Status	Existing Hydraulic Overload	Municipality	Mill Creek Borough
Connection Status	No Exceptions Allowed	County	Huntingdon
Date Application Received	August 27, 2019	EPA Waived?	Yes
Date Application Accepted	September 25, 2019	If No, Reason	

Purpose of Application: NPDES permit renewal.

Summary of Review

Mill Creek Area Municipal Authority has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit. The permit was last reissued on February 10, 2015 and became effective on March 1, 2015. The permit expired on February 29, 2020, and the permit has been administratively extended since that time.

The Mill Creek Borough Area Municipal Authority Waste Water Treatment Plant (WWTP) is located in Mill Creek Borough, Huntingdon County. The WWTP is owned and operated by the Authority. The WWTP has a design flow capacity of 0.12 MGD, hydraulic design capacity of 0.30 MGD, and discharges to the Juniata River (WWF). The facility received 34% of influents from Mill Creek Borough, 48% of Brady Township, and 17% of Henderson Township.

WQM No. 3193401 original was issued on August 22, 1995.

On September 20, 2018 the letter from DEP accepted and approved the Corrective Action Plan (CAP) subject to comments as follows:

1. The Authority intends to be hydraulically compliant by 6/2019 if the Inflow and Infiltration (I/I) removal activities are effective.
2. If the I/I removal activities are not effective the Authority will complete structural improvements and become hydraulically compliant in accordance with the implementation schedule on page 4 of the CAP, which indicates completion of construction improvements by 11/2022.
3. In accordance with item 9 of your CAP, all connections to the Mill Creek Area Municipal Authority system will be requested by submission of tap-in applications to the Department for approval.

Approve	Deny	Signatures	Date
X		*Hilaryle* Hilary H. Le / Environmental Engineering Specialist	September 4, 2020
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E. / Clean Water Program Manager	

Summary of Review

Changes from the previous permit: Unit of Fecal Coliform changed from CFU/100 ml to No./100 ml.

Based on the review outline in this fact sheet, it is recommended that the permit be drafted and published in the Pennsylvania Bulletin for public comments for 30 days.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.12
Latitude	40º 25' 49.83"	Longitude	-77º 55' 54.38"
Quad Name	Mount Union	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Juniata River (WWF)	Stream Code	11414
NHD Com ID	66209569	RMI	88.0
Drainage Area	2,000 mi.^{2}	Yield (cfs/mi^2)	0.102
Q_{7-10} Flow (cfs)	204	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	574.26	Slope (ft/ft)	
Watershed No.	12-C	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	Mifflintown Municipal Authority, Mifflin Borough		
PWS Waters	Juniata River	Flow at Intake (cfs)	
PWS RMI	34 miles	Distance from Outfall (mi)	Approximate 54 miles

Changes Since Last Permit Issuance: none

Drainage Area

The discharge is to Juniata River at RMI 88.0 miles. A drainage area upstream of the discharge is estimated to be 2,000 mi.^{2}, according to USGS PA StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow

According to StreamStats, the discharge point on Juniata River has a Q_{7-10} of 204 cfs and a drainage area of 2,000 mi.^{2}, which results in a Q_{7-10} low flow yield of 0.102 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} = 204 cfs
Low Flow Yield = 204 cfs / 2,000 mi.^{2} ≈ 0.102 cfs/mi.^{2}
Q_{30-10} = 1.36 * 204 cfs ≈ 277.4 cfs
Q_{1-10} = 0.64 * 204 cfs ≈ 130.6 cfs

Juniata River

25 Pa Code § 93.9n classifies Juniata River as Warm Water Fishes (WWF) surface water. Based on the 2018 Integrated Report, Juniata River, assessment unit ID 16843, 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 Mifflintown Municipal Authority on the Juniata River in Mifflin Borough, approximately 54 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: Mill Creek STP				
WQM Permit No.	**Issuance Date**			
3193401	8/22/1995			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Chlorine with Dechlorination	0.12
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.12	204	Existing Hydraulic Overload	Belt Filtration	Landfill

Changes Since Last Permit Issuance: none

The WWTP train is as follows:

Equalization Tank (1) ⇒ Aeration Tanks (2) ⇒ Clarifiers (2) ⇒ Chlorine Contact Tank (1) ⇒ Sludge Holding Tank (1) ⇒ Sludge Baggers (2) ⇒ Blowers (4) ⇒ Discharge (Outfall 001)

The chemicals are sodium hypochlorite for disinfection, and sodium thiosulfate for de-chlorination.

Compliance History	
Summary of DMRs:	The DMRs reported from August 1, 2019 to July 31, 2020 is summarized in the Table below (Pages # 6 & 7).
Summary of Inspections:	3/13/2019: Mr. Clark, DEP WQS, conducted compliance evaluation inspection. The recommendations were to repair leaking air line in aeration tanks, properly maintain EQ and clarifier tanks, and more routine process control testing. All treatment units were in service, effluent was clear with fine solids, and field tests results were within permit limits. The sample on 3/13/2019 test results indicated within permit limits. 2/22/2018: Mr. Clark, DEP WQS, conducted compliance evaluation inspection. There was a recommendation such as repair leaking air lines in aeration tanks. There were no violations noted during inspection. Treatment plant appeared to be operating properly, effluent was clear, and field tests results were within permit limits. The facility had been experiencing high flow rates this month due to rain and snow melt for example a few days this month the plant received 300,000 GPD. The treatment plant is designed for an average flow of 120,000 GPD. 3/8/2017: Mr. Clark, DEP WQS, conducted compliance evaluation inspection. The effluent was clear, and field test results were within permit limits. There were no violations noted during inspection. 4/21/2016: Mr. Clark, DEP WQS, conducted follow up inspection. The effluent was clear. There were no violations noted during inspection.
Other Comments:	There are currently no open violations associated to the permittee or the facility.

Other Comments: There were monthly average overflow from December 2019, and January thru May 2020, which were violations.

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

Influent Testing Results			*Effluent Testing Results*		
Parameter	**Min/Max Value**	**Average Value**	**Parameter**	**Min/Max Value**	**Average Value**
BOD_5 (mg/L)	222 mg/L	117 mg/L	pH (minimum)	6.6 S.U.	
BOD_5 (lbs/day)	356 lbs/day	121 lbs/day	pH (maximum)	8.49 S.U.	
TSS (mg/L)	178 mg/L	79 mg/L	D.O (minimum)	5.54 mg/L	7.46 mg/L
TSS (lbs/day)	127 lbs/day	73 lbs/day	TRC	0.80 mg/L	0.21 mg/L
TN (mg/L)	mg/L	40 mg/L	Fecal Coliform	10.0 No./100mL	2 No./100mL
TN (lbs/day)	lbs/day	124 lbs/day	$CBOD_5$	6.8 mg/L	3.6 mg/L
TP (mg/L)	mg/L	5.63 mg/L	TSS	6.8 mg/L	2.7 mg/L
TP (lbs/day)	lbs/day	3.45 lbs/day	NH_3-N	10.5 mg/L	2.8 mg/L
NH_3-N (mg/L)	mg/L	23.34 mg/L	TN	26.6 mg/L	15.3 mg/L
NH_3-N (lbs/day)	lbs/day	14.29 lbs/day	TP	3.4 mg/L	2.7 mg/L
TDS (mg/L)	mg/L	316 mg/L	Temp	N/A F	N/A F
TDS (lbs/day)	lbs/day	193 lbs/day	TKN	11.6 mg/L	8.6 mg/L
TKN	mg/L	40 mg/L	NO_2-N + NO_3-N	13.3 mg/L	8.9 mg/L
NO_2-N + NO_3-N	mg/L	< 2.4 mg/L	TDS	388 mg/L	376 mg/L
Fecal Coliform	No./100mL	3076000No./100mL	Chloride	48.1 mg/L	40.8 mg/L
			Bromide	< 0.4 mg/L	< 0.4 mg/L
			Sulfate	125 mg/L	102 mg/L
			Oil and Grease	< 5.4 mg/L	< 5.4 mg/L
			Total Copper	0.017 mg/L	0.013 mg/L
			Total Lead	< 0.008 mg/L	< 0.008 mg/L
			Total Zinc	0.043 mg/L	0.032 mg/L

Compliance History

DMR Data for Outfall 001 (from August 1, 2019 to July 31, 2020)

Parameter	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19	AUG-19
Flow (MGD) Average Monthly	0.0692	0.0868	0.1257	0.1567	0.1636	0.1524	0.1630	0.1326	0.0686	0.0748	0.0639	0.0685
Flow (MGD) Daily Maximum	0.1036	0.1753	0.3179	0.2388	0.3059	0.3001	0.3242	0.2582	0.07	0.1208	0.0938	0.0909
pH (S.U.) Minimum	6.71	6.67	6.59	6.71	6.69	6.67	6.61	6.59	6.85	6.8	6.88	6.86
pH (S.U.) Maximum	7.46	7.57	7.32	7.11	7.32	7.35	7.25	7.42	7.75	7.34	7.95	7.17
DO (mg/L) Minimum	6.04	7.80	6.72	6.48	6.81	7.56	6.58	7.71	8.36	7.14	7.67	7.36
TRC (mg/L) Average Monthly	0.35	0.43	0.5	0.48	0.48	0.34	0.32	0.34	0.29	0.37	0.41	0.39
TRC (mg/L) Instantaneous Maximum	0.77	0.63	0.81	0.69	0.82	0.85	0.9	0.72	0.9	0.99	1.43	1.25
CBOD5 (lbs/day) Average Monthly	2.04	2.72	3.37	5.17	4.21	5.49	4.98	6.4	1.71	2.01	2.03	1.76
CBOD5 (lbs/day) Weekly Average	2.17	3.65	4.07	5.36	4.95	6.78	5.46	8.96	1.72	2.09	2.36	1.82
CBOD5 (mg/L) Average Monthly	3	3	3	4.15	4.14	4.02	4.02	4.24	3	3.12	3.48	3
CBOD5 (mg/L) Weekly Average	3	3	3	5.3	5.28	4.54	4.33	5.47	3	3.23	3.96	3
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	85	133	63	119	125	159	174	55	55	62	76	111
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	90	184	69	151	154	175	188	89	65	64	88	113
BOD5 (mg/L) Raw Sewage Influent Average Monthly	125.5	145	60	101.05	118	121.05	134	55	95.95	95.6	130.5	189
TSS (lbs/day) Average Monthly	1.81	1.93	6.38	5.22	7.85	5.66	6.45	5.65	1.82	1.81	0.93	0.59
TSS (lbs/day) Raw Sewage Influent Average Monthly	93	93	62	74	58	124	110	89	59	52	97	55

TSS (lbs/day) Raw Sewage Influent Daily Maximum	130	128	89	93	68	150	139	131	73	69	129	59
TSS (lbs/day) Weekly Average	2.61	2.44	8.13	5.99	12.01	7.47	8.08	7.2	1.92	1.81	1.02	0.73
TSS (mg/L) Average Monthly	2.6	2.2	5.6	4	8	4.1	5	3.8	3.2	2.8	1.6	1
TSS (mg/L) Raw Sewage Influent Average Monthly	134	102	63	55	57	95	84	58.5	103	80.5	168.5	94
TSS (mg/L) Weekly Average	3.6	2.4	6	4.4	12.8	5	6.4	4.4	3.4	2.8	1.8	1.2
Fecal Coliform (CFU/100 ml) Average Monthly	1.41	6.28	1.41	3.32	33.5	1	1	< 1	1	1	1	1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	2	38.8	2	11	69.7	1	1	< 1	1	1	1	1
Nitrate-Nitrite (mg/L) Average Monthly	31.09	21.11	15.61	12.255	17.64	14.06	15.15	16.67	23.24	30.665	24.48	28.035
Total Nitrogen (mg/L) Average Monthly	31.59	21.61	16.11	12.755	18.14	14.56	15.65	17.17	24.24	31.665	25.48	29.035
Ammonia (mg/L) Average Monthly	< 0.1	0.4935	0.148	0.1	< 0.1	0.244	< 0.1	0.1	0.227	0.179	0.523	0.1
TKN (mg/L) Average Monthly	< 0.5	0.5	< 0.5	0.5	< 0.5	0.5	< 0.5	0.5	< 1	1	< 1	1
Total Phosphorus (mg/L) Average Monthly	3.845	2.87	2.3	1.89	2.47	2.18	2.45	1.855	2.92	3.26	2.9	2.715

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.12
Latitude 40º 25' 50.75" **Longitude** -77º 55' 52.04"
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:

Water Quality-Based Limitations

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)
Only the minimum treatment requirements of secondary treatment will be necessary to protect water quality. The existing limits of 25 mg/L average monthly (AML), 40 mg/L average weekly (AWL), and 50 mg/L instantaneous maximum (IMAX) will remain in the permit. The facility has consistently achieved $CBOD_5$ levels well below these limits. Mass limits are calculated as follows:

Mass based AML (lb/day) = 25 (mg/L) x 0.12 (MG/day) x 8.34 (lb/MG) (L/mg) = 25.02 lb/day
Mass based AWL (lb/day) = 40 (mg/L) x 0.12 (MG/day) x 8.34 (lb/MG) (L/mg) = 40.03 lb/day

Ammonia (NH_3-N)
NH_3-N 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 attached printout of the WQM 7.0 data indicates that at a discharge of 0.12 MGD, limits (rounded according to the NPDES Technical Guidance 362-0400-001) of 25 mg/L NH_3-N as a monthly average and 50 mg/L NH_3-N instantaneous maximum are necessary to protect the aquatic life from toxicity effects.

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 for WWF)
- Background NH_3-N = 0 (Default)

There are no NH3-N effluent limits in this permit. The "Monitor & Report" twice per month for average monthly will remain in the proposed permit.

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(2).

Total Suspended Solids (TSS)

The existing limits of 30 mg/L average monthly (AML), 45 mg/L average weekly (AWL), and 60 mg/L instantaneous maximum (IMAX) will remain in the permit based on the minimum level of effluent quality attainable by secondary treatment based on 25 Pa. Code § 92a.47. Past DMRs and inspection reports show that the facility has been consistently achieving these limits. Mass limits are calculated as follows:

Mass based AML (lb/day) = 30 (mg/L) x 0.12 (MG/day) x 8.34 (lb/MG) (L/mg) = 30.02 lb/day
Mass based AWL (lb/day) = 45 (mg/L) x 0.12 (MG/day) x 8.34 (lb/MG) (L/mg) = 45.04 lb/day

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.

Total Residual Chlorine

The attached computer printout utilizes the equations and calculations as presented in the Department's 2003 Implementation Guidance for Residual Chlorine (TRC) (ID # 391-2000-015) for developing chlorine limitations. The attached printout indicates that an average monthly water quality limit of 0.5 mg/L and 1.6 mg/L maximum daily would be needed to prevent toxicity concerns. This is consistent with the existing permit. The treatment facility is meeting this limit.

Toxics

No toxic parameters of concern associated with this discharge.

Biosolids Management

Sludge is digested on-site, via an aerobic sludge digester, and removed by a certified hauler.

Stormwater

There is no known stormwater outfall associated with this facility.

Chesapeake Bay Strategy

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

The Chesapeake Bay parameters monitoring frequency for this facility will match that of the conventional pollutants monitoring frequency of two samples per month.

Anti-Degradation (93.4)

The effluent limits for this discharge have been developed to ensure that the existing in-stream water used 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.

303d Listed Streams:

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

Additional Considerations

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., TRC, and pH; two per month effluent 8-hr composite samples of $CBOD_5$, and TSS; two per month effluent grab samples of Fecal Coliform; two per month effluent 8-hr composite samples of Ammonia-Nitrogen, Nitrate-Nitrite as N, Total Kjeldahl Nitrogen, and TP; and two 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.

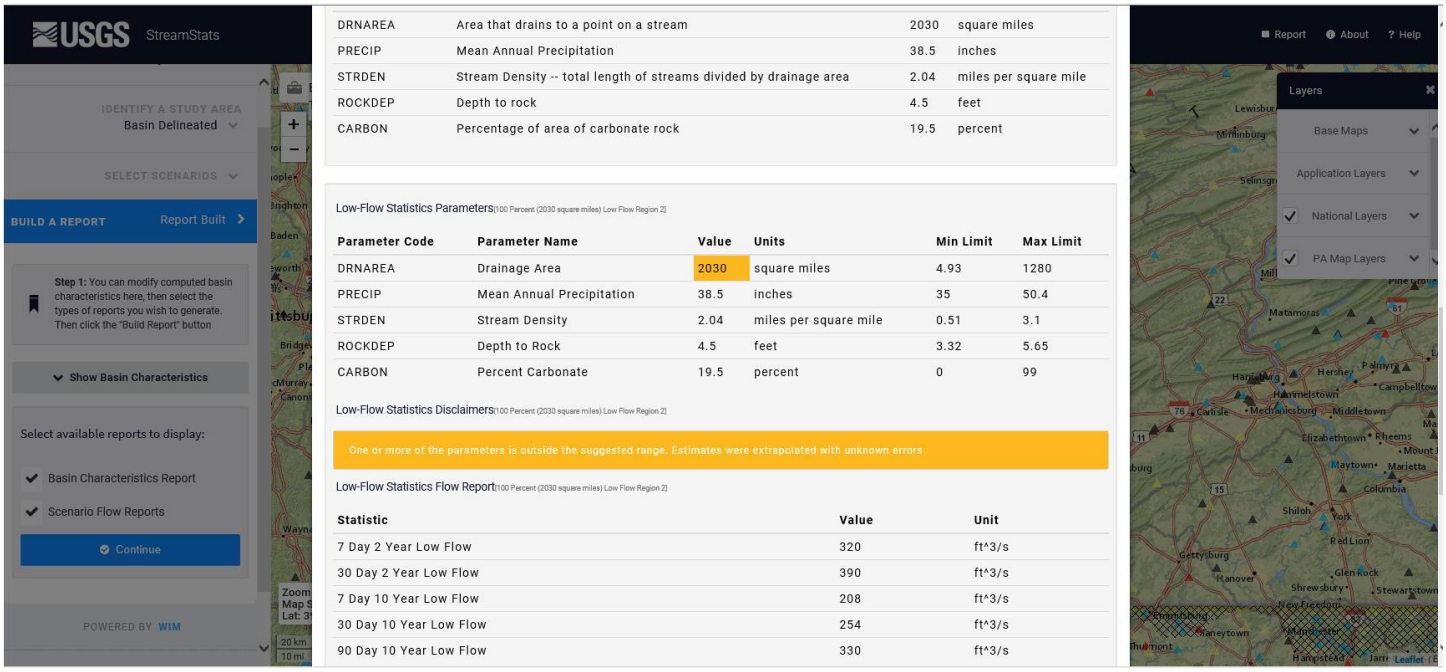
WQM 7.0 data:

Node 1: Outfall 001 on Juniata River (11414)

Elevation:	574.26 ft (USGS National Map Viewer)
Drainage Area:	2000.0 $mi.^2$ (USGS PA StreamStats)
River Mile Index:	88.00 (PA DEP eMapPA)
Low Flow Yield:	0.102 $cfs/mi.^2$
Discharge Flow:	0.120 MGD (NPDES Application)

Node 2: Station ID 01563500 on Juniata River at Mapleton Depot, PA

Elevation:	562.06 ft (USGS National Map Viewer)
Drainage Area:	2030.00 $mi.^2$ (USGS PA StreamStats)
River Mile Index:	85.21 (PA DEP eMapPA)
Low Flow Yield:	0.102 $cfs/mi.^2$
Discharge Flow:	0.000 MGD


USGS StreamStats
IDENTIFY A STUDY AREA
Basin Delineated
SELECT SCENARIOS
BUILD A REPORT
Report Built
Step 1: You can modify computed basin characteristics here, then select the types of reports you wish to generate. Then click the "Build Report" button
Show Basin Characteristics
Select available reports to display:
Basin Characteristics Report
Scenario Flow Reports
Continue
POWERED BY WIM
DRNAREA Area that drains to a point on a stream 2030 square miles
PRECIP Mean Annual Precipitation 38.5 inches
STRDEN Stream Density -- total length of streams divided by drainage area 2.04 miles per square mile
ROCKDEP Depth to rock 4.5 feet
CARBON Percentage of area of carbonate rock 19.5 percent
Low-Flow Statistics Parameters[100 Percent (2030 square miles) Low Flow Region 2]
Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit
DRNAREA | Drainage Area | 2030 | square miles | 4.93 | 1280
PRECIP | Mean Annual Precipitation | 38.5 | inches | 35 | 50.4
STRDEN | Stream Density | 2.04 | miles per square mile | 0.51 | 3.1
ROCKDEP | Depth to Rock | 4.5 | feet | 3.32 | 5.65
CARBON | Percent Carbonate | 19.5 | percent | 0 | 99
Low-Flow Statistics Disclaimers[100 Percent (2030 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[100 Percent (2030 square miles) Low Flow Region 2]
Statistic | Value | Unit
7 Day 2 Year Low Flow | 320 | ft^3/s
30 Day 2 Year Low Flow | 390 | ft^3/s
7 Day 10 Year Low Flow | 208 | ft^3/s
30 Day 10 Year Low Flow | 254 | ft^3/s
90 Day 10 Year Low Flow | 330 | ft^3/s
Report
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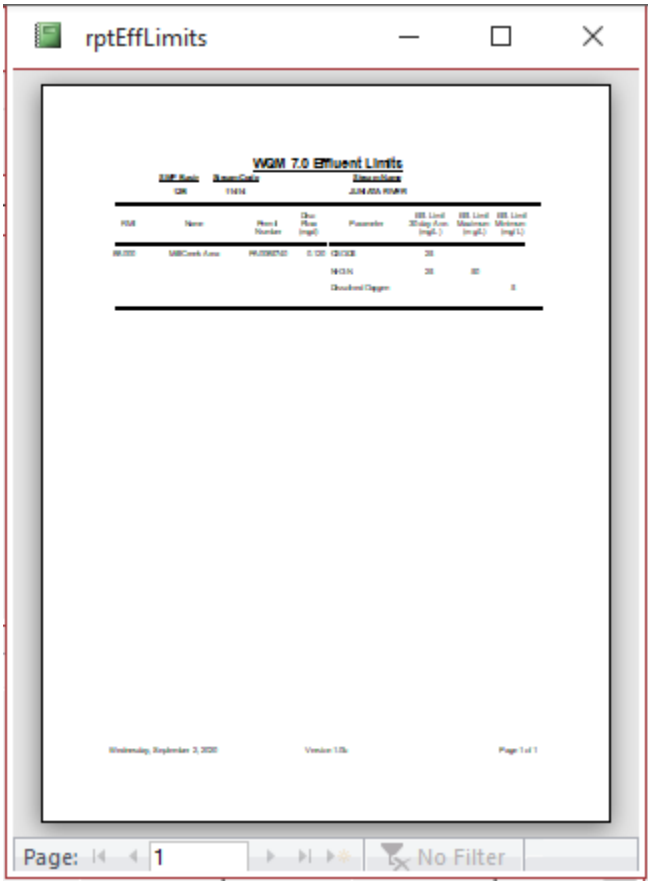
Application Layers
National Layers
PA Map Layers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WQM 7.0 Effluent Limits
Page: 1
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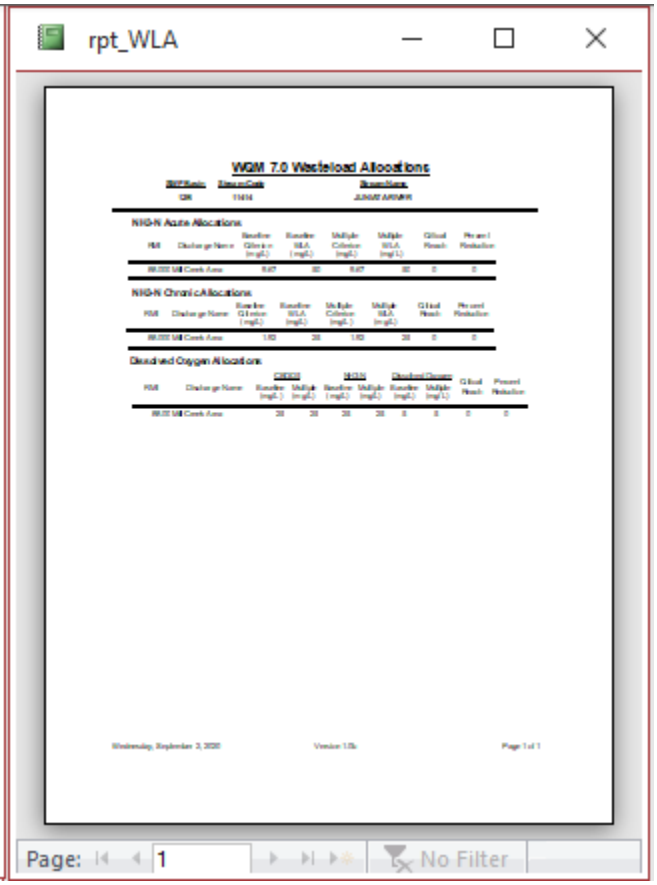
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WQM 7.0 Wasteload Allocations
NH3-N Acute Allocations
NH3-N Chronic Allocations
Dissolved Oxygen Allocations
Page: 1
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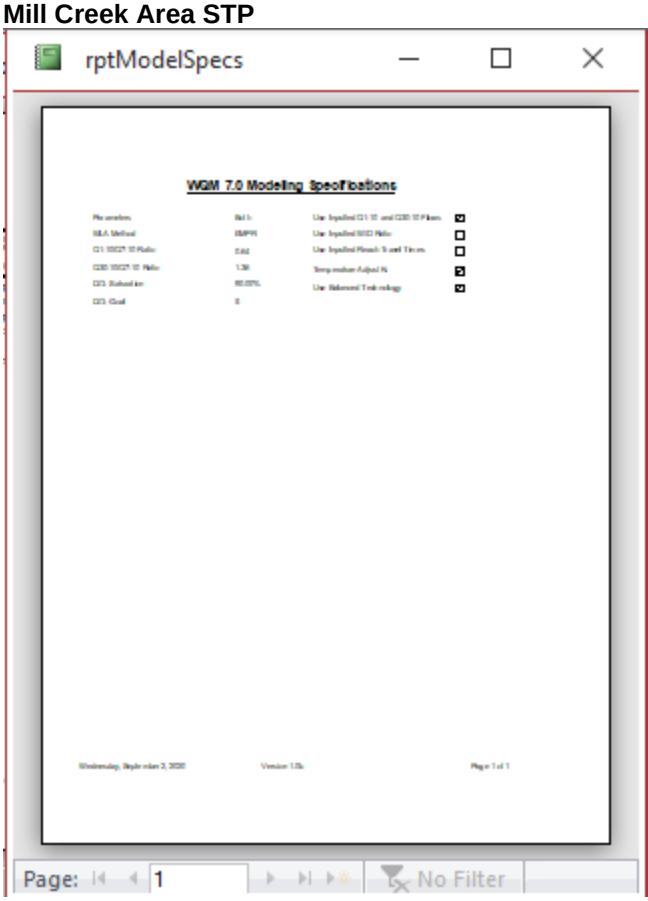
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WQM 7.0 Modeling Specifications
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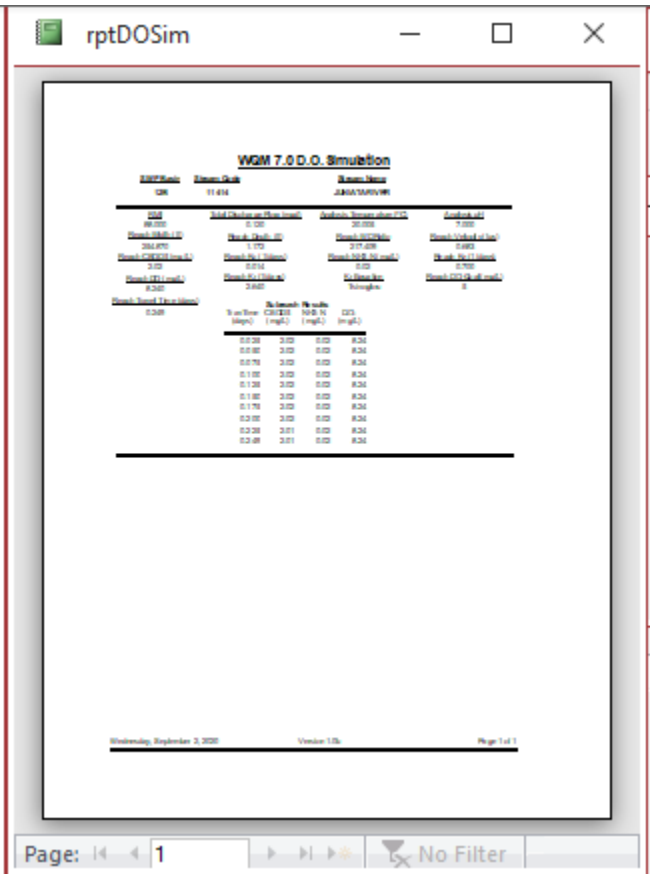
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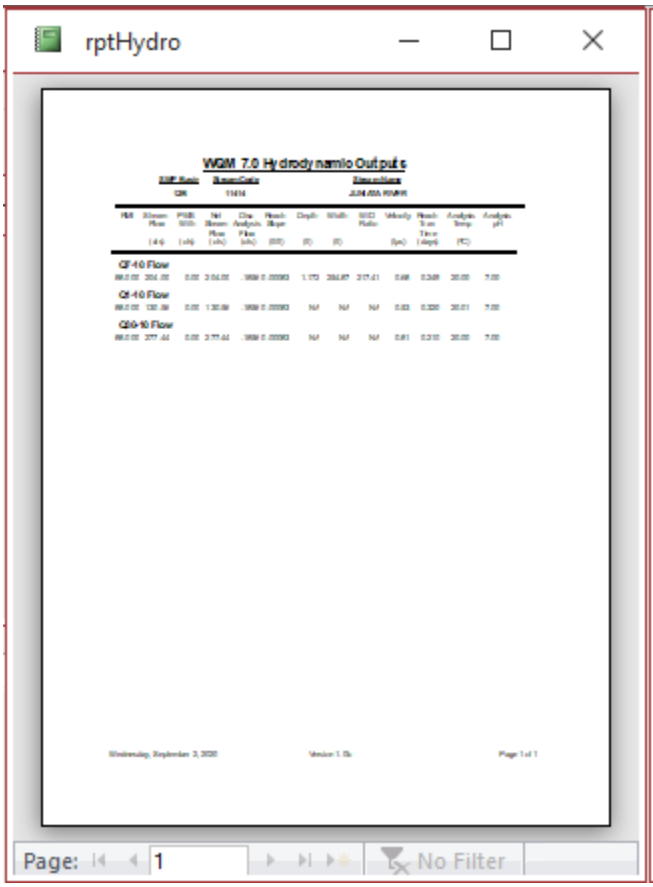
rptHydro
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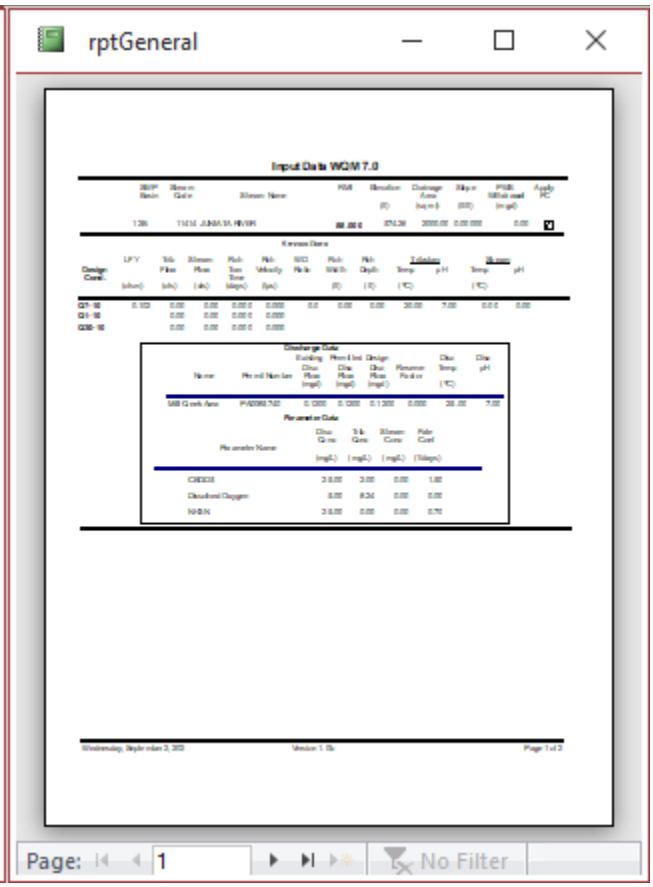
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Input Data WQM 7.0
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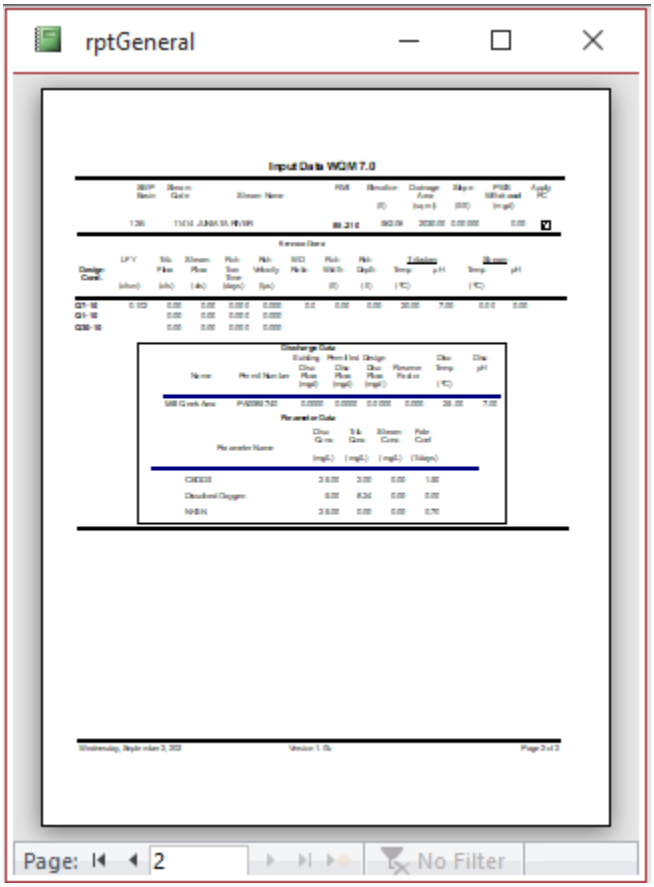
rptGeneral
Input Data WQM 7.0
Page: 2
No Filter

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

204	= Q stream (cfs)	0.5	= CV Daily
0.12	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	350.568	1.3.2.iii	WLA cfc =	341.769
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	130.630	5.1d	LTA_cfc =	198.689

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.635	

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))... ...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))... ...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**

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	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
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
$CBOD_5$	25	40 Wkly Avg	XXX	25	40	50	2/month	8-Hr Composite
TSS	30	45 Wkly Avg	XXX	30	45	60	2/month	8-Hr Composite
BOD_5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	Calculation
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (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	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
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
$CBOD_5$	25.0	40.0 Wkly Avg	XXX	25.0	40.0	50.0	2/month	8-Hr Composite
TSS	30.0	45.0 Wkly Avg	XXX	30.0	45.0	60.0	2/month	8-Hr Composite
BOD_5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	Calculation
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite

Compliance Sampling Location:

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☐	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Toxics Screening Analysis 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:
☐	Other: