pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

NPDES/WQM PERMITS FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0111422 & 3412401 A-1**
Facility Type	**Municipal**	APS ID	**147**
Major / Minor	**Minor**	Authorization ID	**1311566 & 1335039 WQM**

Applicant and Facility Information

Applicant Name	**Thompsontown Borough Municipal Authority Juniata County**	Facility Name	**Thompsontown STP**
Applicant Address	PO Box 154	Facility Address	281 South Mill Street
	Thompsontown, PA 17094-0154		Thompsontown, PA 17094-0154
Applicant Contact	Roger Stutts	Facility Contact	Roger Stutts
Applicant Phone	(717) 535-5292	Facility Phone	(717) 535-5292
Client ID	87479	Site ID	252191
Ch 94 Load Status	Not Overloaded	Municipality	Delaware Township
Connection Status	No Limitations	County	Juniata
Date Application Received	April 7, 2020	EPA Waived?	Yes
Date Application Accepted	May 26, 2020	If No, Reason	

Purpose of Application: NPDES Renewal and WQM amendment permits.

Summary of Review

cb^3 Solutions, LLC, on behalf of Thompsontown Municipal Authority, has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit on April 7, 2020. The permit was last reissued on September 22, 2015 and became effective on October 1, 2015. The permit expired on September 30, 2020 but the terms and conditions of the permit have been extended since that time.

Thompsontown Municipal Authority owns, operates, and maintains the wastewater treatment plant located in Delaware Township, Juniata County. The aeration secondary treatment plant discharges treated municipal wastewater to Delaware Creek, which is classified for Trout Stocking Fishes (TSF). The collection system has 75% sewers from Thompsontown Borough and 30% sewers from Delaware Township. The facility has proposed a change of design, from the average annual design flow / hydraulic capacity flow of 0.205 MGD, to 0.250 MGD due to a few consecutive months of overflow in 2019.

At the request of DEP, WQM No. 3412401 (originally issued on September 28, 2012), a permit amendment application was also submitted by cb^3 Solutions, LLC on December 1, 2020, to increase average annual design flow / hydraulic capacity flow to 0.250 MGD. This rerate, according to the cb^3 Solutions, LLC, will not require any construction. Accordingly, DEP has decided to review both WQM amendment permit and NPDES permit renewal applications simultaneously.

Changes from the previous permit: Unit of Fecal Coliform changed from CFU/100 ml to No./100 ml. The average annual flow / hydraulic capacity flow changed from 0.205 MGD to 0.250 MGD. Organic capacity changed from 367 lbs/day to 448 lbs/day.

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.

Approve	Deny	Signatures	Date
X		*Hilaryle* Hilary H. Le / Environmental Engineering Specialist	December 9, 2020
		Daniel W. Martin, P.E. / Environmental Engineer Manager	

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.25
Latitude	40º 33' 20.24"	Longitude	-77º 14' 4.33"
Quad Name	Millerstown	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Delaware Creek (TSF)	Stream Code	11754
NHD Com ID	66204937	RMI	0.24 mile
Drainage Area	12.6 mi.^{2}	Yield (cfs/mi^2)	0.12
Q_{7-10} Flow (cfs)	1.5	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	390.0	Slope (ft/ft)	
Watershed No.	12-B	Chapter 93 Class.	TSF
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	Newport Water Authority		
PWS Waters	Juniata River	Flow at Intake (cfs)	
PWS RMI	12 miles	Distance from Outfall (mi)	Approximate 13 miles

Changes Since Last Permit Issuance: increase average annual design flow from 0.205 MGD to 0.25 MGD

Drainage Area
The discharge is to Delaware Creek at RMI 0.24 mile. A drainage area upstream of the discharge is estimated to be 12.6 mi.^{2}, according to USGS StreamStats available at https://streamstats.usgs.gov/ss/.

Stream Flow
Since there is no gage station near the outfall, a downstream gage station on the Juniata River was used to determine design stream flows (Gage No. 01567000). The gage is located near Newport, PA. The $Q_{7,10}$ flow at the gage station is 403 cfs, with a drainage area of 3,350 mi.^{2} (according to USGS PA StreamStats available at https://streamstats.usgs.gov/ss/) which results in a Q_{7-10} low flow yield of 0.12 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):

Low Flow Yield = 403 cfs / 3,350 mi.^{2} ≈ 0.12 cfs/mi.^{2}

Q_{7-10} discharge = 0.12 cfs/mi.^{2} x D.A discharge = 0.12 cfs/mi.^{2} x 12.6 mi.^{2} = 1.5 cfs

Q_{30-10} = 1.36 * 1.5 cfs ≈ 2.04 cfs

Q_{1-10} = 0.64 * 1.5 cfs ≈ 0.96 cfs

The resulting dilution ratio (under Q_{7-10} conditions) is: Q_{stream} / $Q_{discharge}$ = 1.5 cfs / [0.25 MGD * (1.55 cfs/MGD)] = 3.9:1

Delaware Creek
25 Pa. Code § 93.9n classifies Delaware Creek as Trout Stocking Fishes (TSF) surface water. Based on the 2018 Integrated Report, Delaware Creek, assessment unit ID 9589, 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 Newport Water Authority on Juniata River in Perry County, approximately 13 miles downstream of this discharge. Given the nature and dilution, the discharge is not expected to significantly impact the water supply.

Treatment Facility Summary				
Treatment Facility Name: Thompsontown STP				
WQM Permit No.	**Issuance Date**			
3412401	9/28/2012			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Gas Chlorine	0.205 to 0.25
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.205 to 0.25	367 to 448	Not Overloaded	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance: Yes, the facility flow changed to 0.250 MGD of average daily, 0.04 MGD of minimum daily, 0.50 MGD of maximum daily, and 1.00 MGD of instantaneous peak.

Other Comments: The facility is a 250,000 GPD system with the following treatment units:

One (1), Comminutor
One (1), Influent Pump Station
Two (2), Sequencing Batch Reactors
One (1), Chlorine Contact Tank
One (1), Post Aeration Tank
One (1), Aerobic Sludge Digester

The chemical used chlorine for disinfection.

Compliance History	
Summary of DMRs:	DMRs reported last 12 months from November 1, 2019 to October 31, 2020 are summarized in the Table below (Pages 5, 6, & 7).
Summary of Inspections:	4/4/2019: Mr. Michael Benham, DEP WQS, conducted compliance evaluation inspection. There were recommendations such as calibrating the influent flowmeter which was due by 3/31/2019, restraining all chlorine gas cylinders, developing logs for the emergency generator maintenance and daily treatment plant activities, having the SCBA unit inspected regularly and developing a logbook for SCBA maintenance and training, and developing SOP for non-certified operators which should include a section on Chlorine gas emergency. The field test results were within permit limit. 2/14/2017: Mr. Patrick Bowen, DEP WQS, conducted compliance evaluation inspection. There were violations noted during inspection due to failure to submit discharge monitoring reports for water years 2014-2015 and 2015-2016. Field test results were within permit limit.
Other Comments:	There are no open violations associated with the permittee or the facility.

Other Comments:

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

Influent Testing Results

Parameter	Min/Max Value	Average Value
BOD_5 (mg/L)	83/151 mg/L	165 mg/L
BOD_5 (lbs/day)	77/181 lbs/day	275 lbs/day
TSS (mg/L)	75/322 mg/L	180 mg/L
TSS (lbs/day)	95/268 lbs/day	300 lbs/day
TN (mg/L)	42/63 mg/L	50 mg/L
TN (lbs/day)	35/117 lbs/day	84 lbs/day
TP (mg/L)	4.5/6.6 mg/L	6.0 mg/L
TP (lbs/day)	4/11 lbs/day	10.0 lbs/day
NH_3-N (mg/L)	17.2/25 mg/L	22.0 mg/L
NH_3-N (lbs/day)	25/52 lbs/day	37.0 lbs/day
TDS (mg/L)	200 mg/L	350 mg/L
TDS (lbs/day)	333 lbs/day	500 lbs/day
TKN	25/45 mg/L	35 mg/L
NO_2-N + NO_3-N	12/22 mg/L	15 mg/L

Effluent Testing Results

Parameter	Min/Max Value	Average Value
pH (minimum)	6.8 S.U.	
pH (maximum)	7.3 S.U.	
D.O (minimum)	6.2 mg/L	6.8 mg/L
TRC	0.3 mg/L	0.6 mg/L
Fecal Coliform	2 No./100mL	22 No./100 mL
$CBOD_5$	2 mg/L	3.6 mg/L
TSS	5 mg/L	6.5 mg/L
NH_3-N	0.1 mg/L	3.6 mg/L
TN	2.0 mg/L	4.5 mg/L
TP	1.0 mg/L	1.3 mg/L
Temp	50 F	62 F
TKN	1.4 mg/L	4.0 mg/L
NO_2-N + NO_3-N	2.6 mg/L	2.6 mg/L
TDS	200 mg/L	350 mg/L
Chloride	mg/L	mg/L
Bromide	mg/L	mg/L
Sulfate	mg/L	mg/L
Oil and Grease	10 mg/L	15 mg/L
Total Copper	0.0025 mg/L	0.02 mg/L
Total Lead	0.001 mg/L	0.0011 mg/L
Total Zinc	0.0025 mg/L	0.036 mg/L

Compliance History

DMR Data for Outfall 001 (from November 1, 2019 to October 31, 2020)

Parameter	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19
Flow (MGD) Average Monthly	0.108	0.094	0.091	0.089	0.116	0.221	0.174	0.168	0.136	0.133	0.110	0.115
Flow (MGD) Daily Maximum	0.300	0.126	0.118	0.120	0.200	1.307	0.306	0.949	0.435	0.601	0.227	0.492
pH (S.U.) Minimum	7.1	7.1	7.0	6.9	6.8	7.0	6.8	7.0	7.0	6.9	6.8	7.0
pH (S.U.) Maximum	7.4	7.4	7.3	7.7	7.2	7.4	7.4	7.3	7.5	7.3	7.3	7.3
DO (mg/L) Minimum	7.4	7.5	7.2	7.3	6.9	6.8	6.8	6.9	7.0	7.0	7.0	6.8
TRC (mg/L) Average Monthly	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4
TRC (mg/L) Instantaneous Maximum	0.7	0.7	0.6	0.9	0.8	0.7	0.6	0.6	0.3	0.7	0.7	0.6
CBOD5 (lbs/day) Average Monthly	< 2.0	< 2.2	2.2	2.3	< 2.5	< 2.5	< 3.4	< 2.8	< 2.5	< 3.0	< 2.4	< 2.2
CBOD5 (lbs/day) Weekly Average	2.8	4.0	2.7	2.8	2.8	< 3.8	< 5.0	3.8	4.0	5.0	4.0	3.8
CBOD5 (mg/L) Average Monthly	< 2.5	< 2.8	3.0	3.1	< 2.6	< 2.0	< 2.2	< 2.7	2.3	< 3.1	< 2.6	< 2.8
CBOD5 (mg/L) Weekly Average	3.4	5.1	3.6	3.4	3.3	< 2.0	2.7	4.7	3.2	4.7	3.7	4.7
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	183	125	113	115	205	174	155	128	141	90	91	91
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	267	200	141	142	286	204	224	196	174	137	120	123
BOD5 (mg/L) Raw Sewage Influent Average Monthly	217	153	152	152	225	163	111	109	134	107	101	122
TSS (lbs/day) Average Monthly	< 4.3	< 5.0	< 3.7	< 3.8	< 4.8	< 6.3	< 7.7	< 5.7	< 4.4	< 6.2	< 4.5	7.0
TSS (lbs/day) Raw Sewage Influent Average Monthly	261	117	183	172	238	166	195	119	80	110	144	100

TSS (lbs/day) Raw Sewage Influent Daily Maximum	460	259	282	212	335	227	255	210	121	193	347	124
TSS (lbs/day) Weekly Average	4.9	7.7	< 3.8	< 4.0	6.7	< 9.4	< 12.5	8.2	6.3	7.0	5.3	16.0
TSS (mg/L) Average Monthly	< 5.0	< 6.3	< 5.0	< 5	< 5.0	< 5	< 5	< 5	< 5	< 7.0	< 5	9.0
TSS (mg/L) Raw Sewage Influent Average Monthly	310	142	113	228	254	148	137	102	79	131	163	133
TSS (mg/L) Weekly Average	6.0	10	< 5.0	< 5	< 5.0	< 5	< 5	5	< 5	13.0	< 5	20.0
Fecal Coliform (CFU/100 ml) Geometric Mean	< 6	1.0	< 3.0	< 21	17	< 1	< 1	< 2	< 1	< 34	< 3.0	< 2.0
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	2100	27500	57	23900	2100	1	< 1	25	2	5000	68.0	12.0
Nitrate-Nitrite (mg/L) Average Monthly	3.0	2.28	1.88	1.83	2.12	3.7	3.64	4.73	2.28	4.24	2.05	< 6.9
Nitrate-Nitrite (lbs) Total Monthly	74.4	54	43.4	43.4	48	152	180	173.6	69.6	18.1	57.7	< 154.4
Total Nitrogen (mg/L) Average Monthly	< 4.0	< 4.13	< 2.9	< 2.95	< 3.24	< 4.7	< 4.64	< 6.15	3.60	< 5.84	3.93	< 8.01
Total Nitrogen (lbs) Effluent Net Total Monthly	< 102.3	< 102	< 65.1	< 68.2	< 72	< 192.2	< 225	< 217	110	< 25.1	109.9	< 181.2
Total Nitrogen (lbs) Total Monthly	102.3	< 102	< 65.1	< 68.2	< 72	< 192.2	< 225	< 217	110	< 25.1	109.9	< 181.2
Total Nitrogen (lbs) Effluent Net Total Annual		< 229										
Total Nitrogen (lbs) Total Annual		< 229										
Ammonia (lbs/day) Average Monthly	< 0.1	< 0.75	0.15	< 0.1	< 0.08	< 1.3	< 0.16	< 0.13	< 0.15	< 0.022	< 0.6	< 4.9
Ammonia (mg/L) Average Monthly	< 0.118	< 0.805	< 0.185	< 0.136	< 0.109	< 0.1	< 0.113	< 0.113	< 0.132	< 0.153	< 0.638	< 6.508
Ammonia (lbs) Total Monthly	< 3.1	< 22.5	< 4.7	< 3.1	< 2.4	< 40.3	< 4.8	< 4.0	< 4.4	< 0.7	< 18.5	< 146.5
Ammonia (lbs) Total Annual		< 30										
TKN (mg/L) Average Monthly	< 1.0	< 1.9	< 1.0	< 1.1	< 1.1	< 1.0	< 1.0	< 1.4	1.3	< 1.6	1.9	< 6.9

TKN (lbs) Total Monthly	< 25.4	< 48	< 23.3	< 26.4	< 33	< 40.3	< 45	< 46.5	42	< 7.0	52.2	< 154.4
Total Phosphorus (mg/L) Average Monthly	2.4	2.8	2.05	2.63	1.9	< 1.2	< 0.52	2.2	1.14	1.1	0.62	0.59
Total Phosphorus (lbs) Effluent Net Total Monthly	59	72	46.5	62	< 39	< 40.3	< 21.6	70	34.8	4.5	15.6	13.5
Total Phosphorus (lbs) Total Monthly	59	72	46.5	62	39	40.3	< 21.6	70	34.8	4.5	15.6	13.5
Total Phosphorus (lbs) Effluent Net Total Annual		< 67										
Total Phosphorus (lbs) Total Annual		< 67										

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.25
Latitude 40º 33' 20.25" **Longitude** -77º 14' 4.33"
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 ($CBOD_5$):
The attached computer printout of the WQM 7.0 stream model indicates that a monthly average limit of 25 mg/L, or secondary treatment, is adequate to protect the water quality of the stream. However, the existing limits of 25 mg/L monthly average (AML), 40mg/l average weekly limit (AWL), and 50 mg/L instantaneous maximum will remain in the proposed permit as per guidance document 391-2000-014. 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: 25 mg/L x 0.250 MGD x 8.34 = 52.1 (52.0) lbs/day
Average weekly mass limit: 40 mg/L x 0.250 MGD x 8.34 = 83.4 (83.0) lbs/day

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 indicates that a limit of 11.44 mg/L as a monthly average and 22.88 mg/L IMAX are necessary to protect the aquatic life from toxicity effects at the point of discharge. However, the existing limits of 10.0 mg/L monthly average & 20 mg/L IMAX will remain in the proposed permit. 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 0.250 MGD x 8.34 = 20.85 (21.0) lbs/day

Dissolved Oxygen (D.O.):
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).

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

Average monthly mass limit: 30 mg/L x 0.250 MGD x 8.34 = 62.55 (63.0) lbs/day
Average weekly mass limit: 45 mg/L x 0.250 MGD x 8.34 = 93.8 (94.0) lbs/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 (TRC):
Based on the attached TRC Excel Spreadsheet calculator, which uses the equations and calculations from the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (ID No. 391-2000-015), the facility's discharge must meet a monthly average limit of 0.5 mg/L and an instantaneous maximum limit of 1.6 mg/L. These limits are the same as those in the existing permit. The facility has been meeting the limits consistently.

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 1, 2, and 3) 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 4 (0.2 -0.4 MGD) will be required to monitor and report TN and TP during permit renewal monthly and Phase 5 (below 0.2 MGD) will monitor during current permit renewal once a year unless two years of monitoring completed and documented. Any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away.

This plant is classified as a phase 4 and is currently undergoing an expansion as allowed under a Part II permit issued on September 28, 2012. For Phase 4 sewage facilities (average annual design flow on August 29, 2005 ≥ 0.2 MGD and < 0.4 MGD), renewed or amended permits that include an increase in design flow will contain Cap Loads based on the lesser of a) existing TN and TP concentrations at current design average annual flow or b) 7,306 lbs./yr. TN and 974 lbs./yr. TP (Phase 3 WIP Wastewater Supplement revised 12/17/2019, page #19). Therefore, the existing cap loads of 7,306 lbs./yr. TN and 974 lbs./yr. TP will be continuing to be utilized.

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 25 Pa. Code § 94.12 and assess percent removal requirements, per DEP policy.

Biosolids Management:
Digested Sludge is sent out periodically to the drying beds.

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

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.

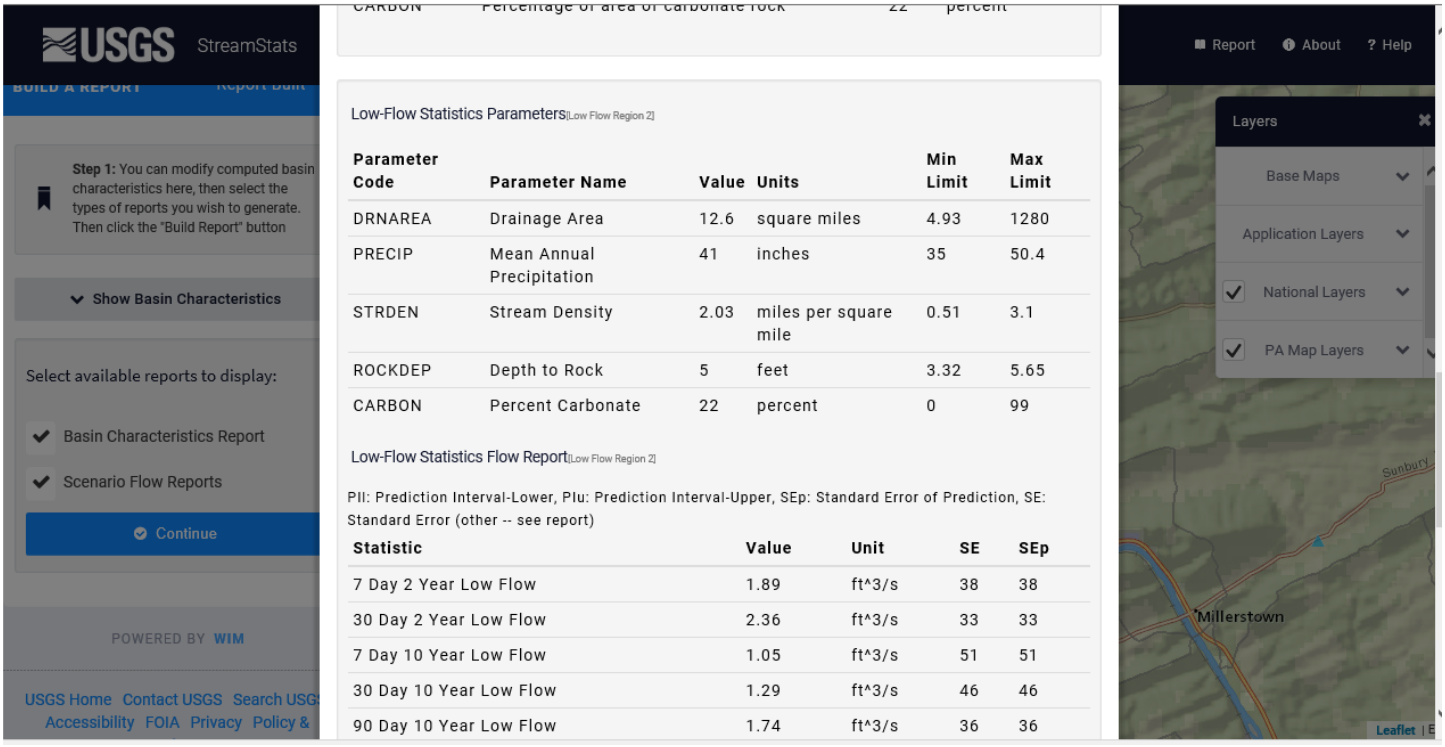
303d Listed Streams:
The discharge is not located on a 303d listed stream segment. The stream segment that receive the discharge is listed as attaining its uses for aquatic life and fish consumption.

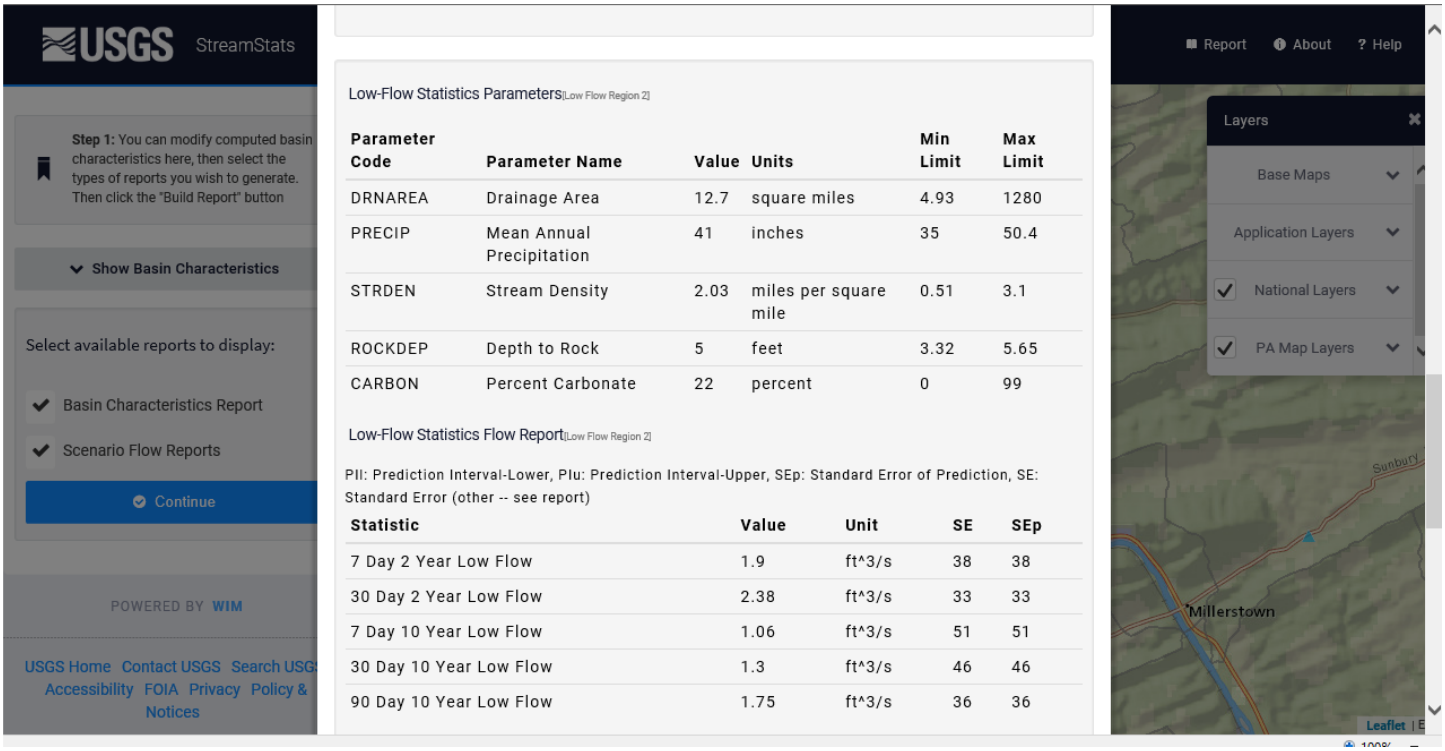
Class A Wild Trout Fisheries:
No Class A Wild Trout Fisheries are impacted by this discharge.

WQM 7.0

Node 1: Outfall 001 on Delaware Creek (11754)
- Elevation: 390 ft (USGS National Map Viewer)
- Drainage Area: 12.6 mi.^{2} (USGS PA StreamStats)
- River Mile Index: 0.240 (PA DEP eMapPA)
- Low Flow Yield: 0.12 cfs/mi.^{2}
- Discharge Flow: 0.250 MGD (NPDES Application)

Node 2: Just before confluence with Delaware Creek to Juniata River
- Elevation: 381 ft (USGS National Map Viewer)
- Drainage Area: 12.7 mi.^{2} (USGS PA StreamStats)
- River Mile Index: 0.01 (PA DEP eMapPA)
- Low Flow Yield: 0.12 cfs/mi.^{2}
- Discharge Flow: 0.000 MGD





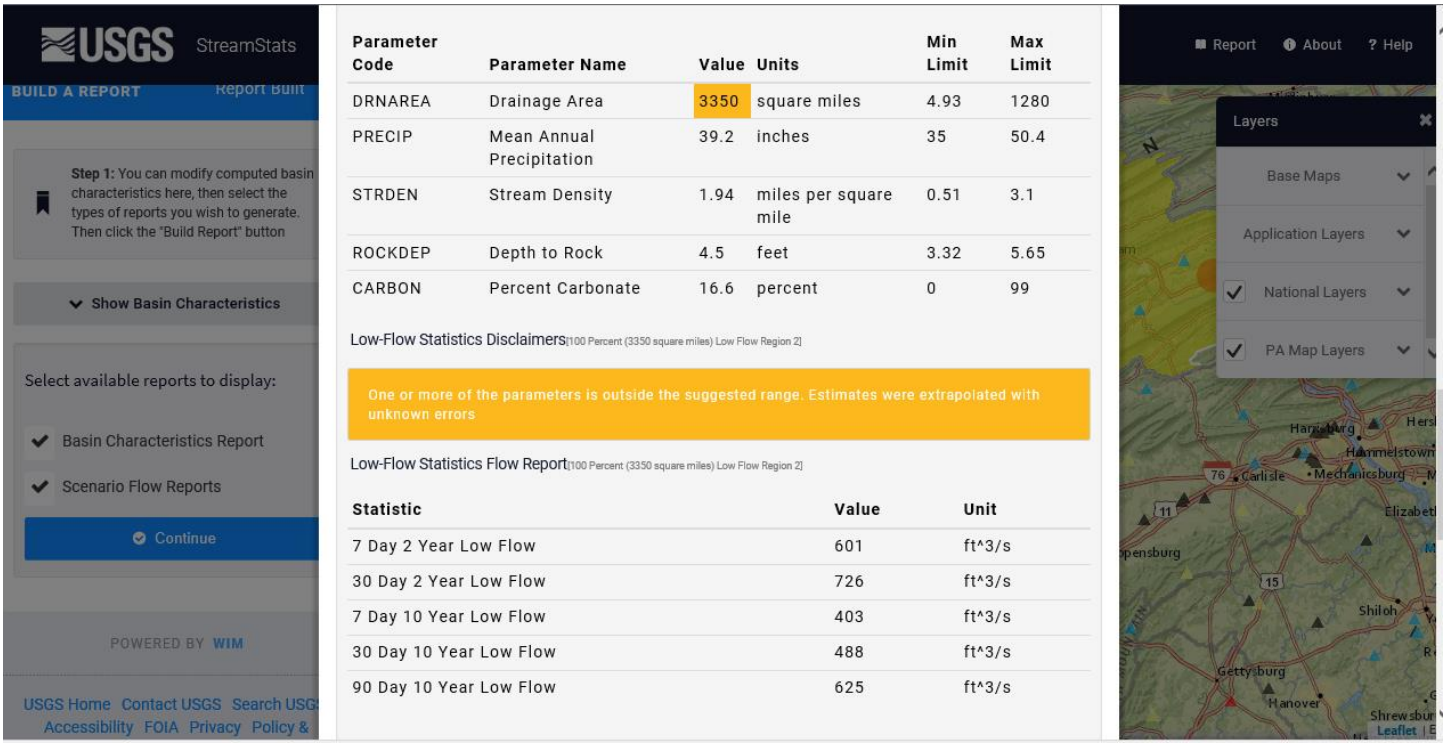
Low-Flow Statistics Parameters[Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	12.7	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	41	inches	35	50.4
STRDEN	Stream Density	2.03	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	5	feet	3.32	5.65
CARBON	Percent Carbonate	22	percent	0	99

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

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	1.9	ft^3/s	38	38
30 Day 2 Year Low Flow	2.38	ft^3/s	33	33
7 Day 10 Year Low Flow	1.06	ft^3/s	51	51
30 Day 10 Year Low Flow	1.3	ft^3/s	46	46
90 Day 10 Year Low Flow	1.75	ft^3/s	36	36



Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3350	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39.2	inches	35	50.4
STRDEN	Stream Density	1.94	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	16.6	percent	0	99

Low-Flow Statistics Disclaimers[100 Percent (3350 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 (3350 square miles) Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	601	ft^3/s
30 Day 2 Year Low Flow	726	ft^3/s
7 Day 10 Year Low Flow	403	ft^3/s
30 Day 10 Year Low Flow	488	ft^3/s
90 Day 10 Year Low Flow	625	ft^3/s

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

1.5	= Q stream (cfs)	0.5	= CV Daily
0.25	= 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 = 1.256	1.3.2.iii	WLA cfc = 1.217
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.468	5.1d	LTA_cfc = 0.708

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)**

Analysis Results WQM 7.0

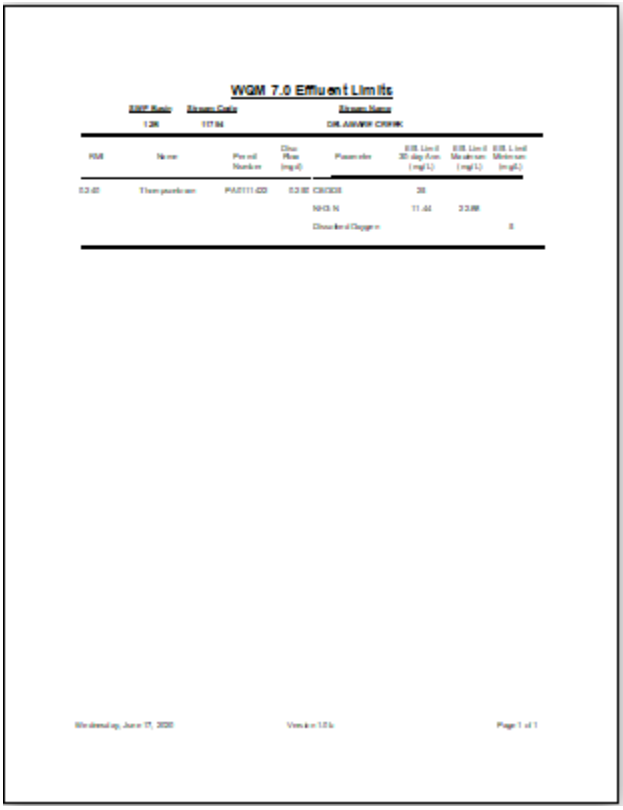
Hydrodynamics | NH3-N Allocations | D.O. Allocations | D.O. Simulation | Effluent Limitations

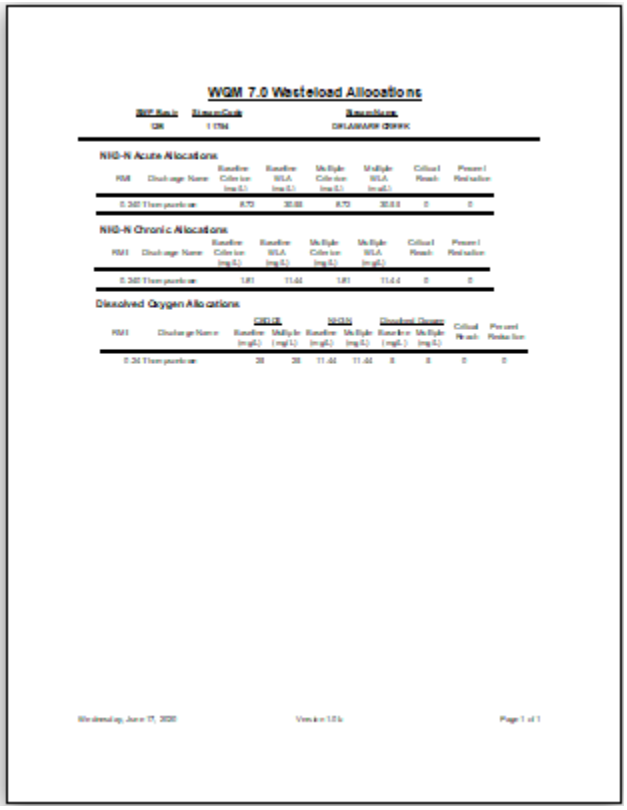
RMI	Discharge Name	Permit Number	Disc Flow (mgd)
0.24	Thompsontown	PA0111422	0.2500

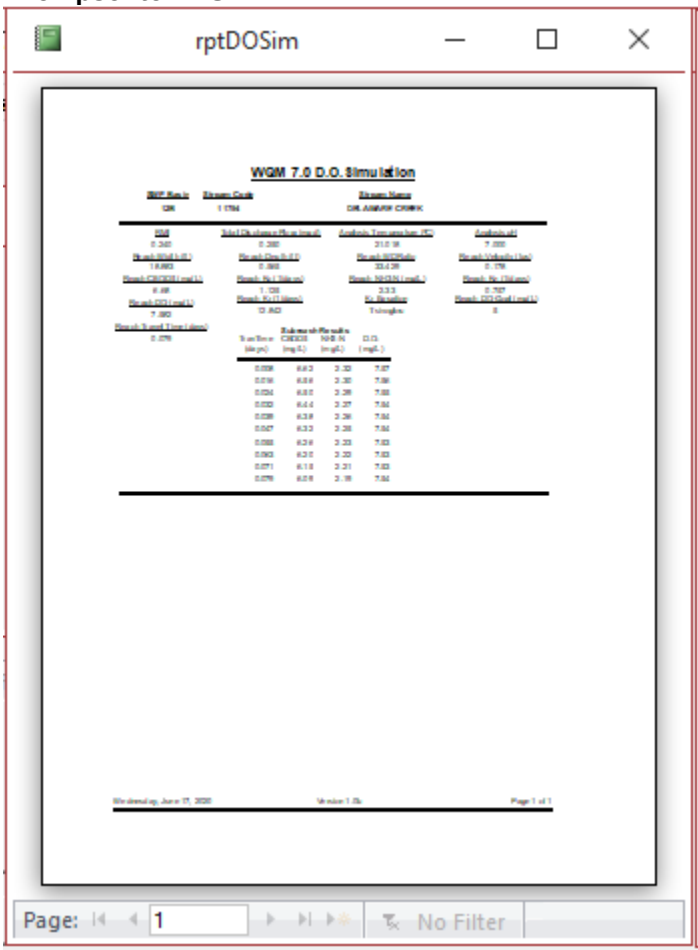
Parameter	Effluent Limit 30 Day Average (mg/L)	Effluent Limit Maximum (mg/L)	Effluent Limit Minimum (mg/L)
CBOD5	25		
NH3-N	11.44	22.88	
Dissolved Oxygen			5

Record: 1 of 1 | No Filter | Search

Print | < Back | Next > | Archive | Cancel



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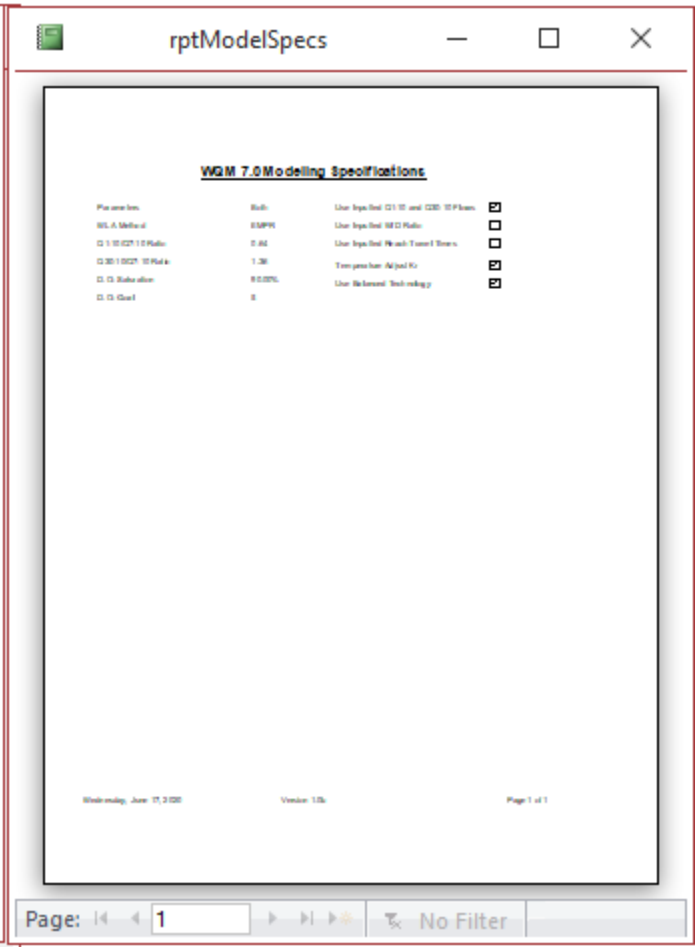
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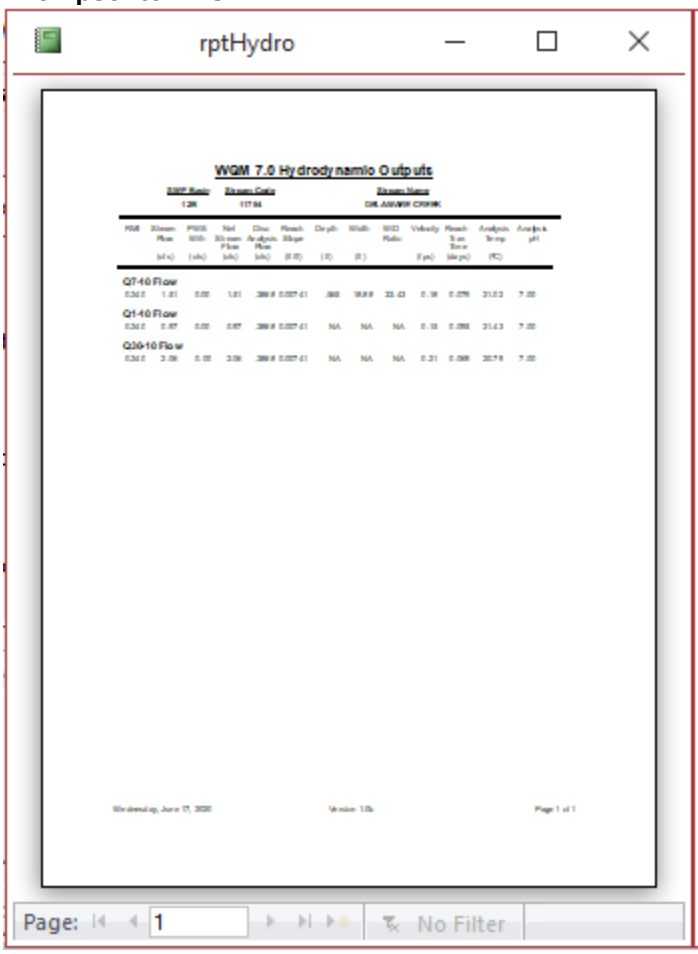
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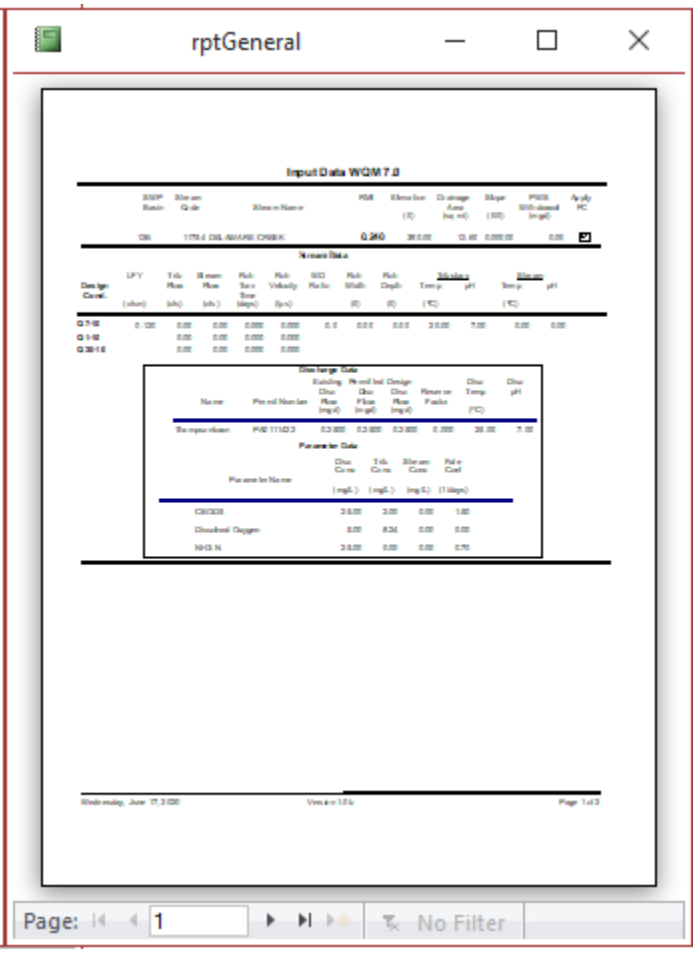
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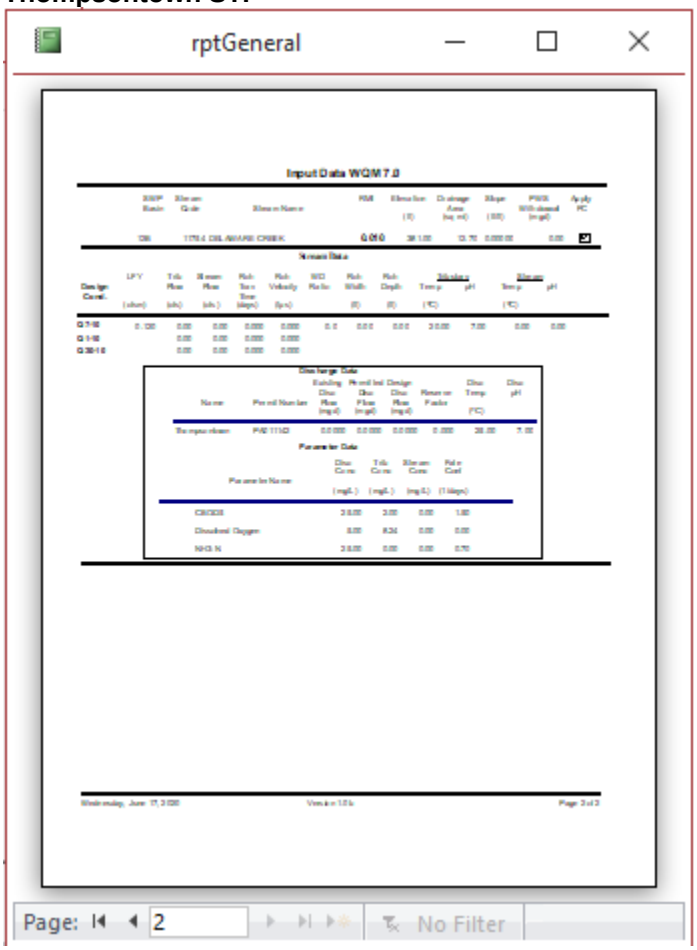
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Existing Effluent Limitations and Monitoring Requirements

The annual design flow & hydraulic capacity flow are 0.205 MGD.

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
$CBOD_5$	42	67 Wkly Avg	XXX	25	40	50	1/week	24-Hr Composite
TSS	50	75 Wkly Avg	XXX	30	45	60	1/week	24-Hr Composite
BOD_5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
Ammonia May 1 - Oct 31	17	XXX	XXX	10	XXX	20	1/week	24-Hr Composite
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite

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
	Monthly	Annual	Minimum	Monthly Average	Maximum	Instant. Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	XXX	1/week	24-hr Composite
Kjeldahl---N	Report	Report	XXX	Report	XXX	XXX	1/week	24-hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	1/week	24-hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	1/week	24-hr Composite
Net Total Nitrogen	Report	7,032	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	974	XXX	XXX	XXX	XXX	1/month	Calculation

Proposed Effluent Limitations and Monitoring Requirements

The annual design flow & hydraulic capacity flow are 0.25 MGD.

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
$CBOD_5$	52.0	83.0 Wkly Avg	XXX	25.0	40.0	50.0	1/week	24-Hr Composite
TSS	63.0	94.0 Wkly Avg	XXX	30.0	45.0	60.0	1/week	24-Hr Composite
BOD_5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
Ammonia May 1 - Oct 31	21.0	XXX	XXX	10.0	XXX	20.0	1/week	24-Hr Composite
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite

Compliance Sampling Location:

Other Comments:

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum	Instant. Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	XXX	1/week	24-hr Composite
Kjeldahl---N	Report	Report	XXX	Report	XXX	XXX	1/week	24-hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	1/week	24-hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	1/week	24-hr Composite
Net Total Nitrogen	Report	7,032	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	974	XXX	XXX	XXX	XXX	1/month	Calculation

Compliance Sampling Location:

Other Comments:

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☐	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: