

Application Type **Amendment,
Major**

Facility Type **Municipal**

Major / Minor **Minor**

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. **PA0247910 A-1**

APS ID **562641**

Authorization ID **1333824**

Applicant and Facility Information

Applicant Name	Bethel Township Municipal Authority Berks County	Facility Name	Bethel Township Frystown STP
Applicant Address	PO Box 274, 60 Klahr Road Bethel, PA 19507-0274	Facility Address	1711 Camp Swatara Road Myerstown, PA 17067-1904
Applicant Contact	Harold Gruber, Chairman of the Board	Facility Contact	Michael Kreiser (+ project contact = Doug.Kopp@arroconsulting.com))
Applicant Phone	(717) 933-8813/ betheltwpma@gmail.com	Facility Phone	(610) 589-4023 Kreiser 484-525-4553 Kopp
Client ID	243378	Site ID	660904
Ch 94 Load Status	Not Overloaded	Municipality	Bethel Township
Connection Status	No Limitations	County	Berks
Date Application Received	November 10, 2020 & November 18, 2020 (email) & December 10, 2020	EPA Waived?	No
Date Application Accepted	November 18, 2020	If No, Reason	Chesapeake Bay TMDL- existing discharger proposing to expand
Purpose of Application	Expansion of STP – increase in design flow		

Summary of Review

The existing NPDES permit was issued July 25, 2019 with an expiration date of July 31, 2024. A NPDES amendment application and a WQM permit application were received separately in 2020 for a planned increase in design flow and upgrades to the Sewage Treatment Plant (STP). According to the facility's 2019 Chapter 94 Municipal Wasteload Report, a hydraulic and organic overload is projected beginning in 2022 due to increased flow from new Equivalent Dwelling Units (EDU's) including the Pilot Travel Center's sewage (existing NPDES permit PA0070360) which is expected to be diverted to the MUA's Frystown STP. Sewage Planning approval was granted by DEP, according to Sewage Planning staff. The applicant has represented that all wastewater conveyed to the STP at this time is domestic wastewater, no industrial wastewater.

The STP's discharge is to Little Swatara Creek, within the Chesapeake Bay watershed. Expansions to existing facilities discharging to waters within the Chesapeake Bay watershed trigger nutrient caploads in order to achieve the nutrient reductions required by the Chesapeake Bay Total Maximum Daily Load (TMDL).

The NPDES permit will be amended first. The applicant will have the option to withdraw their WQM permit application and submit a new one if their proposal is not adequate to meet the new NPDES limits. Otherwise, the WQM permit will be issued based on the design in the already-submitted WQM permit application.

Because construction cannot commence until a WQM permit is issued, this amended NPDES permit will carry forward the existing permit limits for an interim period, will include final permit limits based on the new design flow, and will include a compliance schedule in Part C. During the comment period, the permittee can request changes to the compliance schedule.

Approve	Deny	Signatures	Date
x		Bonnie J. Boylan Bonnie J. Boylan / Environmental Engineering Specialist	February 4, 2021
x		Maria D. Bebenek for Daniel W. Martin Daniel W. Martin, P.E. / Environmental Engineer Manager	March 1, 2021
x		Maria D. Bebenek Maria D. Bebenek, P.E. / Environmental Program Manager	March 1, 2021

Summary of Review

Sludge use and disposal description and location(s):

Solids are hauled offsite for disposal in a larger POTW or an eligible landfill.

Unresolved Violations

At this time, there are no unresolved violations for this facility or this client.

EPA Review

According to the latest EPA Permit Review Waiver (December 2019), this draft permit amendment and Fact Sheet must be provided to EPA because a) it is an expanding discharge to Chesapeake Bay with cap loads; and b) it is an existing discharge to waters with an approved TMDL which will apply different permit requirements than were imposed in previous permit.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.113 (after STP upgrade) 0.0724 (before STP upgrade)
Latitude	40°26'39"	Longitude	-76°19'51"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Little Swatara Creek (CWF)*	Stream Code	09888
NHD Com ID	56395743	RMI	12.4
Drainage Area	38 sq.mi.	Yield (cfs/mi²)	0.05
Q ₇₋₁₀ Flow (cfs)	1.9	Q ₇₋₁₀ Basis	USGS/PA Strm Stats
Elevation (ft)	450, estimated	Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	CWF
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	
Background/Ambient Data	Data Source – no WQN station nearby		
pH (SU)			
Temperature (°F)			
Hardness (mg/L)			
Other:			
Nearest Downstream Public Water Supply Intake	PA American Water		
PWS Waters	Swatara Creek	Flow at Intake (cfs)	
PWS RMI	16.4	Distance from Outfall (mi)	Approx.. 35 miles

*Not Class A Wild Trout or Trout Natural Reproduction classification

Changes Since Last Permit Issuance:

- Increase in design flow from 0.0724 MGD to 0.113 MGD

Other Comments:

- No upstream gages. No nearby downstream gages.

Treatment Facility Summary				
Treatment Facility Name: Frystown System, <u>proposed</u>				
WQM Permit No.		Issuance Date		
0606402 A-1		pending		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	To Be Determined	Ultraviolet	0.113
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.113	185	Not Overloaded	Aerobic Digestion	Combination of methods

The existing STP:

WQM Permit No.		Issuance Date		
0606402				
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration With Solids Removal	Ultraviolet	0.0724
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0767	145	Not Overloaded	Aerobic Digestion	Combination of methods

The existing facility consists of a comminutor, two lift pumps, a mechanical screen, multiple anoxic tanks, multiple aeration tanks with fine bubble diffusion, two settling tanks, a UV disinfection system, a post-aeration chamber and the outfall.

Existing Permit:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum 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
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
CBOD5	15.0	24.0	XXX	25.0	40.0	50	2/month	24-Hr Composite
BOD5	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TSS	18.0	27.0	XXX	30.0	45.0	60	2/month	24-Hr Composite
TSS	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
UV Intensity (mW/cm ²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Metered
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Ammonia May 1 - Oct 31	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite

Continued.....

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/month	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/month	24-Hr Composite

Compliance History

DMR Data for Outfall 001 (from January 1, 2020 to December 31, 2020)

Parameter	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20
Flow (MGD) Average Monthly	0.0277	0.0264	0.024	0.0229	0.0243	0.022	0.0213	0.0187	0.0195	0.0214	0.0166	0.0151
Flow (MGD) Daily Maximum	0.0499	0.041	0.0374	0.0356	0.0533	0.0361	0.0384	0.0331	0.0328	0.0388	0.032	0.0385
pH (S.U.) Instantaneous Minimum	6.89	6.83	6.96	7.12	7.12	7.12	6.91	6.98	6.82	6.87	6.93	6.81
pH (S.U.) Instantaneous Maximum	7.97	7.72	7.7	7.95	7.90	7.89	7.72	7.85	7.97	7.82	7.75	8.0
DO (mg/L) Instantaneous Minimum	6.92	7.99	8.2	7.97	8.04	7.95	7.99	8.34	8.83	7.23	10.33	7.87
CBOD5 (lbs/day) Average Monthly	< 0.2	< 0.4	< 0.40	< 0.5	< 0.5	0.5	< 0.5	< 0.2	< 0.5	< 0.4	< 0.3	< 0.3
CBOD5 (lbs/day) Weekly Average	< 0.2	< 0.4	< 0.4	< 0.6	< 0.5	0.5	< 0.6	< 0.3	< 0.5	< 0.4	< 0.3	0.4
CBOD5 (mg/L) Average Monthly	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.1	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
CBOD5 (mg/L) Weekly Average	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.1	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	11	26	48	28	42	125	35	21	44	78	24	34
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	12	27	57	33	57	205	39	35	52	111	36	38
BOD5 (mg/L) Raw Sewage Influent Average Monthly	146	129	248	114	187	482	136.2	217	194	389	193.7	212
TSS (lbs/day) Average Monthly	< 0.3	< 1.0	1.0	< 1.0	1.0	2.0	< 1.0	< 0.5	1.0	< 0.9	< 0.6	0.8
TSS (lbs/day) Raw Sewage Influent Average Monthly	8	13	45	53	36	50	36	22	79	86	30	41

NPDES Permit Fact Sheet
Bethel Township Frystown STP

NPDES Permit No. PA0247910 A-1

TSS (lbs/day) Raw Sewage Influent Daily Maximum	9	20	56	58	37	63	44	33	100	103	53	59
TSS (lbs/day) Weekly Average	< 0.3	1.0	1.0	1.0	1.0	2.0	1.0	0.9	1.0	1.0	0.6	1.0
TSS (mg/L) Average Monthly	< 4.0	< 4.8	6.4	< 5.4	5.0	7.2	< 4.2	< 5.0	4.4	< 4.6	< 4.4	4.4
TSS (mg/L) Raw Sewage Influent Average Monthly	106	62	232	233	159	197	144	246	342	427	249	295
TSS (mg/L) Weekly Average	< 4.0	5.6	7.2	6.8	5.6	9.2	4.4	6.0	4.8	5.2	4.8	4.8
Fecal Coliform (No./100 ml) Geometric Mean	1228	51	38	115	54	93	31	26	141	119	< 9	104
Fecal Coliform (No./100 ml) Instantaneous Maximum	7500	96	481	1100	140	268	157	136	216	136	90	5400
UV Intensity (mW/cm ²) Instantaneous Minimum	2.8	1.9	1.7	0.6	1	0.2	0.2	0.5	0.7	0.7	0.5	0.4
Nitrate-Nitrite (mg/L) Average Monthly	20.6	19.9	20.2	19.8	17.5	18.8	21.5	19.7	19.4	20.7	25.9	24.7
Nitrate-Nitrite (lbs) Total Monthly	50	122	121	144	122	150	178	60	133	130	94	130
Total Nitrogen (mg/L) Average Monthly	< 21.2	< 20.5	< 20.8	20.7	< 18	19.7	< 22.3	< 20.4	< 19.9	< 21.3	27.2	< 25.5
Total Nitrogen (lbs) Total Monthly	< 52	< 126	< 125	150	< 125	156	< 184	< 63	< 136	< 134	99	< 135
Total Nitrogen (lbs) Total Annual				< 1618								
Ammonia (lbs/day) Average Monthly	< 0.008	< 0.02	< 0.02	< 0.02	< 0.02	< 0.03	< 0.03	< 0.009	< 0.02	< 0.02	< 0.01	< 0.02
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ammonia (lbs) Total Monthly	< 0.2	< 0.6	< 0.6	< 0.7	< 0.7	< 0.8	< 0.8	< 0.3	< 0.7	< 0.6	< 0.4	< 0.5
Ammonia (lbs) Total Annual				< 7								
TKN (mg/L) Average Monthly	< 0.61	< 0.63	< 0.53	0.82	< 0.5	0.86	< 0.82	< 0.74	< 0.5	< 0.58	1.28	< 0.8

**NPDES Permit Fact Sheet
Bethel Township Frystown STP**

NPDES Permit No. PA0247910 A-1

TKN (lbs) Total Monthly	< 2	< 4	< 3	6	< 3	7	< 6	< 3	< 3	< 4	5	< 5
Total Phosphorus (lbs/day) Average Monthly	0.02	0.08	0.07	0.1	0.07	0.1	0.1	0.04	0.07	0.05	0.05	0.06
Total Phosphorus (mg/L) Average Monthly	0.27	0.37	0.34	0.42	0.33	0.46	0.41	0.44	0.3	0.24	0.38	0.36
Total Phosphorus (lbs) Total Monthly	0.7	2	2.0	3	2	4	3	1	2	2	1	2
Total Phosphorus (lbs) Total Annual				26								

Compliance History

Effluent Violations for Outfall 001, from: February 1, 2020 To: December 31, 2020

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	09/30/20	IMAX	1100	No./100 ml	1000	No./100 ml

Summary of Inspections:

4/7/2020 - Administrative File Review – No Violations.

2/23/2018 – Inspection – No violations.

12/13/2016 – Inspection – No violations.

11/19/2014 – Inspection – No violations.

Development of Effluent Limitations

Outfall No.	001	Design Flow (MGD)	0.113 (final)
Latitude	40° 26' 39"	Longitude	-76° 19' 51"
Wastewater Description:	Sewage Effluent		

Technology-Based Effluent Limitations (TBELs)

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)

Water Quality-Based Effluent Limitations (WQBELs)

TMDL:

On December 29, 2010, the US EPA published a final Total Maximum Daily Load (TMDL) for Nitrogen, Phosphorus and Sediment in the Chesapeake Bay (CB). The TMDL requires Pennsylvania to reduce its overall pollutant loading of nitrogen, phosphorus and sediment by 32%, 26%, and 25%, respectively, by 2025.

With a design flow of 0.113, this facility qualifies as a Phase 5 facility for the CB TMDL. Phase 5 facilities are those sewage facilities having a design flow more than 0.002 MGD and less than 0.2 MGD. It does not qualify as a “significant sewage treatment facility” because it does not discharge in excess of 75 lbs/day of Total Nitrogen (TN) or 25 lbs/day of Total Phosphorus (TP). As such the previous permit only required monitoring for TN and TP.

According to DEP’s Phase 3 Chesapeake Bay Watershed Implementation Plan (WIP) Wastewater Supplement dated December 17, 2019 (and DEP’s Phase 2 WIP Wastewater Supplement dated 2012): “If, however, Phase 5 facilities choose to expand, the renewed or amended permits will contain Cap Loads based on the lesser of a) existing TN/TP concentrations at current design average annual flow or b) 7,306 lbs/yr TN and 974 lbs/yr TP.” The WIP also allows for the following: “If Facility A has a permitted discharge and decides to eliminate the discharge through connection to Facility B, the lesser of the existing annual TN and TP loads or Cap Loads of Facility A may be transferred to Facility B’s Cap Load. The transferred loads are not considered Offsets and can be used for nutrient trading purposes.” In this case, Pilot Travel Center STP’s existing discharge (PA0070360) is being eliminated by connecting to the Frystown STP (PA0247910).

The average TN concentration for the Frystown STP according to DMRs from 8/1/2019 through 12/31/2020 was 25.3 mg/l. The average TP concentration according to DMRs from 8/1/2019 through 12/31/2020 was 0.53 mg/l. TN and TP monitoring only began in August 1, 2019. The existing TN/TP concentrations at current design average annual flow for the Frystown STP are:

$$25.3 \text{ mg/l} \times 0.0724 \text{ MGD} \times 8.34 \text{ conversion factor} \times 365 \text{ days/year} = \boxed{5576 \text{ lbs/yr TN}}$$

$$0.53 \text{ mg/l} \times 0.0724 \text{ MGD} \times 8.34 \text{ c.f.} \times 365 \text{ days/year} = \boxed{117 \text{ lbs/yr TP}}$$

For the Pilot Travel Center STP, monitoring for TN and TP has been conducted longer. The below values are the average of their mass loads in lbs/yr as reported on their DMRs and CB Annual Nutrient Summaries from 10/1/2015 through 9/30/2020. (For CB reporting, water years are used rather than calendar years. A water year starts October 1 and ends the following September 30.)

Average TN mass load = 2469 lbs.

Average TP mass load = 71 lbs

The above existing annual TN and TP loads are less than cap loads based on Pilot Travel Center STP's design flow of 0.04 MGD and so shall be transferred to Frystown STP's new cap loads. If cap loads had been assigned to the Pilot Travel Center STP's permit, they would have been calculated as follows:

Average TN concentration = 53.3 mg/l, from DMRs covering 10/1/2015 through 9/30/2020

TN cap load = 53.3 mg/l x 0.04 MGD x 8.34 conversion factor x 365 days/year = 6490 lbs/year

Average TP concentration 1.50 mg/l, from DMRs covering 10/1/2015 through 9/30/2020

TP cap load = 1.50 mg/l x 0.04 MGD x 8.34 c.f. x 365 days/year = 183 lbs/year

After adding in the transferred loads from the Pilot Travel Center STP, the **nutrient Cap Loads** that have been included in this draft permit amendment are as follows:

5576 lbs/yr TN from Frystown STP + 2469 lbs/yr TN from Pilot = **8045 lbs/yr TN**

117 lbs/yr TP from Frystown STP + 71 lbs/yr TP from Pilot = **188 lbs/yr TP**

These Chesapeake Bay TMDL reporting requirements are included in the draft permit amendment:

An Annual DMR for Chesapeake Bay must be submitted by November 28th following each compliance year. The facility must also complete and submit an Annual Chesapeake Bay Spreadsheet. This Spreadsheet will reflect all nutrient sample results (for the period October 1–September 30), Credit transactions (including the Truing Period) & Offsets applied during the Compliance Yr.

These Chesapeake Bay TMDL Nutrient Credit requirements are included in the draft permit amendment:

Nutrient Credits may be used for compliance with the Cap Loads where authorized under 25 Pa. Code § 96.8 (Use of offsets and tradable credits from pollution reduction activities in the Chesapeake Bay Watershed), including amendments, updates and revisions thereto; in accordance with DEP's Phase 2 WIP Wastewater Supplement; and in accordance with the Phase 2 WIP Nutrient Trading Supplement (see www.dep.pa.gov/nutrient_trading).

Chesapeake Bay Offsets are included in the draft permit amendment:

The draft permit amendment allows the use of offsets for compliance with the cap loads. Offsets must be approved by DEP in writing before they may be applied for compliance with Cap Loads. Offsets may be approved for the connection of on-lot sewage disposal systems that existed prior to January 1, 2003 to public sewers. Twenty-five pounds (25 lbs) of TN Offsets per year may be approved for each on-lot system retirement. These approved Offsets are cumulative. For example, if 10 on-lot systems are retired in year 1 (250 lbs TN approved Offsets) and 10 on-lot systems are retired in year 2, 500 lbs TN Offsets may be used toward compliance with the TN Cap Load in year 2 and thereafter. Documentation must be submitted and retained.

WQBEL's other than TMDL:

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
CBOD5	25	Average Monthly	WQM 7.0, Version 1b
Total Copper	None	-	Toxics Management Spreadsheet Vsn 1.1/ PENTOXSD
Total Lead	None	-	Toxics Management Spreadsheet Vsn 1.1/ PENTOXSD
Total Zinc	None	-	Toxics Management Spreadsheet Vsn 1.1/ PENTOXSD

Default values are commonly used in the models where site-specific data is not available. Stream Hardness and discharge Hardness of 100 mg/l and stream and discharge pH of 7.0 s.u. were defaults values used as model input values.

CBOD5, NH3-N and Dissolved Oxygen (DO)

DEP's WQM 7.0 model was run with the design flow of 0.113 MGD and only this STP's discharge; there are no other sewage dischargers in the vicinity. DEP's guidance 391-2000-007 provides the technical methods contained in WQM 7.0 for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. As with the existing permit, the model recommended a CBOD5 permit limit of 25 mg/l as a Monthly average—meaning the TBEL is adequately protective of the receiving stream. The model and past Discharge Monitoring Reports (DMRs) also indicate that no limits for NH3-N are needed, but the monitoring requirement has been continued from the existing permit. The WQM 7.0 model incorporates the implementation of ammonia criteria as provided in DEP's guidance 391-2000-013. The model used a minimum concentration of 5.0 mg/l for DO, consistent with the existing permit, 25 Pa. Code 93.7(a), and DEP's Standard Operating Procedure for Establishing Effluent Limitations for Individual Sewage Permits.

Toxics and Total Dissolved Solids

For toxics, the DEP's Toxics Management Spreadsheet (TMS) was used, with the design flow of 0.113 MGD and the maximum effluent concentrations from the permit application. No other dischargers were included in the evaluation; no industrial or sewage dischargers are in the vicinity.

The TMS is a macro-enabled Excel binary file that combines the functions of the former PENTOXSD model and the former Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine water-quality based effluent limits (WQBELs). The PENTOXSD model is explained in depth in DEP's technical guidance document: Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, 391-2000-011. The logic used in the TMS is explained in DEP's Standard Operating Procedure (SOP) Establishing WQBELs and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers/

The TMS found no Reasonable Potential to cause an excursion above water quality standards for any toxic parameter, namely Copper, Lead, and Zinc for which the discharge had been sampled. The TMS did not recommend any additional monitoring requirements for any toxic parameter.

Total Phosphorus and Total Nitrogen

Due to the increase in design flow, calculations were re-run to verify that concentration limits for TP and TN did not need to be added to the permit, in addition to the mass load limits already discussed. DEP assumes that TP is the limiting nutrient.

Phosphorus limits are based on the Department's *Implementation Guidance for Section 96.5 Phosphorus Discharges to Free Flowing Streams* dated 10/27/97 (DEP ID No. 391-2000-018). Without considering the limit on the TP load due to the Chesapeake Bay TMDL:

$$10 \text{ mg/L} \times 0.113 \text{ mgd} \times 8.34 \text{ conversion factor} = 9.42 \text{ lbs/day TP}$$

Using the Equation documented in EPA's Chesapeake Bay Management Report:
 $TP @ Y = TP \times 0.99^Y$ (Y = stream miles to PA-MD line)

$$\begin{aligned} TP @ 100 \text{ mi} &= (9.42 \text{ lbs TP/day}) \times 0.99^{(100)} \\ TP @ 100 \text{ mi} &= 3.45 \text{ lbs TP/day} \end{aligned}$$

Assuming the Total TP loading to the Susquehanna River is 3814 lbs TP/day:
 $3.45 \text{ lbs TP/day} / 3814 \text{ lbs TP/day} = 0.09\%$

According to the CB Phase 3 WIP Supplement, the total Wasteload Allocation (WLA) of TP to the Susquehanna River for Non-Significant sewage dischargers in Pennsylvania is 842,104 lbs/yr = 2307 lbs/day:

$$3.45 \text{ lbs/day TP} / 2307 \text{ lbs/day WLA} = 0.15\%$$

Since the potential loading from this source is less than 0.25%, no TP (or TN) concentration limits are necessary.

Monitoring Frequencies and Sample Types

No changes were made for monitoring frequencies and sample types from the existing permit for the interim limits. After the increase in flow, DEP's guidance document 362-0400-001 recommends once per week monitoring (except for DO and pH and UV). The monitoring frequency for the final limits is therefore once per week, except for DO and pH and UV which remain as daily.

Anti-Backsliding

No concentration limits have been made less stringent than the existing permit.

Antidegradation Requirements

All effluent limitations and monitoring requirements have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. The receiving water is not classified as an Exceptional Value (EV) or High Quality (HQ) water.

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 Construction Completed of Treatment Plant Expansion

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum 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
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
UV Intensity (mW/cm ²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Metered
CBOD5	15	24	XXX	25.0	40.0	50	2/month	24-Hr Composite
BOD5	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TSS	18	27	XXX	30.0	45.0	60	2/month	24-Hr Composite
TSS	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Ammonia	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite

Compliance Sampling Location: at discharge from facility

Continued next page...

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 001, Effective Period: Permit Effective Date through Construction Completed of Treatment Plant Expansion

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Nitrate-Nitrite (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Ammonia (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: at discharge from facility

Other Comments:

- See Part C for Chesapeake Bay Requirements.
- This is the minimum number of sampling events required. Permittees are encouraged, and it may be advantageous in demonstrating compliance, to perform more than the minimum number of sampling events required.

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: Construction Completed of Treatment Plant Expansion through Permit Expiration Date

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum 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
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
UV Intensity (mW/cm ²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Metered
CBOD5	24	38	XXX	25.0	40.0	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	28	42	XXX	30.0	45.0	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ammonia	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite

Compliance Sampling Location: at discharge from facility

Continued next page....

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 001, Effective Period: Construction Completed of Treatment Plant Expansion through Permit Expiration Date

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TKN	XXX	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Nitrate-Nitrite (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia (lbs)	XXX	Report	XXX	XXX	XXX	XXX	1/year	Calculation
Total Nitrogen (lbs)	XXX	Report	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report	XXX	XXX	XXX	XXX	1/year	Calculation
Net Total Nitrogen (lbs)	XXX	8045	XXX	XXX	XXX	XXX	1/year	Calculation
Net Total Phosphorus (lbs)	XXX	188	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: at discharge from facility

Other Comments:

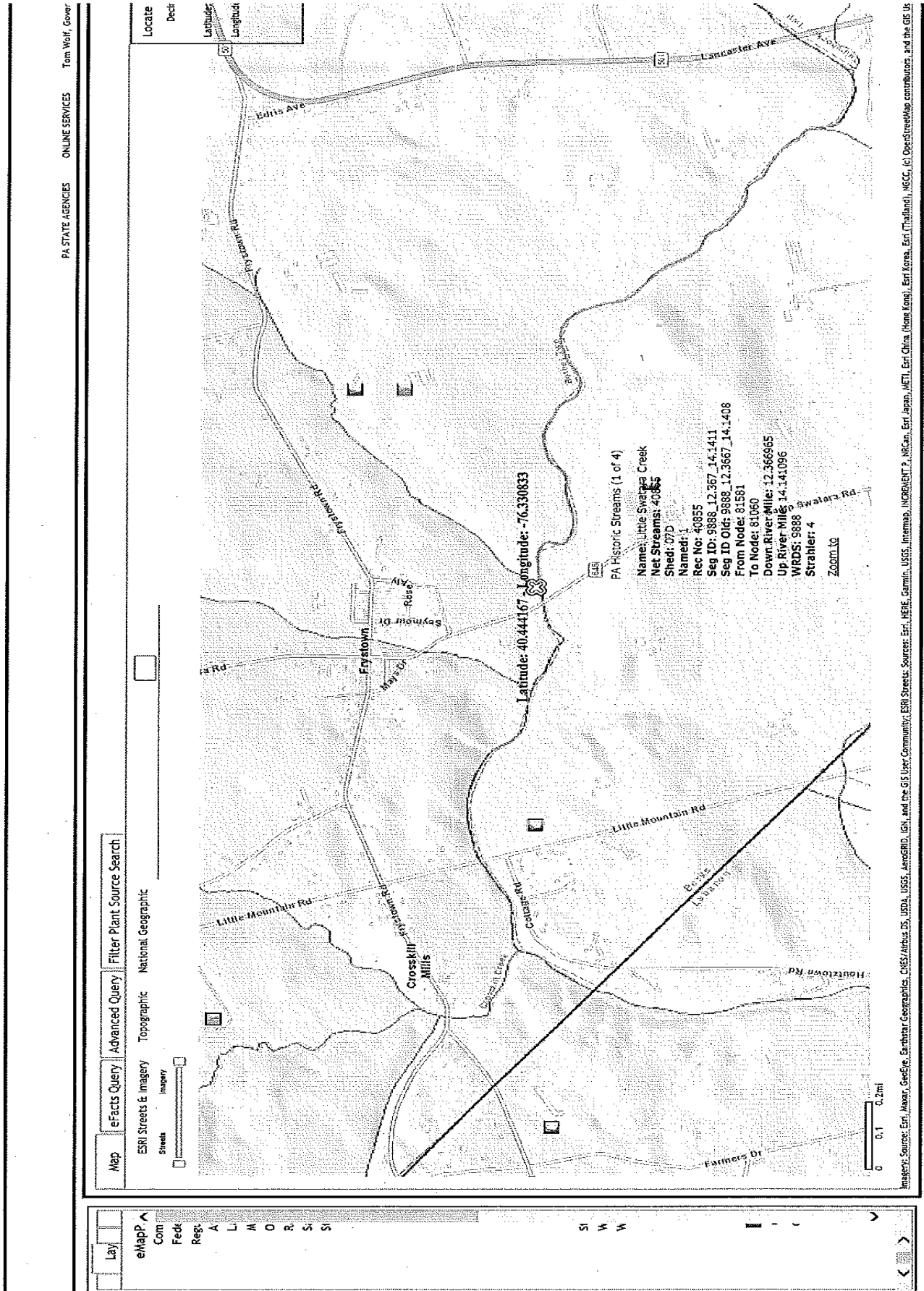
- See Part C for Chesapeake Bay Requirements.
- This is the minimum number of sampling events required. Permittees are encouraged, and it may be advantageous in demonstrating compliance, to perform more than the minimum number of sampling events required.

Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment)
<input checked="" type="checkbox"/>	Toxics Management Spreadsheet (see Attachment)
<input type="checkbox"/>	TRC Model Spreadsheet (see Attachment)
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment)
<input checked="" type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input checked="" type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 385-2000-011, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
<input checked="" type="checkbox"/>	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
<input checked="" type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
<input checked="" type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
<input checked="" type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
<input type="checkbox"/>	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.
<input checked="" type="checkbox"/>	Design Stream Flows, 391-2000-023, 9/98.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
<input checked="" type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	Pennsylvania's Phase 2 and Phase 3 Chesapeake Bay Watershed Implementation Plan (WIP) Wastewater Supplement, last revised December 17, 2019.
<input checked="" type="checkbox"/>	DEP SOP: Establishing Effluent Limitations for Individual Sewage Permits, Vsn 1.8, October 1, 2020
<input checked="" type="checkbox"/>	DEP SOP: Establishing WQBELs and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers, Vsn 1.3, October 1, 2020

StreamStats Output Report					
State/Reg	PA				
Workspac	PA20210128221933431000				
Latitude	40.44393				
Longitude	-76.331				
Time	â€Ž1â€Ž/â€Ž28â€Ž/â€Ž2021â€Ž â€Ž5â€Ž:â€Ž19â€Ž:â€Ž				
Basin Characteristics					
Paramete	Paramete	Value	Unit		
DRNAREA	Area that	37.9	square miles		
PRECIP	Mean Ann	45	inches		
STRDEN	Stream De	1.44	miles per square mile		
ROCKDEP	Depth to r	3.5	feet		
CARBON	Percentag	2.66	percent		
Low-Flow	100 Percent Low Flow Region 2				
Paramete	Paramete	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage /	37.9	square mi	4.93	1280
PRECIP	Mean Ann	45	inches	35	50.4
STRDEN	Stream De	1.44	miles per	0.51	3.1
ROCKDEP	Depth to F	3.5	feet	3.32	5.65
CARBON	Percent C	2.66	percent	0	99
Low-Flow	100 Percent Low Flow Region 2				
Statistic	Value	Unit	SE	SEp	
7 Day 2 Ye	4.98	ft^3/s	38	38	
30 Day 2 Y	7.13	ft^3/s	33	33	
7 Day 10 Y	1.86	ft^3/s	51	51	
30 Day 10	2.81	ft^3/s	46	46	
90 Day 10	4.85	ft^3/s	36	36	
USGS Data	all data	metadata	no warrar	nor on all	nor shall t
USGS Soft	the USGS	expresse	is made b	the software is relea	
USGS Proc	firm	or product	names is	for descriptive purpo	
Application Version: 4.4.0					

Permit No. PA0247910 A-1

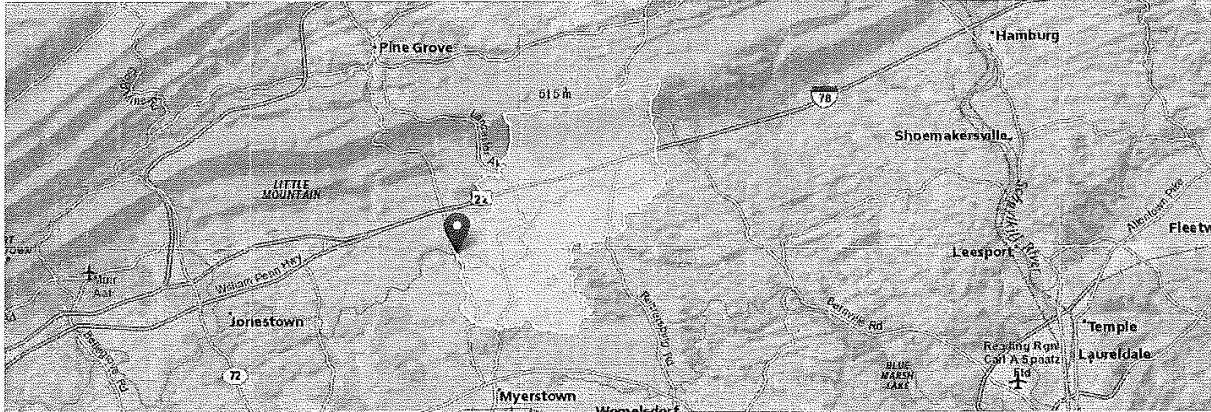
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State/Reg	PA				
Workspac	PA20210128223413366000				
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Longitude	-76.3824				
Time	â€Ž1â€Ž/â€Ž28â€Ž/â€Ž2021â€Ž â€Ž5â€Ž:â€Ž34â€Ž:â€Ž				
Basin Characteristics					
Paramete	Paramete	Value	Unit		
DRNAREA	Area that	64.7	square miles		
PRECIP	Mean Ann	45	inches		
STRDEN	Stream De	1.41	miles per square mile		
ROCKDEP	Depth to r	3.7	feet		
CARBON	Percentag	2.13	percent		
Low-Flow 100 Percent Low Flow Region 2					
Paramete	Paramete	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage /	64.7	square mi	4.93	1280
PRECIP	Mean Ann	45	inches	35	50.4
STRDEN	Stream De	1.41	miles per	0.51	3.1
ROCKDEP	Depth to F	3.7	feet	3.32	5.65
CARBON	Percent C	2.13	percent	0	99
Low-Flow 100 Percent Low Flow Region 2					
Statistic	Value	Unit	SE	SEp	
7 Day 2 Ye	10.1	ft^3/s	38	38	
30 Day 2 Y	14	ft^3/s	33	33	
7 Day 10 Y	4.18	ft^3/s	51	51	
30 Day 10	6.04	ft^3/s	46	46	
90 Day 10	9.88	ft^3/s	36	36	
USGS Data all data metadata no warrar nor on all nor shall t					
USGS Soft the USGS expresse is made b the software is relea					
USGS Proc firm or product names is for descriptive purpc					
Application Version: 4.4.0					



StreamStats Report - Bethel Twp MUA STP

Region ID:
Workspace ID:
Clicked Point (Latitude, Longitude):
Time:

PA
PA20210128221933431000
40.44393, -76.33095
2021-01-28 17:19:51 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	37.9	square miles
PRECIP	Mean Annual Precipitation	45	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.44	miles per square mile
ROCKDEP	Depth to rock	3.5	feet
CARBON	Percentage of area of carbonate rock	2.66	percent

Low-Flow Statistics Parameters (Low Flow Region 2)

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	37.9	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	45	inches	35	50.4
STRDEN	Stream Density	1.44	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	3.5	feet	3.32	5.65
CARBON	Percent Carbonate	2.66	percent	0	99

Low-Flow Statistics Flow Report (Low Flow Region 2)

PII: Prediction Interval-Lower, PIU: 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	4.98	ft ³ /s	38	38
30 Day 2 Year Low Flow	7.13	ft ³ /s	33	33
7 Day 10 Year Low Flow	1.86	ft ³ /s	51	51
30 Day 10 Year Low Flow	2.81	ft ³ /s	46	46
90 Day 10 Year Low Flow	4.85	ft ³ /s	36	36

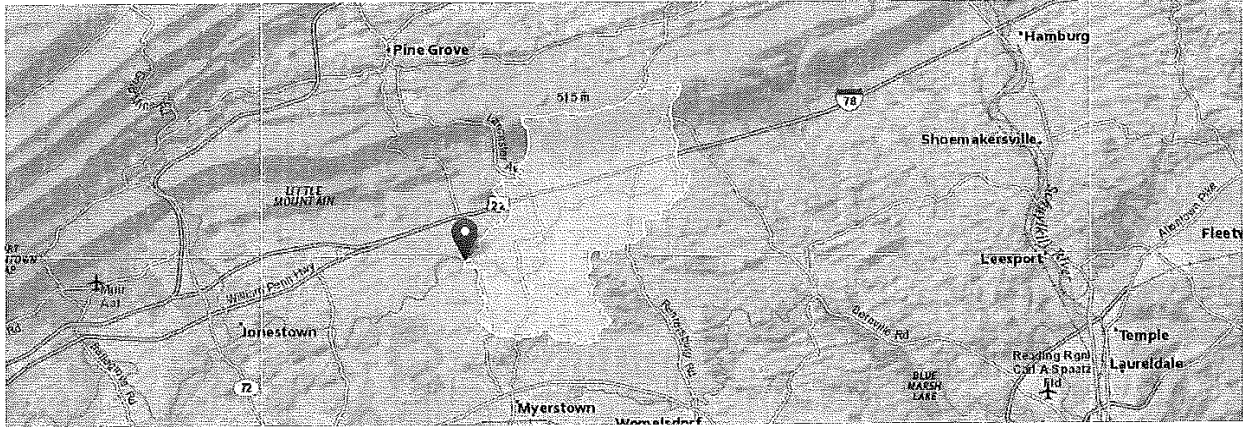
Low-Flow Statistics Citations

Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

StreamStats Report- at confluence with UNT 09932 & Little Swatara Creek

Region ID: PA
Workspace ID: PA2021012822558359000
Clicked Point (Latitude, Longitude): 40.44414, -76.33631
Time: 2021-01-28 17:26:16 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	38	square miles
PRECIP	Mean Annual Precipitation	45	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.44	miles per square mile
ROCKDEP	Depth to rock	3.5	feet
CARBON	Percentage of area of carbonate rock	2.65	percent

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	38	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	45	inches	35	50.4
STRDEN	Stream Density	1.44	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	3.5	feet	3.32	5.65
CARBON	Percent Carbonate	2.65	percent	0	99

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

PI: Prediction Interval-Lower, PIU: 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	4.99	ft ³ /s	38	38
30 Day 2 Year Low Flow	7.15	ft ³ /s	33	33
7 Day 10 Year Low Flow	1.87	ft ³ /s	51	51
30 Day 10 Year Low Flow	2.82	ft ³ /s	46	46
90 Day 10 Year Low Flow	4.86	ft ³ /s	36	36

Low-Flow Statistics Citations

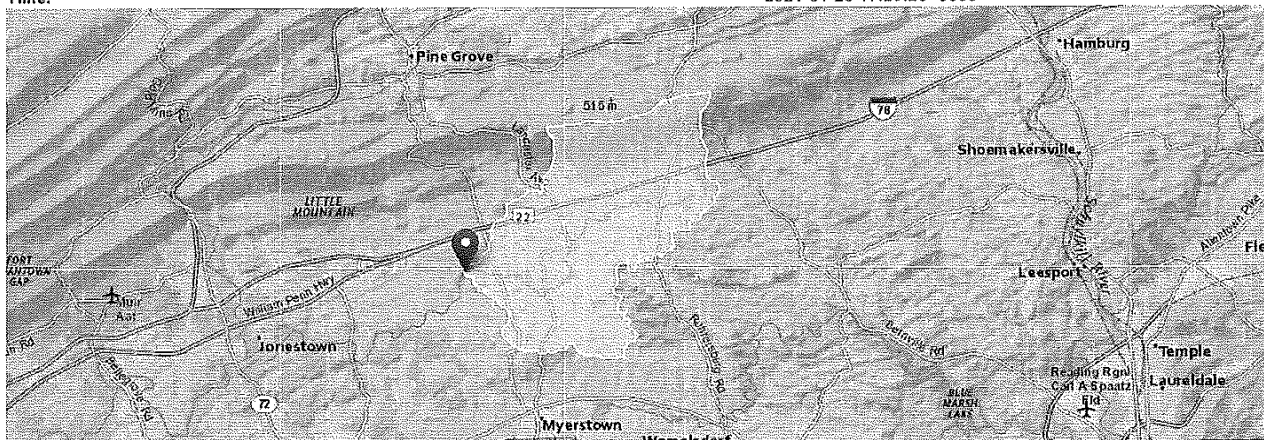
Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

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StreamStats Report - at confl with Crosskill Creek and Little Swatara

Region ID:
Workspace ID:
Clicked Point (Latitude, Longitude):
Time:

PA
PA20210128222908971000
40.44463, -76.35099
2021-01-28 17:29:28 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	40.8	square miles
PRECIP	Mean Annual Precipitation	45	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.43	miles per square mile
ROCKDEP	Depth to rock	3.5	feet
CARBON	Percentage of area of carbonate rock	2.49	percent

Low-Flow Statistics Parameters^[Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	40.8	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	45	inches	35	50.4
STRDEN	Stream Density	1.43	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	3.5	feet	3.32	5.65
CARBON	Percent Carbonate	2.49	percent	0	99

Low-Flow Statistics Flow Reports^[Low Flow Region 2]

PfL: Prediction Interval-Lower, PfU: 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	5.42	ft ³ /s	38	38
30 Day 2 Year Low Flow	7.75	ft ³ /s	33	33
7 Day 10 Year Low Flow	2.04	ft ³ /s	51	51
30 Day 10 Year Low Flow	3.07	ft ³ /s	46	46
90 Day 10 Year Low Flow	5.29	ft ³ /s	36	36

Low-Flow Statistics Citations

Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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
07D	9888	LITTLE SWATARA CREEK	12.400	450.00	37.90	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	pH	Stream Temp (°C)	pH
Q7-10	0.050	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	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
BethelFrystwnST	PA0247910	0.0000	0.1130	0.0000	0.000	25.00	7.00

Parameter Data

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

Permit No. PA0247910 A-1

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
07D	9888	LITTLE SWATARA CREEK	12.000	445.00	38.00	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	pH	Stream Temp (°C)	pH
Q7-10	0.050	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	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
confl UNT09932		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

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

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
07D	9888	LITTLE SWATARA CREEK	11.200	435.00	40.80	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	pH	Stream Temp (°C)	pH
Q7-10	0.050	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	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
conf Crosskill		0.0000	0.0000	0.0000	0.000	25.00	7.00

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

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>								
07D		9888		LITTLE SWATARA CREEK								
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)	
Q7-10 Flow												
12.400	1.90	0.00	1.90	.1748	0.00237	.611	25.38	41.51	0.13	0.183	20.42	7.00
12.000	1.90	0.00	1.90	.1748	0.00237	.612	25.41	41.54	0.13	0.366	20.42	7.00
Q1-10 Flow												
12.400	1.21	0.00	1.21	.1748	0.00237	NA	NA	NA	0.11	0.229	20.63	7.00
12.000	1.22	0.00	1.22	.1748	0.00237	NA	NA	NA	0.11	0.458	20.63	7.00
Q30-10 Flow												
12.400	2.58	0.00	2.58	.1748	0.00237	NA	NA	NA	0.16	0.156	20.32	7.00
12.000	2.58	0.00	2.58	.1748	0.00237	NA	NA	NA	0.16	0.312	20.32	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
07D	9888	LITTLE SWATARA CREEK

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
12.400	BethelFrystwnST	9.24	50	9.24	50	0	0
12.000	confl UNT09932	NA	NA	9.24	NA	NA	NA

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
12.400	BethelFrystwnST	1.87	25	1.87	25	0	0
12.000	confl UNT09932	NA	NA	1.87	NA	NA	NA

Dissolved Oxygen Allocations

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
12.40	BethelFrystwnST	25	25	25	25	5	5	0	0
12.00	confl UNT09932	NA	NA	NA	NA	NA	NA	NA	NA

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
07D	9888	LITTLE SWATARA CREEK		
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
12.400	0.113	20.422	7.000	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
25.379	0.611	41.506	0.133	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
3.94	0.751	2.11	0.723	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
7.969	3.031	Tsivoglou	5	
<u>Reach Travel Time (days)</u>	<u>Subreach Results</u>			
0.183	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.018	3.89	2.08	7.83
	0.037	3.83	2.06	7.69
	0.055	3.78	2.03	7.57
	0.073	3.73	2.00	7.46
	0.092	3.68	1.98	7.35
	0.110	3.62	1.95	7.25
	0.128	3.57	1.92	7.17
	0.147	3.52	1.90	7.08
	0.165	3.47	1.87	7.01
	0.183	3.43	1.85	6.94

<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
12.000	0.113	20.421	7.000	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
25.410	0.612	41.537	0.133	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
3.42	0.596	1.84	0.723	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
6.945	3.033	Tsivoglou	5	
<u>Reach Travel Time (days)</u>	<u>Subreach Results</u>			
0.366	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.037	3.35	1.80	6.86
	0.073	3.27	1.75	6.78
	0.110	3.20	1.70	6.72
	0.147	3.13	1.66	6.68
	0.183	3.06	1.62	6.65
	0.220	3.00	1.57	6.63
	0.256	2.93	1.53	6.61
	0.293	2.87	1.49	6.61
	0.330	2.80	1.45	6.61
	0.366	2.74	1.42	6.62

WQM 7.0 Effluent Limits

<u>SWP Basin</u>		<u>Stream Code</u>	<u>Stream Name</u>				
07D		9888	LITTLE SWATARA CREEK				
RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
12.400	BethelFrystwnST	PA0247910	0.000	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

NPDES Permit Fact Sheet

Bethel Township Frystown STP

NPDES Permit No. PA0247910 A-1

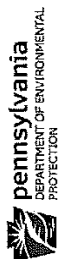
PA0247910 - Bethel MUA

[illegible]

PA0247910 - Bethel MUA

AUTH. ID. MONITORING MONITORING OUTLET MONITORING PARAMETER LOAD UNIT LOAD 1.V. LOAD 1.U. LOAD 1.S. LOAD 2.V. LOAD 2.U. LOAD 2.S. CONC. 1.V. CONC. 1.U. CONC. 1.S. CONC. 2.V. CONC. 2.U. CONC. 2.S. CONC. 3.V. CONC. 3.U. CONC. 3.S. SAMPLE TYPE													
1159971	10/1/2019	10/31/2019	1	Final Effluent	Total Phos lbs/day	0.06	Monitor at Average Monthly	mg/L	0.51	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	11/1/2019	11/30/2019	1	Final Effluent	Total Phos lbs/day	0.05	Monitor at Average Monthly	mg/L	0.38	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	12/1/2019	12/31/2019	1	Final Effluent	Total Phos lbs/day	0.08	Monitor at Average Monthly	mg/L	0.65	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	1/1/2020	1/31/2020	1	Final Effluent	Total Phos lbs/day	0.05	Monitor at Average Monthly	mg/L	0.38	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	2/1/2020	2/29/2020	1	Final Effluent	Total Phos lbs/day	0.05	Monitor at Average Monthly	mg/L	0.24	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	3/1/2020	3/31/2020	1	Final Effluent	Total Phos lbs/day	0.07	Monitor at Average Monthly	mg/L	0.3	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	4/1/2020	4/30/2020	1	Final Effluent	Total Phos lbs/day	0.04	Monitor at Average Monthly	mg/L	0.44	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	5/1/2020	5/31/2020	1	Final Effluent	Total Phos lbs/day	0.1	Monitor at Average Monthly	mg/L	0.41	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	6/1/2020	6/30/2020	1	Final Effluent	Total Phos lbs/day	0.1	Monitor at Average Monthly	mg/L	0.46	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	7/1/2020	7/31/2020	1	Final Effluent	Total Phos lbs/day	0.07	Monitor at Average Monthly	mg/L	0.33	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	8/1/2020	8/31/2020	1	Final Effluent	Total Phos lbs/day	0.1	Monitor at Average Monthly	mg/L	0.42	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	9/1/2020	9/30/2020	1	Final Effluent	Total Phos lbs/day	0.07	Monitor at Average Monthly	mg/L	0.34	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	10/1/2020	10/31/2020	1	Final Effluent	Total Phos lbs/day	0.08	Monitor at Average Monthly	mg/L	0.37	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	11/1/2020	11/30/2020	1	Final Effluent	Total Phos lbs/day	0.02	Monitor at Average Monthly	mg/L	0.22	Monitor at Average Monthly	2/month	24-Hr Composite	
1159971	12/1/2020	12/31/2020	1	Final Effluent	Total Phos lbs/day	0.02	Monitor at Average Monthly	mg/L	0.53	Avg	2/month	24-Hr Composite	
70 Monitor at Total Annual													
1159971	10/1/2019	9/30/2019	1	Final Effluent	Total Phos lbs	8	Monitor at Total Monthly				1/year	Calculation	
1159971	11/1/2019	10/31/2019	1	Final Effluent	Total Phos lbs	9	Monitor at Total Monthly				1/month	Calculation	
1159971	12/1/2019	11/30/2019	1	Final Effluent	Total Phos lbs	2	Monitor at Total Monthly				1/month	Calculation	
1159971	1/1/2020	12/31/2019	1	Final Effluent	Total Phos lbs	2	Monitor at Total Monthly				1/year	Calculation	
1159971	2/1/2020	1/31/2020	1	Final Effluent	Total Phos lbs	3	Monitor at Total Monthly				1/month	Calculation	
1159971	3/1/2020	2/29/2020	1	Final Effluent	Total Phos lbs	1	Monitor at Total Monthly				1/month	Calculation	
1159971	4/1/2020	3/31/2020	1	Final Effluent	Total Phos lbs	2	Monitor at Total Monthly				1/month	Calculation	
1159971	5/1/2020	4/30/2020	1	Final Effluent	Total Phos lbs	2	Monitor at Total Monthly				1/month	Calculation	
1159971	6/1/2020	5/31/2020	1	Final Effluent	Total Phos lbs	1	Monitor at Total Monthly				1/month	Calculation	
1159971	7/1/2020	6/30/2020	1	Final Effluent	Total Phos lbs	4	Monitor at Total Monthly				1/month	Calculation	
1159971	8/1/2020	7/31/2020	1	Final Effluent	Total Phos lbs	2	Monitor at Total Monthly				1/month	Calculation	
1159971	9/1/2020	8/31/2020	1	Final Effluent	Total Phos lbs	3	Monitor at Total Monthly				1/month	Calculation	
1159971	10/1/2020	9/30/2020	1	Final Effluent	Total Phos lbs	2	Monitor at Total Monthly				1/month	Calculation	
1159971	11/1/2020	10/31/2020	1	Final Effluent	Total Phos lbs	2	Monitor at Total Monthly				1/month	Calculation	
1159971	12/1/2020	11/30/2020	1	Final Effluent	Total Phos lbs	0.7	Monitor at Total Monthly				1/month	Calculation	
1159971	1/1/2020	12/31/2020	1	Final Effluent	Total Susp. lbs/day	2	27	Weekly Av. mg/L	19	30	Average M	45	Weekly Av 2/month
1159971	2/1/2020	1/31/2020	1	Final Effluent	Total Susp. lbs/day	4	18	Average M	13.9	30	Average M	45	Weekly Av 2/month
1159971	3/1/2020	2/29/2020	1	Final Effluent	Total Susp. lbs/day	<1	18	Average M	<5.8	30	Average M	45	Weekly Av 2/month
1159971	4/1/2020	3/31/2020	1	Final Effluent	Total Susp. lbs/day	<0.9	18	Average M	<6	30	Average M	45	Weekly Av 2/month
1159971	5/1/2020	4/30/2020	1	Final Effluent	Total Susp. lbs/day	<0.8	18	Average M	<4	30	Average M	45	Weekly Av 2/month
1159971	6/1/2020	5/31/2020	1	Final Effluent	Total Susp. lbs/day	<1	18	Average M	<7	30	Average M	45	Weekly Av 2/month
1159971	7/1/2020	6/30/2020	1	Final Effluent	Total Susp. lbs/day	<1	18	Average M	<5.4	30	Average M	45	Weekly Av 2/month
1159971	8/1/2020	7/31/2020	1	Final Effluent	Total Susp. lbs/day	<0.8	18	Average M	<4	30	Average M	45	Weekly Av 2/month
1159971	9/1/2020	8/31/2020	1	Final Effluent	Total Susp. lbs/day	<0.7	18	Average M	<4	30	Average M	45	Weekly Av 2/month
1159971	10/1/2020	9/30/2020	1	Final Effluent	Total Susp. lbs/day	1	18	Average M	7	30	Average M	45	Weekly Av 2/month
1159971	11/1/2020	10/31/2020	1	Final Effluent	Total Susp. lbs/day	0.8	18	Average M	5.2	30	Average M	45	Weekly Av 2/month
1159971	12/1/2020	11/30/2020	1	Final Effluent	Total Susp. lbs/day	3	18	Average M	14	30	Average M	45	Weekly Av 2/month
1159971	1/1/2021	12/31/2020	1	Final Effluent	Total Susp. lbs/day	1	18	Average M	13.8	30	Average M	45	Weekly Av 2/month
1159971	2/1/2021	1/31/2021	1	Final Effluent	Total Susp. lbs/day	2	18	Average M	8.4	30	Average M	45	Weekly Av 2/month
1159971	3/1/2021	2/28/2021	1	Final Effluent	Total Susp. lbs/day	1	18	Average M	7.8	30	Average M	45	Weekly Av 2/month
1159971	4/1/2021	3/31/2021	1	Final Effluent	Total Susp. lbs/day	0.6	18	Average M	8.6	30	Average M	45	Weekly Av 2/month
1159971	5/1/2021	4/30/2021	1	Final Effluent	Total Susp. lbs/day	<0.7	18	Average M	<8.4	30	Average M	45	Weekly Av 2/month
1159971	6/1/2021	5/31/2021	1	Final Effluent	Total Susp. lbs/day	<1	18	Average M	<6.2	30	Average M	45	Weekly Av 2/month
1159971	7/1/2021	6/30/2021	1	Final Effluent	Total Susp. lbs/day	<0.7	18	Average M	<4.8	30	Average M	45	Weekly Av 2/month
1159971	8/1/2021	7/31/2021	1	Final Effluent	Total Susp. lbs/day	2	18	Average M	9.4	30	Average M	45	Weekly Av 2/month
1159971	9/1/2021	8/31/2021	1	Final Effluent	Total Susp. lbs/day	1	18	Average M	6.8	30	Average M	45	Weekly Av 2/month
1159971	10/1/2021	9/30/2021	1	Final Effluent	Total Susp. lbs/day	2	18	Average M	9	30	Average M	45	Weekly Av 2/month
1159971	11/1/2021	10/31/2021	1	Final Effluent	Total Susp. lbs/day	1	18	Average M	11	30	Average M	45	Weekly Av 2/month
1159971	12/1/2021	11/30/2021	1	Final Effluent	Total Susp. lbs/day	1	18	Average M	4.8	30	Average M	45	Weekly Av 2/month
1159971	1/1/2022	12/31/2021	1	Final Effluent	Total Susp. lbs/day	0.8	18	Average M	4.4	30	Average M	45	Weekly Av 2/month
1159971	2/1/2022	1/31/2022	1	Final Effluent	Total Susp. lbs/day	<0.6	18	Average M	<4.4	30	Average M	45	Weekly Av 2/month
1159971	3/1/2022	2/29/2022	1	Final Effluent	Total Susp. lbs/day	<0.9	18	Average M	<4.6	30	Average M	45	Weekly Av 2/month
1159971	4/1/2022	3/31/2022	1	Final Effluent	Total Susp. lbs/day	1	18	Average M	4.4	30	Average M	45	Weekly Av 2/month
1159971	5/1/2022	4/30/2022	1	Final Effluent	Total Susp. lbs/day	0.9	18	Average M	<5.0	30	Average M	45	Weekly Av 2/month
1159971	6/1/2022	5/31/2022	1	Final Effluent	Total Susp. lbs/day	<1.0	18	Average M	<4.2	30	Average M	45	Weekly Av 2/month
1159971	7/1/2022	6/30/2022	1	Final Effluent	Total Susp. lbs/day	2	18	Average M	7.2	30	Average M	45	Weekly Av 2/month
1159971	8/1/2022	7/31/2022	1	Final Effluent	Total Susp. lbs/day	1	18	Average M	5	30	Average M	45	Weekly Av 2/month

CHESAPEAKE BAY SUPPLEMENTAL REPORT
ANNUAL NUTRIENT MONITORING



Facility Name: Bethel Township Frystown STP
 Municipality: Bethel Township
 County: Berks
 Watershed: 7-D
 TN Cap Load (lbs): _____
 TN Delivery Ratio: _____

☒ Sewage ☐ Industrial Waste

Compliance Year: 2019
 NPDES Permit No.: PA0247910
 This permit will expire on: July 31, 2024
 TP Cap Load (lbs): _____
 TP Delivery Ratio: _____

Outfall: _____

001

[illegible]

I certify, under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Prepared By: Selena K Kreiser
 Title: Vice President

License No.: S16380
 Date: 10/25/2019

Monthly Statistics

CHESAPEAKE BAY SUPPLEMENTAL REPORT
ANNUAL NUTRIENT MONITORING

pennsylvania
DEPARTMENT OF ENVIRONMENTAL
PROTECTION

Bethel Township Frystown STP
 Bethel Township
 7-D
 Watershed: _____
 County: Berks
 Facility Name: _____
 Municipality: _____
 TN Cap Load (lbs): _____
 TN Delivery Ratio: _____
☒ Sewage ☐ Industrial Waste
 Compliance Year: _____
 NPDES Permit No.: PA0247910
 This permit will expire on: July 31, 2024
 TP Cap Load (lbs): _____
 TP Delivery Ratio: _____
 Outfall: _____
 001

[illegible]

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. §4904 (relating to unsworn falsification).

Prepared By: Selena K Kreiser License No.: S16380
 Title: Vice President Date: 10/25/2020

AUTH_ID	MONITORIN	MONITORIN	DMR	VERS	OUTFALL	PARAMETE	LOAD_2	V_LOAD_2	LOAD_2	S1	CONC.	UNITS	CONC_2	V_LOAD_2	LOAD_2	S2	CONC.	UNITS	CONC_3	V_LOAD_3	LOAD_3	S3	CONC.	UNITS	CONC_4	V_LOAD_4	LOAD_4	S4	CONC.	UNITS	CONC_5	V_LOAD_5	LOAD_5	S5	CONC.	UNITS	CONC_6	V_LOAD_6	LOAD_6	S6	CONC.	UNITS	CONC_7	V_LOAD_7	LOAD_7	S7	CONC.	UNITS	CONC_8	V_LOAD_8	LOAD_8	S8	CONC.	UNITS	CONC_9	V_LOAD_9	LOAD_9	S9	CONC.	UNITS	CONC_10	V_LOAD_10	LOAD_10	S10	CONC.	UNITS	CONC_11	V_LOAD_11	LOAD_11	S11	CONC.	UNITS	CONC_12	V_LOAD_12	LOAD_12	S12	CONC.	UNITS	CONC_13	V_LOAD_13	LOAD_13	S13	CONC.	UNITS	CONC_14	V_LOAD_14	LOAD_14	S14	CONC.	UNITS	CONC_15	V_LOAD_15	LOAD_15	S15	CONC.	UNITS	CONC_16	V_LOAD_16	LOAD_16	S16	CONC.	UNITS	CONC_17	V_LOAD_17	LOAD_17	S17	CONC.	UNITS	CONC_18	V_LOAD_18	LOAD_18	S18	CONC.	UNITS	CONC_19	V_LOAD_19	LOAD_19	S19	CONC.	UNITS	CONC_20	V_LOAD_20	LOAD_20	S20	CONC.	UNITS	CONC_21	V_LOAD_21	LOAD_21	S21	CONC.	UNITS	CONC_22	V_LOAD_22	LOAD_22	S22	CONC.	UNITS	CONC_23	V_LOAD_23	LOAD_23	S23	CONC.	UNITS	CONC_24	V_LOAD_24	LOAD_24	S24	CONC.	UNITS	CONC_25	V_LOAD_25	LOAD_25	S25	CONC.	UNITS	CONC_26	V_LOAD_26	LOAD_26	S26	CONC.	UNITS	CONC_27	V_LOAD_27	LOAD_27	S27	CONC.	UNITS	CONC_28	V_LOAD_28	LOAD_28	S28	CONC.	UNITS	CONC_29	V_LOAD_29	LOAD_29	S29	CONC.	UNITS	CONC_30	V_LOAD_30	LOAD_30	S30	CONC.	UNITS	CONC_31	V_LOAD_31	LOAD_31	S31	CONC.	UNITS	CONC_32	V_LOAD_32	LOAD_32	S32	CONC.	UNITS	CONC_33	V_LOAD_33	LOAD_33	S33	CONC.	UNITS	CONC_34	V_LOAD_34	LOAD_34	S34	CONC.	UNITS	CONC_35	V_LOAD_35	LOAD_35	S35	CONC.	UNITS	CONC_36	V_LOAD_36	LOAD_36	S36	CONC.	UNITS	CONC_37	V_LOAD_37	LOAD_37	S37	CONC.	UNITS	CONC_38	V_LOAD_38	LOAD_38	S38	CONC.	UNITS	CONC_39	V_LOAD_39	LOAD_39	S39	CONC.	UNITS	CONC_40	V_LOAD_40	LOAD_40	S40	CONC.	UNITS	CONC_41	V_LOAD_41	LOAD_41	S41	CONC.	UNITS	CONC_42	V_LOAD_42	LOAD_42	S42	CONC.	UNITS	CONC_43	V_LOAD_43	LOAD_43	S43	CONC.	UNITS	CONC_44	V_LOAD_44	LOAD_44	S44	CONC.	UNITS	CONC_45	V_LOAD_45	LOAD_45	S45	CONC.	UNITS	CONC_46	V_LOAD_46	LOAD_46	S46	CONC.	UNITS	CONC_47	V_LOAD_47	LOAD_47	S47	CONC.	UNITS	CONC_48	V_LOAD_48	LOAD_48	S48	CONC.	UNITS	CONC_49	V_LOAD_49	LOAD_49	S49	CONC.	UNITS	CONC_50	V_LOAD_50	LOAD_50	S50	CONC.	UNITS	CONC_51	V_LOAD_51	LOAD_51	S51	CONC.	UNITS	CONC_52	V_LOAD_52	LOAD_52	S52	CONC.	UNITS	CONC_53	V_LOAD_53	LOAD_53	S53	CONC.	UNITS	CONC_54	V_LOAD_54	LOAD_54	S54	CONC.	UNITS	CONC_55	V_LOAD_55	LOAD_55	S55	CONC.	UNITS	CONC_56	V_LOAD_56	LOAD_56	S56	CONC.	UNITS	CONC_57	V_LOAD_57	LOAD_57	S57	CONC.	UNITS	CONC_58	V_LOAD_58	LOAD_58	S58	CONC.	UNITS	CONC_59	V_LOAD_59	LOAD_59	S59	CONC.	UNITS	CONC_60	V_LOAD_60	LOAD_60	S60	CONC.	UNITS	CONC_61	V_LOAD_61	LOAD_61	S61	CONC.	UNITS	CONC_62	V_LOAD_62	LOAD_62	S62	CONC.	UNITS	CONC_63	V_LOAD_63	LOAD_63	S63	CONC.	UNITS	CONC_64	V_LOAD_64	LOAD_64	S64	CONC.	UNITS	CONC_65	V_LOAD_65	LOAD_65	S65	CONC.	UNITS	CONC_66	V_LOAD_66	LOAD_66	S66	CONC.	UNITS	CONC_67	V_LOAD_67	LOAD_67	S67	CONC.	UNITS	CONC_68	V_LOAD_68	LOAD_68	S68	CONC.	UNITS	CONC_69	V_LOAD_69	LOAD_69	S69	CONC.	UNITS	CONC_70	V_LOAD_70	LOAD_70	S70	CONC.	UNITS	CONC_71	V_LOAD_71	LOAD_71	S71	CONC.	UNITS	CONC_72	V_LOAD_72	LOAD_72	S72	CONC.	UNITS	CONC_73	V_LOAD_73	LOAD_73	S73	CONC.	UNITS	CONC_74	V_LOAD_74	LOAD_74	S74	CONC.	UNITS	CONC_75	V_LOAD_75	LOAD_75	S75	CONC.	UNITS	CONC_76	V_LOAD_76	LOAD_76	S76	CONC.	UNITS	CONC_77	V_LOAD_77	LOAD_77	S77	CONC.	UNITS	CONC_78	V_LOAD_78	LOAD_78	S78	CONC.	UNITS	CONC_79	V_LOAD_79	LOAD_79	S79	CONC.	UNITS	CONC_80	V_LOAD_80	LOAD_80	S80	CONC.	UNITS	CONC_81	V_LOAD_81	LOAD_81	S81	CONC.	UNITS	CONC_82	V_LOAD_82	LOAD_82	S82	CONC.	UNITS	CONC_83	V_LOAD_83	LOAD_83	S83	CONC.	UNITS	CON
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Model Results

Bethel MUA Frystown STP, NPDES Permit No. PA0247910, Outfall 001

☒ All
 ☐ Inputs
 ☐ Results
 ☐ Limits

☐ Hydrodynamics

☒ Wasteload Allocations

☒ AFC
 CCT (min):
 PMF:
 Analysis Hardness (mg/l):
 Analysis pH:

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	13.439	14.0	118	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	689	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	1,012	Chem Translator of 0.978 applied

☒ CFC
 CCT (min):
 PMF:
 Analysis Hardness (mg/l):
 Analysis pH:

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	8.956	9.33	110	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	37.7	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	1,419	Chem Translator of 0.986 applied

☒ THH
 CCT (min):
 PMF:
 Analysis Hardness (mg/l):
 Analysis pH:

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	

Total Copper	0	0	0	0	N/A	N/A	N/A	N/A	N/A
Total Lead	0	0	0	0	N/A	N/A	N/A	N/A	N/A
Total Zinc	0	0	0	0	N/A	N/A	N/A	N/A	N/A

☒ **CRL** CCT (min): 10.896 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0	0	0	N/A	N/A	N/A	
Chloride (PWS)	0	0	0	0	N/A	N/A	N/A	
Sulfate (PWS)	0	0	0	0	N/A	N/A	N/A	
Total Copper	0	0	0	0	N/A	N/A	N/A	
Total Lead	0	0	0	0	N/A	N/A	N/A	
Total Zinc	0	0	0	0	N/A	N/A	N/A	

☒ **Recommended WQBELs & Monitoring Requirements**

No. Samples/Month: 4

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

☒ **Other Pollutants without Limits or Monitoring**

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., ≤ Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Copper	75.8	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	N/A	N/A	Discharge Conc < TQL
Total Zinc	648	µg/L	Discharge Conc ≤ 10% WQBEL



Toxics Management Spreadsheet
Version 1.1, October 2020

Discharge Information

Instructions Discharge Stream

Facility: Bethel MUA Frystown STP NPDES Permit No.: PA0247910 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: sewage>0.1 MGD

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q ₇₋₁₀	Q _h
0.113	100	7						

Discharge Pollutant	Units	Max Discharge Conc	0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
			Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L	722								
	Chloride (PWS)	mg/L	229								
	Bromide	mg/L	< 1								
	Sulfate (PWS)	mg/L	27.1								
	Fluoride (PWS)	mg/L									
Group 2	Total Aluminum	µg/L									
	Total Antimony	µg/L									
	Total Arsenic	µg/L									
	Total Barium	µg/L									
	Total Beryllium	µg/L									
	Total Boron	µg/L									
	Total Cadmium	µg/L									
	Total Chromium (III)	µg/L									
	Hexavalent Chromium	µg/L									
	Total Cobalt	µg/L									
	Total Copper	µg/L	6								
	Free Cyanide	µg/L									
	Total Cyanide	µg/L									
	Dissolved Iron	µg/L									
	Total Iron	µg/L									
	Total Lead	µg/L	< 1								
	Total Manganese	µg/L									
	Total Mercury	µg/L									
	Total Nickel	µg/L									
	Total Phenols (Phenolics) (PWS)	µg/L									
	Total Selenium	µg/L									
	Total Silver	µg/L									
	Total Thallium	µg/L									
	Total Zinc	µg/L	11								
	Total Molybdenum	µg/L									
	Acrolein	µg/L	<								
	Acrylamide	µg/L	<								
	Acrylonitrile	µg/L	<								
	Benzene	µg/L	<								

