pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0024074**
Facility Type	**Municipal**	APS ID	**41980**
Major / Minor	**Minor**	Authorization ID	**1398173**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Shoemakersville Borough Municipal Authority - Berks County**	Facility Name	**Shoemakersville Borough STP**
Applicant Address	846 Main Street	Facility Address	Second Street
	Shoemakersville, PA 19555-1410		Shoemakersville, PA 19555
Applicant Contact	Paul Gruber, Borough Manager	Facility Contact	Paul Gruber
Applicant Phone	(610) 562-8030 / pgruber@shoeyboro.org	Facility Phone	(610) 562-8030, cell: 610-607-4866
Client ID	134377	Site ID	451526
Ch 94 Load Status	Not Overloaded (2023 Ch 94 report)	Municipality	Shoemakersville Borough (Verified on eMapPA)
Connection Status		County	Berks
Date Application Received	May 31, 2022	EPA Waived?	No
Date Application Accepted	June 13, 2022	If No, Reason	SIU, PCB TMDL
Purpose of Application	NPDES Renewal.		

Summary of Review

The existing NPDES permit was issued December 15, 2017, with an expiration date of December 31, 2022. The permit renewal application was received May 31, 2022, via DEP's OnBase electronic upload system (Reference ID # 59016). The existing permit was administratively extended past its expiration date. On June 27, 2024, the DEP permit writer verified with Paul Gruber of Shoemakersville Borough that there had not been changes to the facility and that the application was still accurate. Mr. Gruber agreed to accept the draft permit and final permit via email sent to the email address shown above. In response to the DEP permit writer's questions about discrepancies with the reported PCB data, the permittee provided supplemental data to the renewal application in a July 9, 2024 email.

Design flow:

The existing permit's limits were based on a design flow of 0.75 MGD. Past Discharge Monitoring Reports (DMRs) were reviewed: the average flow has been consistently below 0.75 MGD. There is no need to change the effluent flow on which the permit limits are developed.

Summarized DMR data (attached) from January 1, 2021 through May 31, 2024 indicate an average flow at outfall 001 of 0.40 MGD and a maximum monthly average of 0.64 MGD. The 2023 Chapter 94 Municipal Wasteload Report (see attached excerpts) also indicates that the facility is operating below their design flow. The same report did not indicate existing or projected hydraulic overload or organic overload and did not report the occurrence of Sanitary Sewer Overflows (SSOs) or bypassing.

Industrial Users:

Per 2023 and 2022 Chapter 94 Reports, Wolfe Dye and Bleach Works pretreats its effluent prior to discharging up to 200,000 gpd into the Borough's sewer system. The pretreatment reduces color and TSS. Flow is metered. They were the

Approve	Deny	Signatures	Date
x		*Bonnie Boylan* Bonnie Boylan / Environmental Engineering Specialist	July 18, 2024
x		*Maria D. Bebenek* for Daniel W. Martin, P.E. / Environmental Engineer Manager	July 18, 2024
x		*Maria D. Bebenek* Maria D. Bebenek, P.E. / Environmental Program Manager	July 18, 2024

only industrial user identified. Local limits have been established.

The 2022 NPDES renewal application a) identifies Wolfe Dye and Bleach Works as a "Significant Industrial User" who contributes an average of 20,000 gpd [sic] to the STP and b) indicated that the STP does not have an EPA-approved pretreatment program.

Publicly Owned Treatment Works (POTWs) with design flows equal to or greater than 5 MGD are required to have EPA-approved pretreatment programs and other POTWs as the need is determined.

Hauled-in Wastes:

None per 2023 application and none expected over the next five years.

Combined Sewer Overflows:

Not applicable

Sludge use and/or disposal:

Hauled off-site, to a landfill. (per application)

Unresolved Violations:

There are no outstanding violations for this client according to DEP's Power BI Report: Compliance History Summary (by client), as of the preparation of this Fact Sheet.

Delaware River Basin Commission (DRBC):

The facility discharges to a waterway within the Delaware River watershed and is thus subject to DRBC requirements. A copy of the draft permit and Fact Sheet will therefore be sent to the DRBC for their review in accordance with State regulations and an interagency agreement. Any comments from DRBC will be considered.

DRBC's Interactive Map shows two dockets for Shoemakersville:

1) D-1990-007 CP-4, approved September 16, 2015 with an expiration date of September 16, 2025, for groundwater withdrawal of 7.5 MG per month.
2) D-1993-074 CP-6, approved September 9, 2021, with an expiration date of December 31, 2027 which approves a 0.75 MGD discharge from the Sewage Treatment Plant (STP) into the Schuylkill River. Area served: Shoemakersville Borough and portions of Perry Twp. All existing facilities are built 1 foot above the 100-year floodplain elevation. The docket does not include any limits or monitoring requirements not in NPDES permit. TDS Determination was previously approved and continued in the most recent docket: 3300 mg/l as a monthly average and 4000 mg/l as a daily maximum.

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)	0.75
Latitude	40° 29' 35.6" (40.493222)	Longitude	-75° 58' 16.4" (-75.971222)
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	00833
NHD Com ID	133228678	River Mile Index (RMI)	92.5 per last permit
Drainage Area	388 sq.mi. (PA Stream Stats)	Yield (cfs/mi^2)	0.23
Q_{7-10} Flow (cfs)	88.1 (PA Stream Stats)	Q_{7-10} Basis	Pa Stream Stats https://streamstats.usgs.gov/ss/
Elevation (ft)	300, approx	Slope (ft/ft)	
Watershed No.	3-B	Chapter 93 Class.	WWF, MF
Existing Use	none	Existing Use Qualifier	none
Exceptions to Use	none	Exceptions to Criteria	none
Assessment Status	Impaired for fish consumption		
Cause(s) of Impairment	Polychlorinated-biphenyls (PCBs)		
Source(s) of Impairment	unknown		
TMDL Status	Final	Name	Schuylkill River PCB TMDL (Final: 4/7/2007)
Background/Ambient Data		Data Source	
pH (SU)			
Temperature (°F)			
Hardness (mg/L)			
Other:			
Nearest Downstream Public Water Supply Intake	Pottstown Water Authority		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	
PWS RMI	Approx. 57	Distance from Outfall (mi)	Approx. 36

**Q7-10 flow data stopped being calculated in 2008 for the upstream gage 01470500, 16 years ago. Estimating the Q7-10 of River at outfall 001 by gage correlation method was thus not used.

Changes Since Last Permit Issuance:

-last permit's Fact Sheet estimated the Q7-10 higher based on gage correlation (upstream gage 01470500) but estimate used similar Low Flow Yield (LFY): 0.232 cfs/sq.mi.
-last permit's modeling did not incorporate adjustment for incomplete mixing in wide receiving water

Downstream dischargers, nearby, per eMapPA (other than stormwater only or Small Flow Treatment Facilities, SFTF's):
Materion Brush, PA0011169, RMI 92.3
Leesport Borough STP, PA0070149, RMI 89.0
Cambridge Lee, PA0034304, RMI 86.5

Closest upstream dischargers,, shown on eMapPA (other than stormwater only or SFTF's):
Hamburg STP, PA0021601, RMI 99.9

Treatment Facility Summary				
Treatment Facility Name: Shoemakersville STP				
WQM Permit No.	**Issuance Date**			
0608402 A-1	1/20/2021			
0608402	7/29/2009			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Chlorine With Dechlorination	0.75
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.75	1251	Not Overloaded	Aerobic Digestion	Combination of methods

Changes Since Last Permit Issuance:

The January 2021 WQM amendment approved an upgrade to the headworks including a new mechanically-cleaned screen, bar screen, and sludge de-watering screw press.

From 2023 Chapter 94 Report:

2.0 WASTEWATER TREATMENT PLANT DESCRIPTION

The upgraded treatment facilities utilize a modified activated sludge process known as a Vertical Loop Reactor. In 2009, the treatment facility was re-rated by PaDEP to the permitted capacity to treat 750,000 gallons per day of wastewater and an organic loading capacity of 1,251 pounds per day of BOD5. The capacity of the wastewater treatment plant is shared between Shoemakersville, Perry Township, and Wolfe Dye and Bleach Company.

The existing treatment plant includes the Vertical Loop Reactor, final clarifiers, and chlorination for disinfection and dechlorination. Aerobic digesters and a volute dewatering press handle sludge processing.

EXISTING NPDES PERMIT , OUTFALL 001:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	156	250 Wkly Avg	XXX	25.0	40.0	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids	187	281 Wkly Avg	XXX	30.0	45.0	60	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Ammonia-Nitrogen	125	XXX	XXX	20.0	XXX	40	1/week	8-Hr Composite
Copper, Total	Report	Report	XXX	Report	Report Daily Max	XXX	1/month	8-Hr Composite
Total Dissolved Solids	20641	XXX	XXX	3300.0	4000.0 Daily Max	XXX	1/week	8-Hr Composite
Color (Pt-Co Units)	XXX	XXX	XXX	200	XXX	XXX	1/month	Grab
Total Nitrogen	XXX	Report	XXX	XXX	Report Daily Max	XXX	1/quarter	Calculation
Total Phosphorus	XXX	Report	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite
Total PCBs (ng/L)	XXX	Report	XXX	XXX	Report Daily Max	XXX	2/year*	24-Hr Composite

*See Part C.III.B of this permit.

Compliance History

DMR Data for Outfall 001 (from May 1, 2023 to April 30, 2024)

Parameter	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23
Flow (MGD) Average Monthly	0.555	0.584	0.42	0.642	0.561	0.287	0.347	0.401	0.329	0.41	0.335	0.385
Flow (MGD) Daily Maximum	2.399	1.508	0.912	1.786	2.064	0.832	1.115	0.912	0.699	1.785	0.869	1.365
pH (S.U.) Minimum	6.42	6.44	6.54	6.54	6.3	6.69	6.89	0.01	6.89	7.09	6.74	6.4
pH (S.U.) Instantaneous Maximum	7.42	7.46	7.37	7.39	7.39	7.61	7.78	7.87	7.78	7.66	7.66	7.79
DO (mg/L) Minimum	5.83	6.72	5.28	5.83	5.44	6.51	5.24	0.01	4.63	5.17	5.15	5.25
TRC (mg/L) Average Monthly	0.1	0.04	0.04	0.03	0.03	0.03	0.1	0.1	0.1	0.1	0.1	0.05
TRC (mg/L) Instantaneous Maximum	0.16	0.1	0.15	0.11	0.1	0.14	1.19	0.73	0.46	0.24	0.25	0.14
Color (Pt-Co Units) Average Monthly	6	10	23	9	7	46	7	10	55	17	14	30
CBOD5 (lbs/day) Average Monthly	< 8.4	< 19.2	< 8.4	9.2	10	7.1	5.3	10.7	44.6	16.4	15.5	8.6
CBOD5 (lbs/day) Weekly Average	< 11	44.4	9.6	11.9	17.6	10.0	6.6	14.2	88.9	38.1	30.4	13.7
CBOD5 (mg/L) Average Monthly	< 2.1	< 3.9	< 2.4	< 2.1	2.1	3.8	2.1	2.9	17.1	4.2	3.4	2.5
CBOD5 (mg/L) Weekly Average	2.4	7.6	2.8	2.7	2.2	7.2	2.2	4.0	32.7	9.1	4.2	3.2
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	264	281	405	334	242	297	324	222	260	298	1626	314
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	329	370	469	429	439	546	534	418	344	424	5218	391
BOD5 (mg/L) Raw Sewage Influent Average Monthly	68	64	113	80	52	145	131	56	93	83	571	97

TSS (lbs/day) Average Monthly	< 18.2	< 25.8	< 15.7	< 18	18.9	9.0	10.3	17.9	45.3	23.9	31.4	14.9
TSS (lbs/day) Raw Sewage Influent Average Monthly	265	237	375	283	220	331	367	931	387	223	798	415
TSS (lbs/day) Raw Sewage Influent Daily Maximum	320	306	446	418	304	596	636	2404	544	390	1884	492
TSS (lbs/day) Weekly Average	33.1	55.5	17.8	26.2	32	14.1	13.3	22.7	67.5	31.8	63.8	30.1
TSS (mg/L) Average Monthly	< 4.4	< 5.4	< 4.4	< 4.1	4.0	4.1	4.0	5.0	17.5	6.4	7.2	4.1
TSS (mg/L) Raw Sewage Influent Average Monthly	67	54	105	67	49	164	146	344	141	72	257	138
TSS (mg/L) Weekly Average	6.0	9.5	5.0	4.4	4.0	4.4	4.0	8.0	32.0	7.6	10.5	4.4
Total Dissolved Solids (lbs/day) Average Monthly	3578.6	3750.1	3300	3107.9	2949.4	2006.4	3054.4	4199.7	3586.0	3004.8	4291.6	4692.4
Total Dissolved Solids (mg/L) Average Monthly	918.8	848.5	916.0	690.0	648.0	1007.3	1216.0	1191.5	1308.0	814.0	1217.0	1437.6
Total Dissolved Solids (mg/L) Daily Maximum	1190.0	1030.0	1030.0	941.0	804.0	1440.0	1440.0	1890.0	1560.0	1120.0	1700.0	1860.0
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	< 1	< 1	< 2	3	< 1	< 1	< 4	3	3	2
Fecal Coliform (No./100 ml) Instantaneous Maximum	2	1	2	3	9	5	3	4	33	9	10	16
Total Nitrogen (lbs/day) Daily Maximum		40			36			36			60	
Total Nitrogen (mg/L) Daily Maximum		7.28			10.9			5.14			28.8	
Ammonia (lbs/day) Average Monthly	< 3.1	< 3.0	3.9	< 0.8	0.8	3.7	< 3.2	1.4	36.5	26.7	1.6	5.5
Ammonia (mg/L) Average Monthly	< 0.9	< 0.5	1.1	< 0.2	0.2	2.2	< 1.4	< 0.4	13.1	8.2	0.3	2.0

Total Phosphorus (lbs/day) Daily Maximum		2.8			5.1			3.5			4.93	
Total Phosphorus (mg/L) Daily Maximum		0.51			1.55			< 0.50			1.70	
Total Copper (lbs/day) Average Monthly	0.03	0.05	0.02	0.03	0.02	0.3	0.01	0.03	0.01	0.03	0.04	0.02
Total Copper (lbs/day) Daily Maximum	0.03	0.05	0.02	0.03	0.02	0.01	0.01	0.03	0.01	0.03	0.04	0.02
Total Copper (mg/L) Average Monthly	0.006	0.008	0.005	9	0.003	0.005	0.004	0.005	0.004	0.004	0.008	0.007
Total Copper (mg/L) Daily Maximum	0.006	0.008	0.005	9	0.003	0.005	0.004	0.005	0.004	0.004	0.008	0.007
Total PCBs (lbs/day) Daily Maximum					0.00000 314							
Total PCBs (ng/L) Daily Maximum					1.35							

Compliance History

Effluent Violations for Outfall 001 in past year, from June 1, 2023 to May 31, 2024:

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
pH	09/30/23	Min	0.01	S.U.	6.0	S.U.
Dissolved Oxygen (DO)	09/30/23	Min	0.01	mg/L	5.0	mg/L
Dissolved Oxygen (DO)	08/31/23	Min	4.63	mg/L	5.0	mg/L

Summary of Inspections:

June 20, 2023 – Influent samples are collected by the permittee from the wet well. Effluent composite samples are collected by the permittee from the Chlorine Contact Tank (CCT) prior to dechlorination. Effluent grab samples (including those for TRC) are collected from the effluent weir. The inspector measured TRC in the effluent at 0.01 mg/l and pH at 7.07 s.u. The inspector returned on June 21, 2023 and collected these effluent field measurements: Temp=20.2^{o}C, DO = 8.56 mg/l, pH=7.35 s.u. Per report: “The permit requires composite samples be collected for a minimum of 8 hours and may be collected for longer periods of time.”

March 29, 2018 – Follow-up visit to February 15, 2018 inspection. The water surface in the CCT was mostly clear. Tank cleaning was recorded in onsite log.

February 15, 2018 - Scum layer observed on chlorine contact tank (CCT) for which a Notice of Violation was issued on March 15, 2018. Effluent sample collected; lab results were within permit limits. Inspector’s field measurements: pH at 7.32 s.u., DO at 8.51 mg/l, TRC at 0.81 mg/l. Influent samples collected by permittee downstream of grinder, 8-hour composites. Effluent samples collected by permittee post CCT, 8-hr composites. Flow is measured with weir and ultrasonic meter. Facility uses Totalizer and 7-day chart. No hauled-in wastes are accepted.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.75
Latitude 40º 29' 35.6" **Longitude** -75º 58' 16.4"
Wastewater Description: Sewage Effluent

As applicable, Technology-Based Effluent Limitations, Best Professional Judgment Limitations, and Water-Quality Based Effluent Limitations when there is reasonable potential to exceed a surface water quality criteria are developed independently and compared. The more stringent limitation is generally imposed while also considering the prohibition on backsliding of permit limits [Title 40 of the Code of Federal Regulations (C.F.R) § 122.44(l) and 25 Pa. Code § 92a.44].

Technology-Based Effluent Limitations (TBELs)

The following technology-based limitations were considered for applicability:

Pollutant	Limit (mg/l)	Statistical Base Code	Federal Regulation	State Regulation	DRBC 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 (TSS)	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)	92a.47(a)(7) and 95.2(1)	18 CFR Part 410
Total Residual Chlorine	0.5	Average Monthly		92a.48(b)(2)	
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geometric Mean	-	92a.47(a)(4)	18 CFR Part 410
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	Instant. Maximum	-	92a.47(a)(4)	
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geometric Mean	-	92a.47(a)(5)	
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	Instant. Maximum	-	92a.47(a)(5)	
BOD_5	Secondary Treatment as a minimum	-			18 CFR Part 410 3.10.4 A.
Ammonia	20	Average Monthly	-	-	18 CFR Part 410
Total Dissolved Solids	*1000* [a]	Average Monthly	-	-	18 CFR Part 410
Total Dissolved Solids	*2000* [b]	Average Monthly		95.10	
Total Dissolved Solids	3300	Average Monthly			D-1993-074 CP-6
Total Dissolved Solids	4000	Daily Maximum			D-1993-074 CP-6
Total Phosphorus	*2.0* [c]	Average Monthly		96.5	
Color	No observable change in color in receiving water			92a.41(c)	
Color	*100 (Pt-Co)* [d]	Average Monthly	-	-	18 CFR Part 410
Color	200 (Pt-Co) [d]	Average Monthly	-	-	D-1993-074 CP-6

[a] 1000 mg/l as a monthly average unless the permittee submits a **Total Dissolved Solids (TDS)** Determination to DRBC and DRBC approves a different effluent limit for TDS. DRBC approved an average monthly TDS limit of 3300 mg/l and a daily maximum TDS limit of 4000 mg/l in this facility's docket. The existing NPDES permit included the 3300 and 4000 mg/l limits for TDS and the draft renewal permit carries forward the same TDS limits.

[b] 2000 mg/l as a monthly average for new dischargers or for expanding discharge loadings of TDS greater than 5,000 lbs/day, measured as an average daily discharge over the course of a calendar year, since August 21, 2010—unless a

variance from DEP is granted. This facility is not a new discharger or expanding discharger so the 2000 mg/l limit is not applicable at this time.

[c] applicable if the receiving water is impaired for nutrients. The receiving water in this case has not been identified as impaired for nutrients so the 2.0 mg/l limit is not applicable at this time.

[d] Or a limit that will not cause Color in the receiving water to exceed 100 Pt-Co. Section 4.30.5.c of DRBC's Water Quality Regulations allows for a variance of the 100-unit effluent limit. For this facility, DRBC previously approved a color limit of 200 Pt-Co units, as a monthly average, as recorded in their docket. The existing NPDES permit included the 200 Pt-Co Color limit and the draft renewal permit carries forward the same Color limits.

Federal Effluent Limitation Guidelines (ELGs):

The facility's industrial user, Wolfe Dye and Bleach, was described in the permit application (and previous Fact Sheets) as a Textile Bleaching and Dying "type of business". ELGs exist for Textile Mills (40 CFR Part 410) but do not include numerical Pretreatment Standards.

(The ELGs for direct dischargers, rather than industrial users to a Publicly Owned Treatment Works (POTW), are not in terms of parameter concentrations but in terms of mass loading such as pounds per pounds of product. The parameters listed in the ELGs are as follows: BOD5, COD, TSS, O&G, Sulfide, Phenol, Total Chromium, and pH. Because the Commonwealth has water quality criteria for Phenol and Total Chromium, a separate TMS simulation was run to assess if permit limits or monitoring requirements were warranted for these parameters. The model inputs and results are attached. No limits or monitoring requirements have been added.)

Best Professional Judgment (BPJ) Limitations:

None

Water Quality-Based Effluent Limitations (WQBELs)

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

Parameter	Limit (mg/l)	Statistical Base Code (SBC)	Model
Dissolved Oxygen (DO)	5.0	Minimum	WQM 7.0 model
Ammonia-Nitrogen	14.8	Avg. Monthly	WQM 7.0 model
Ammonia-Nitrogen	30	Maximum	WQM 7.0 model
Total Residual Chlorine	0.5	Avg. Monthly	TRC Excel Spreadsheet
Total Residual Chlorine	1.6	Instant. Maximum	TRC Excel Spreadsheet

$CBOD_5$, Ammonia, and Dissolved Oxygen:

DEP uses a model called WQM 7.0 to calculate WQBELs for these parameters if WQBELs are needed to protect the receiving water. DEP's Guidance document 391-2000-007 provides the methods and calculations contained in the WQM 7.0 model for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. The model output indicated that the existing permit limits for COBD5 (TBELs) are protective of water quality. The model recommended a minimum limit of 5.0 mg/l for DO, the same as the DO limit in the existing permit. The model recommended more stringent limits, WQBELs, for Ammonia: 14.8 mg/l as an Average Monthly limit and 30 mg/l as a maximum limit. [Note: the water quality criteria for Ammonia changed in the last promulgated amendments to State water quality standards, 25 Pa Code Chapter 93.]

The permittee's DMRs for the reporting period January 1, 2021 through May 31, 2024 indicate that the facility is able to immediately meet the new WQBELs for Ammonia such that no compliance period is necessary. The maximum monthly

average for Ammonia during that reporting period was 13.1 mg/l but the next highest average monthly concentration was 8.2 mg/l and the median value was 0.5 mg/l. The maximum monthly average mass load was 36.5 lbs/day for Ammonia.

Model input values and results are attached to this Fact Sheet. The WQM 7.0 model does not account for mixing in the receiving water so a manual adjustment is made when the discharge is to a wide receiving water where complete mixing across the width of the river is not anticipated to occur by the criteria compliance time. Absent any site-specific mixing data, DEP manually adjusts for discharges into the Schuylkill River by multiplying the Low Flow Yield (LFY) values by 1/3 and using the adjusted LFY's as the model input values. (LFY is the result of the stream design low-flow (the historic Q7-10 flow) divided by the drainage area.)

Because of their proximity, Leesport Borough STP (permit PA0070149) and Materion Brush (permit PA0011169) discharges were included in the WQM 7.0 modeling. Cambridge Lee is another discharger downstream, at RMI 86.5, but they do not discharge sewage or effluent with high concentrations of CBOD5 or Ammonia so they were not included in the modeling.

Sources for model inputs includes DEP's eMapPA, Pa Stream Stats, other permits, and past Fact Sheets. Default values were used for the following model inputs: stream pH, stream Hardness, stream Temperature, stream CBOD concentration, stream Ammonia concentration, stream DO concentration, discharge pH, discharge Hardness, and discharge Temperature.

Because the DO was still declining when the confluence with Maiden Creek was used as the end point, the stream segment had to be extended to the confluence with UNT 01984.

Total Residual Chlorine (TRC):

DEP's model (Excel spreadsheet) was used for TRC evaluation, consistent with Implementation Guidance for TRC, #391-2000-015. A default value of 0.3 mg/l was used for stream demand and 0 was conservatively assumed for the discharge chlorine demand. Results are attached. The model concluded that the TBELs were protective of the receiving water; no more stringent WQBEL was calculated. TRC limits of 0.5 mg/l as monthly average and 1.6 mg/l as an Instantaneous maximum are the same TRC limits as in the existing permit.

Toxic Pollutants:

DEP uses a model called the Toxics Management Spreadsheet (TMS) for toxic pollutants. It is a macro-enabled Excel version of DEP's former PENTOX model. It evaluates the reasonable potential for discharges to cause excursions above water quality standards and determines if Water Quality-Based Effluent Limitations (WQBELs) are needed in permits for toxic pollutants. Unlike the WQM 7.0 model, the TMS only analyzes for single dischargers to a stream segment. Unlike the WQM 7.0 model, the TMS considers mixing in the receiving water such that no adjustment to the LFY values were made.

The model will recommend a limit when the discharge concentration equals or exceeds 50% of the WQBEL (deemed a demonstration of Reasonable Potential to exceed water quality criteria in a receiving stream). The model will recommend a monitoring requirement where the discharge concentration is between 25% and 50% of the WQBEL for non-conservative pollutants. The model will recommend a monitoring requirement when the discharge concentration is between 10% and 50% of the WQBEL for conservative pollutants. [Standard Operating Procedure (SOP): Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers, Version 1.5, May 20, 2021.]

The model results (and input values) are attached. The discharge concentrations input in the TMS are the maximum concentrations provided in the permit application for most parameters. DEP had additional available data for Copper, Total Dissolved Solids, and PCBs, as discussed below.

For Total Copper, more than 10 data points were available hence the maximum concentration from the application was not used as the model input for discharge concentration. Instead, the average monthly concentrations from the permittee's DMRs were reviewed. DMRs for the reporting period January 1, 2021 through May 31, 2024--- after corrections for the months of January 2024, October 2022, and August 2022 for which Supplemental DMR values were

used instead of DMR values--yield a median concentration of 0.008 mg/l which was used as the discharge concentration model input. The TMS calculated a WQBEL for Total Copper of 0.1 mg/l. The model did not recommend a limit or a monitoring requirement for Total Copper be included in the renewal permit.

Similarly, for Total Dissolved Solids (TDS), more than 10 data points were available hence the maximum concentration from the application was not used as the model input for discharge concentration. Instead, the average monthly concentrations from the permittee's DMRs were reviewed. DMRs for the reporting period January 1, 2021 through May 31, 2024 yield a median concentration of 1470 mg/l which was used as the discharge concentration model input. The model did not recommend a limit or a monitoring requirement for TDS be included in the renewal permit. (The Public Water Supply is more than 30 miles downstream.)

For Total PCBs, more than 10 data points were available. However, to determine a median value of more than 10 data points, samples from more than three years ago would need to be used. Instead, the three annual DMRs from 2021, 2022, and 2023 were reviewed. These three data points show a Daily Maximum discharge concentration of 4.96 ng/l (the equivalent of 0.00496 ug/l) which was used as the model input value for Total PCBs discharge concentration. The model did not recommend a limit or a monitoring requirement for Total PCBs be included in the renewal permit.
Note: The TMS is only evaluating the discharge concentration's reasonable potential to cause an exceedance of State Standards for Total PCBs, not the discharge's reasonable potential to cause an exceedance of the target criteria identified in the Schuylkill River PCB TMDL. The TMDL is discussed separately, below.

Total Maximum Daily Load (TMDL): Polychlorinated Biphenyls (PCBS) In Schuylkill River

A TMDL for Polychlorinated Biphenyls (PCBs) in the Schuylkill River was finalized in April 2007. Statewide, direct dischargers to the Schuylkill River who demonstrate high concentrations of PCBs in their discharge are being required to prepare and implement Pollutant Minimization Plans (PMPs) and to monitor for Total PCBs. The goal is to collectively reduce total PCB loading to the Schuylkill River.

A Pollutant Minimization Plan for PCBs was reviewed by DEP and deemed complete. DEP's completeness letter to the facility, dated June 10, 2019**,** stated: "DEP recognizes the facility's **PCB baseline** as given in the PMP Plan: **5.34 ng/l** as the average concentration measured in the discharge and **0.000016 lbs/day** as the calculated average load." (0.000016 lbs/day is the equivalent of 2.65 grams per year). The existing NPDES permit required that the permittee commence initiation of the PMP Plan by 60 days from the DEP completeness letter which would be August 10, 2019. Since 2019, PCB monitoring at outfall 001 has continued and Annual Reports have been submitted to DEP as required by the existing NPDES permit.

The average PCB concentrations in the facility's discharge have been less than the 2019 baseline concentration of 5.34 ng/l except for 2023. The average PCB concentration for 2023 was 6.5 ng/l. The Shoemakersville Borough Manager was asked if there was an explanation for the sample results from May 7, 2023: 11.4 ng/l of Total PCBs. He did not know the reason for the spike, more than double any other concentration they have reported for the past 5 years. Every sample analyzed for Total PCBs from the facility since the establishment of the baseline was greater than the TMDL criteria of 0.044 ng/l. The average PCB mass loads in the facility's discharge have been less than the 2019 baseline load of 0.000016 lbs/day, including for 2023. A summary of the most recent PCB results is shown on the following page.

Sample Date	2023 PCB Annual Report (ng/l)	2023 PCB Annual Report - Flow (MGD)	(Known) Corrections to 2023 Annual Report (ng/l)	Flows per Daily Suppl. DMRs (MGD)	Calculated (lbs/day)	eDMR Daily Max (ng/l)	eDMR Daily Max (lbs/day)	
6/25/2019	1.02	0.639			0.00000544			
6/29/2019	0.995	0.498			0.00000413			
9/26/2019	1.72	0.332			0.00000476			
12/9/2019	1.32	0.254			0.00000280			
2019 Avg.	1.264				0.00000428			Avg conc < baseline; Avg load < baseline
2019 Max.	1.72				0.00000544	1.72	0.00000544	
1/30/2020	0.618	0.452			0.00000233			
6/22/2020	0.869	0.336			0.00000244			
9/17/2020	2.55	0.319			0.00000678			
11/12/2020	2.52	0.612			0.0000129			
2020 Avg.	1.639				0.00000611			Avg conc < baseline; Avg load < baseline
2020 Max.	2.55				0.0000129	2.55	0.0000129	
3/12/2021	1.34	0.448			0.00000501			
6/15/2021	4.96	0.431			0.00001783			
2021 Avg.	3.15				0.00001142			Avg conc < baseline; Avg load < baseline
2021 Max.	4.96				0.0000178	4.96	0.00001783	
3/17/2022			3.26	0.304	0.00000826			
5/28/2022	2.53	0.39		0.39	0.00000823			
8/19/2022			4.87*	0.36	0.0000146			
11/12/2022	1.84	0.654		0.654	0.00001004			
2022 Avg.			3.13		0.0000103			Avg conc < baseline; Avg load < baseline
2022 Max.			4.87*		0.0000146	4.78*	0.00001435*	
5/7/2023	11.4	0.267		0.267	0.0000254			
(after Aug report) 9/22/2023			1.63**	0.279	0.00000379			
2023 Avg.			6.5		0.0000146			Avg conc > baseline; Avg load < baseline
2023 Max.			11.4		0.0000254	1.35**	0.00000314**	

*4.87 ng/l per lab results (include EMPC values); 4.78 ng/l not including EMPC results
*1.63 ng/l per lab results (include EMPC values); 1.35 ng/l not including EMPC results

NOTE: The Delaware River Basin Commission (DRBC) established sampling and reporting protocols for Total PCBs for the Delaware River PCB TMDL and require permittees discharging PCBs to the Delaware River to report Total PCBs inclusive of estimated maximum possible concentrations (EMPC) values. The Schuylkill River PCB TMDL is the responsibility of DEP. DEP is using the same sampling and reporting protocols as established by DRBC for the Delaware River PCB TMDL, given that the Schuylkill River is a tributary of the DE River and the data should be consistent for future TMDL analysis and revisions.

The facility's Annual Report for August 2022 to August 2023, stated:

> "To date, the Borough has not been able to identify any specific known or probable sources of PCBs. Based on the sampling results to date, it appears that the majority of the PCBs may be coming from sources outside of the Borough's jurisdiction."

The facility's Annual Report for August 2020 to August 2021 said that meetings with Perry Township were held in April and July of 2022. The facility's Annual Report for August 2019 to August 2020 said that samples were collected from key locations within the sewer, September 2019 and March 2020.

(The most recent PCB PMP Reports are stored in DEP's electronic OnBase system: Ref #118213 submitted 8/9/2023 for August 2022 to August 2023; Ref #66201 submitted 8/12/2022; and Ref #28772 submitted 8/9/2021.)

The draft renewal permit requires that PCB monitoring continue and that implementation of the PMP Plan continue. As in the existing permit, the monitoring must use EPA method 1668A and be conducted once per year for Wet Weather and once per year for Dry Weather. Unlike the existing permit, both results must be reported on the facility's DMRs instead of only the maximum of the two samples. Unlike the existing permit, the PCB Annual Reports due date has been changed to the anniversary date of the effective date of the renewal permit.

Also, Part C of the draft renewal permit specifies that the full laboratory data packages be retained for at least five years and made available upon request. Also, the following condition has been added in Part C of the draft renewal permit, consistent with other NPDES permits subject to PCB TMDLs:

> "If DEP determines at any time that a PMP or Annual Report is deficient or inadequate, the permittee must, when notified by DEP, submit a revised PMP or Annual Report to more aggressively identify and/or reduce pollutant loading. The permittee shall submit a revised PMP or Annual Report responsive to DEP's written request within 60 days of the date of the written request unless DEP grants an extension."

Mass Loading Limits

Consistent with the Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, and the Standard Operating Procedure (SOP) for Establishing Effluent Limitations for Individual Sewage Permits, mass loading limits have been established for CBOD5, TSS, and NH3-N. In addition, mass loading limits have been included for TDS, as was also done in the existing permit. Mass loads for TDS will be reviewed in the event of future expansions to satisfy §95.10 of the PA Code and/or in the event of TDS TMDLs or DRBC TDS determinations on segments of the Schuylkill River.

Effluent mass loading limits are calculated as follows: design flow (MGD) x concentration limit (mg/l) x conversion factor of 8.34.

Anti-Backsliding

No limits have been made less stringent from the existing permit.

Flow Monitoring

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

Influent BOD & TSS Monitoring

The existing influent monitoring reporting requirement for TSS and BOD5 will be maintained in the renewal permit, consistent with the permits of other municipal wastewater treatment facilities.

E. Coli Monitoring

Consistent with the SOP Establishing Effluent Limitations for Individual Sewage Permits and due to the regulatory change in the State Water Quality Standards, E. Coli monitoring has been included. The statutory basis for this requirement is found at PA Code Chapter 92a.61.

Nutrient Monitoring

Nutrient levels in rivers and streams are a concern. In order to gather information to assess the situation and to adequately protect the waterways, most NPDES permits now include a monitoring requirement, at the least, for Total Nitrogen (TKN + NO2-NO3) and Total Phosphorus. The statutory basis for this requirement is found at PA Code Chapter 92a.61. Because this requirement is to gather data and not to demonstrate compliance with a limit, a minimum monitoring frequency of once per quarter has been required.

The DMRs for this facility between January 1, 2021 and May 31, 2024 indicate an average concentration of 15.2 mg/l for Total Nitrogen (TN) and an average load of 50.2 lbs/day for TN. The DMRs between January 1, 2021 and May 31, 2024 indicate an average concentration of 1.4 mg/l for Total Phosphorus (TP) and an average load of 4.2 lbs/day for TP.

TDS Baseline

In order to apply the requirements in Pa Code § 95.10 in the future, i.e. if the facility proposes an expansion, a TDS Baseline as of August 21, 2010 should be documented. This facility's 2009 and 2010 NPDES permits allowed a TDS mass loading of 20,641 lbs/day which constitutes its TDS Baseline.

Class A Wild Trout Fisheries

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

Antidegradation

The effluent limits for this discharge have been developed to ensure that existing in-stream uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Water or Exceptional Value Waters are impacted by this discharge.

303(D) Listed Streams/ Impaired Waters

The discharge is located on a waterway that was included on the 303(d) list of impaired waterways submitted to EPA pursuant to the Clean Water Act. The Schuylkill River PCB TMDL allows non-numeric limits for PCBs, the identified pollutant causing the impairment. Instead of numeric limits, a PCB Pollutant Minimization Plan has been required and submitted, with implementation on-going and continued monitoring.

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 as needed and BPJ. Instantaneous Maximum (IMAX) limits are generally determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	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
Dissolved Oxygen (DO)	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Color (Pt-Co Units)	XXX	XXX	XXX	200	XXX	XXX	1/month	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	156	250	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
Total Suspended Solids (TSS)	187	281	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
Total Dissolved Solids	20,641	XXX	XXX	3300.0	4000.0 Daily Max	XXX	1/week	24-hr composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10,000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Total Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	Calculation

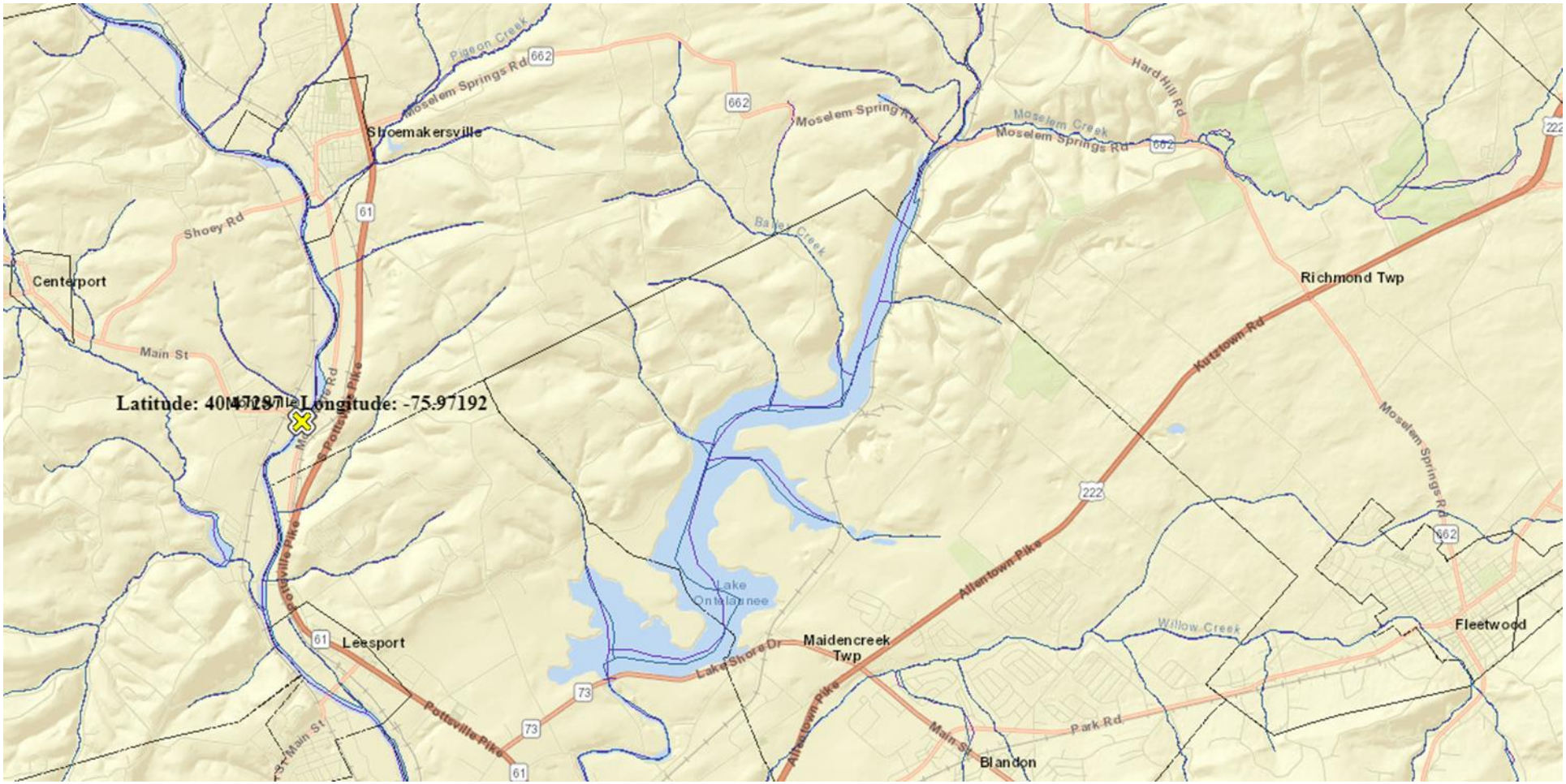
Outfall 001 , Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia-Nitrogen	93	XXX	XXX	14.8	XXX	30	1/week	24-hr composite
Total Phosphorus	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	24-hr composite
PCBs, Dry Weather (ng/l)*	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/year*	24-Hr Composite
PCBs, Wet Weather (ng/l)*	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/year*	24-Hr Composite

* See Part C.III. of permit

Compliance Sampling Location: at outfall 001

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☒	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☒	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Implementation Guidance for Application of Section 93.5I for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☒	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☒	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: New and Reissuance Sewage Individual NPDES Permit Applications, Version 2.0, February 3, 2022
☒	SOP: Establishing Effluent Limitations in Individual Sewage NPDES Permits, version 2.0, February 5, 2024
☒	SOP: Establishing Water-Quality Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers. Version 1.5, May 20, 2021
☐	Other: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Shoemakersville
Centerport
Leesport
Maidencreek Twp
Richmond Twp
Fleetwood
Blandon
Lake Ontelaunee
Pigeon Creek
Moselem Springs Rd
Moselem Spring Rd
Moselem Creek
Hard Hill Rd
Baer Creek
Shoey Rd
Main St
Pottsville Pike
Kutztown Rd
Allentown Pike
Lake Shore Dr
Park Rd
Willow Creek
Moselem Springs Rd
662
61
73
222

From 2023 Chapter 94 Municipal Wasteload Report:

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PADEP Chapter 94 Spreadsh
Sewage Treatment Plar

Reporting Year: 2023

Facility Name: Borough Of Shoemakersville

Permit No.: PA0024074

Persons/EDU: 2.45

Existing Hydraulic Design Capacity:	0.75	MGD	Existing Organic Design Capacity:	1,251	lbs BOD5/day
Upgrade Planned in Next 5 Years?	NO	Year:	Upgrade Planned in Next 5 Years?	NO	Year:
Future Hydraulic Design Capacity:		MGD	Future Organic Design Capacity:		lbs BOD5/day

Monthly Average Flows for Past Five Years (MGD)

Month	2019	2020	2021	2022	2023
January	0.554	0.42	0.367	0.38	0.515
February	0.548	0.39	0.48	0.456	0.363
March	0.536	0.372	0.743	0.376	0.417
April	0.442	0.398	0.426	0.599	0.338
May	0.567	0.374	0.339	0.501	0.385
June	0.603	0.329	0.369	0.43	0.335
July	0.533	0.382	0.333	0.319	0.41
August	0.419	0.501	0.339	0.316	0.329
September	0.279	0.326	0.503	0.357	0.401
October	0.378	0.319	0.306	0.33	0.347
November	0.436	0.322	0.315	0.411	0.287
December	0.4	0.453	0.25	0.517	0.561
Annual Avg	0.475	0.382	0.397	0.416	0.391
Max 3-Mo Avg	0.568	0.419	0.55	0.51	0.481
Max : Avg Ratio	1.20	1.10	1.39	1.23	1.23
Existing EDUs	1,831.0	1,876.0	1,906.0	1,967.0	1,971.0
Flow/EDU (GPD)	259.4	203.6	208.4	211.5	198.4
Flow/Capita (GPD)	105.9	83.1	85.1	86.3	81.0
Exist. Overload?	**NO**	**NO**	**NO**	**NO**	**NO**

Monthly Average BOD5 Loads for Past Five Years (lbs/day)

Month	2019	2020	2021	2022	2023
January	471	571	342	316	617
February	451	368	683	449	391
March	478	337	396	460	271
April	661	291	264	443	1,013
May	474	304	282	438	314
June	342	255	307	595	1,626
July	278	245	448	413	298
August	262	207	340	442	260
September	221	219	320	435	222
October	285	306	324	377	324
November	306	295	303	314	297
December	354	307	291	393	242
Annual Avg	382	309	358	423	490
Max Mo Avg	661	571	683	595	1,626
Max : Avg Ratio	1.73	1.85	1.91	1.41	3.32
Existing EDUs	1,831	1,876	1,905	1,967	1,971
Load/EDU	0.209	0.165	0.188	0.215	0.248
Load/Capita	0.085	0.067	0.077	0.088	0.101
Exist. Overload?	**NO**	**NO**	**NO**	**NO**	**YES**

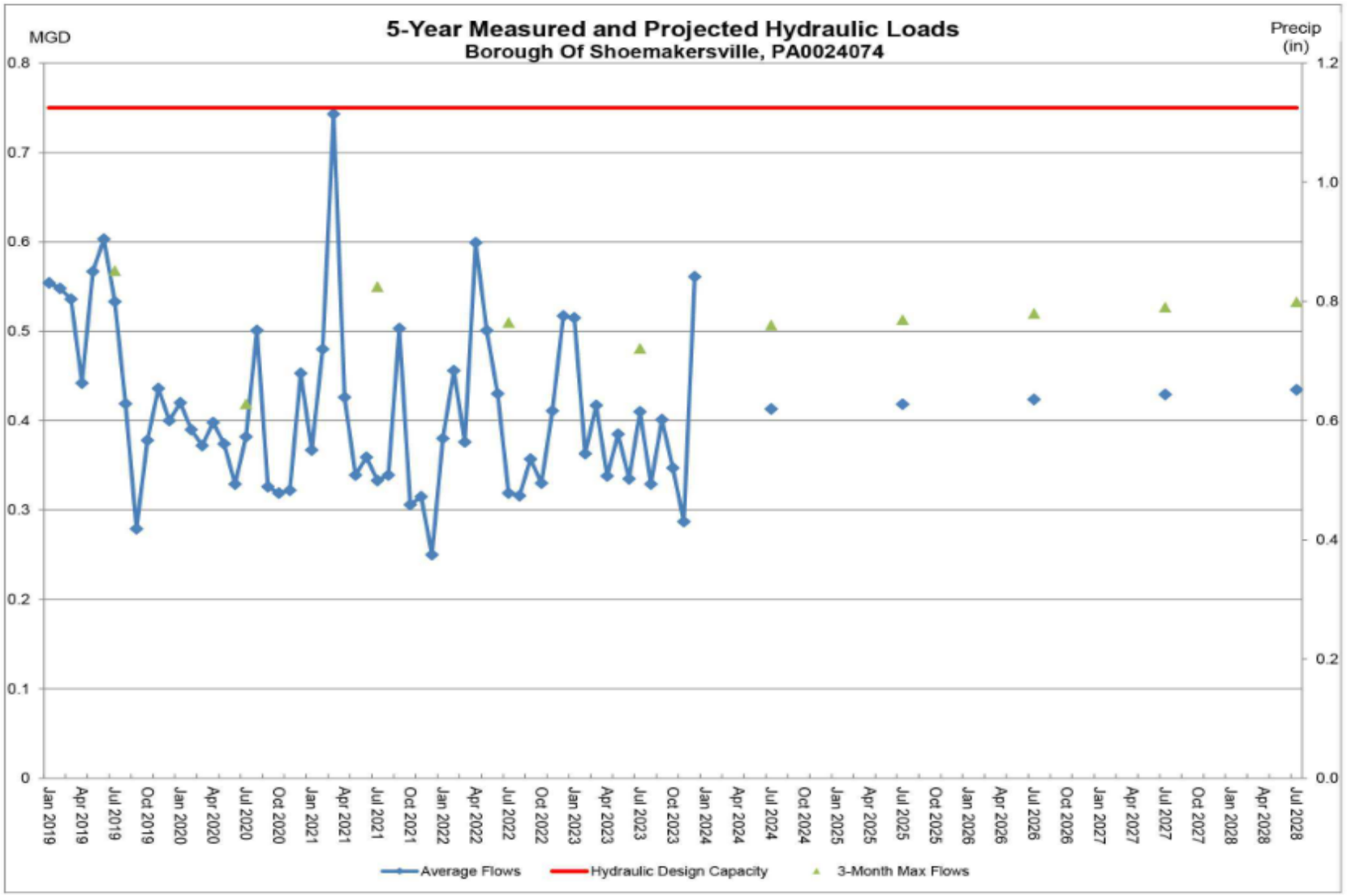
Projected Flows for Next Five Years (MGD)

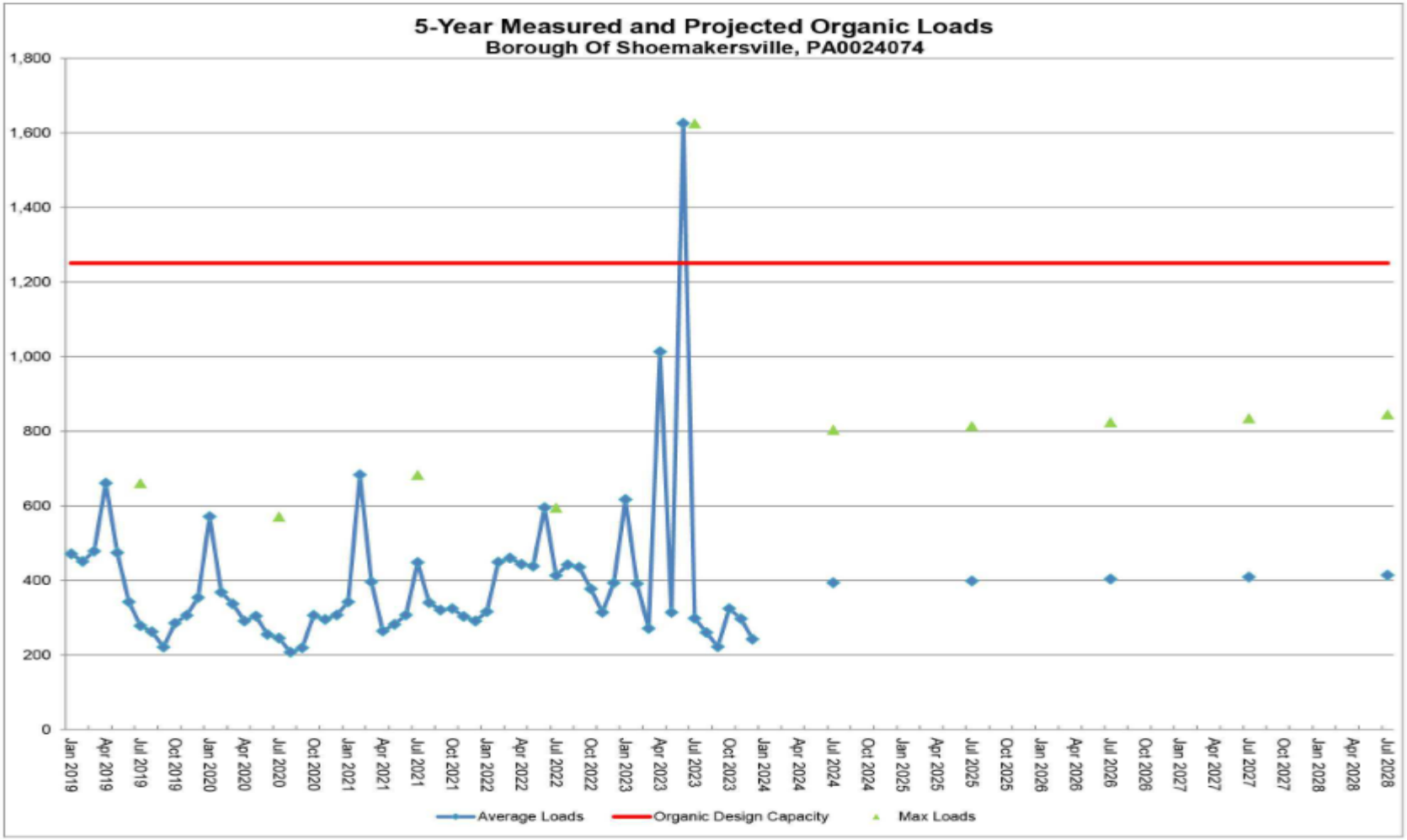
	2024	2025	2026	2027	2028
New EDUs	5.0	25.0	25.0	25.0	25.0
New EDU Flow	0.0011	0.0054	0.0054	0.0054	0.0054
Proj. Annual Avg	0.413	0.4184	0.4238	0.4292	0.4346
Proj. Max 3-Mo Avg	0.507	0.513	0.52	0.527	0.533
Proj. Overload?	**NO**	**NO**	**NO**	**NO**	**NO**

Projected BOD5 Loads for Next Five Years (lbs/day)

	2024	2025	2026	2027	2028
New EDUs	5	25	25	25	25
New EDU Load	1.025	5.123	5.123	5.123	5.123
Proj. Annual Avg	393	398	404	409	414
Proj. Max Avg	804	814	824	835	845
Proj. Overload?	**NO**	**NO**	**NO**	**NO**	**NO**

From 2023 Chapter 94 Municipal Wasteload Report:





Explanation provided by permittee:

June 2023 organic overload was the result of running new dewatering press overnight. The filtrate from the press caused high spike in influent BOD. Practice of running dewatering press overnight was stopped.

PA0024074	1/1/2021	1/31/2021	Monthly	1	1	Final Effluent	Flow	MGD	0.367	Monitor	Average Month	0.649	Monitor	Daily Maximum
PA0024074	2/1/2021	2/28/2021	Monthly	1	1	Final Effluent	Flow	MGD	0.462	Monitor	Average Month	1.062	Monitor	Daily Maximum
PA0024074	3/1/2021	3/31/2021	Monthly	1	1	Final Effluent	Flow	MGD	0.587	Monitor	Average Month	1.556	Monitor	Daily Maximum
PA0024074	4/1/2021	4/30/2021	Monthly	1	1	Final Effluent	Flow	MGD	0.426	Monitor	Average Month	0.951	Monitor	Daily Maximum
PA0024074	5/1/2021	5/31/2021	Monthly	1	1	Final Effluent	Flow	MGD	0.0339	Monitor	Average Month	0.522	Monitor	Daily Maximum
PA0024074	6/1/2021	6/30/2021	Monthly	1	1	Final Effluent	Flow	MGD	0.359	Monitor	Average Month	0.608	Monitor	Daily Maximum
PA0024074	7/1/2021	7/31/2021	Monthly	1	1	Final Effluent	Flow	MGD	0.333	Monitor	Average Month	0.679	Monitor	Daily Maximum
PA0024074	8/1/2021	8/31/2021	Monthly	1	1	Final Effluent	Flow	MGD	0.339	Monitor	Average Month	0.712	Monitor	Daily Maximum
PA0024074	9/1/2021	9/30/2021	Monthly	1	1	Final Effluent	Flow	MGD	0.503	Monitor	Average Month	2.018	Monitor	Daily Maximum
PA0024074	10/1/2021	10/31/2021	Monthly	1	1	Final Effluent	Flow	MGD	0.306	Monitor	Average Month	0.517	Monitor	Daily Maximum
PA0024074	11/1/2021	11/30/2021	Monthly	1	1	Final Effluent	Flow	MGD	0.315	Monitor	Average Month	0.594	Monitor	Daily Maximum
PA0024074	12/1/2021	12/31/2021	Monthly	1	1	Final Effluent	Flow	MGD	0.25	Monitor	Average Month	0.324	Monitor	Daily Maximum
PA0024074	1/1/2022	1/31/2022	Monthly	1	1	Final Effluent	Flow	MGD	0.38	Monitor	Average Month	0.71	Monitor	Daily Maximum
PA0024074	2/1/2022	2/28/2022	Monthly	1	1	Final Effluent	Flow	MGD	0.456	Monitor	Average Month	1.597	Monitor	Daily Maximum
PA0024074	3/1/2022	3/31/2022	Monthly	1	1	Final Effluent	Flow	MGD	0.376	Monitor	Average Month	0.786	Monitor	Daily Maximum
PA0024074	4/1/2022	4/30/2022	Monthly	1	1	Final Effluent	Flow	MGD	0.599	Monitor	Average Month	1.772	Monitor	Daily Maximum
PA0024074	5/1/2022	5/31/2022	Monthly	1	1	Final Effluent	Flow	MGD	0.501	Monitor	Average Month	1.619	Monitor	Daily Maximum
PA0024074	6/1/2022	6/30/2022	Monthly	1	1	Final Effluent	Flow	MGD	0.434	Monitor	Average Month	0.74	Monitor	Daily Maximum
PA0024074	7/1/2022	7/31/2022	Monthly	1	1	Final Effluent	Flow	MGD	0.319	Monitor	Average Month	0.528	Monitor	Daily Maximum
PA0024074	8/1/2022	8/31/2022	Monthly	1	1	Final Effluent	Flow	MGD	0.316	Monitor	Average Month	0.652	Monitor	Daily Maximum
PA0024074	9/1/2022	9/30/2022	Monthly	1	1	Final Effluent	Flow	MGD	0.357	Monitor	Average Month	0.622	Monitor	Daily Maximum
PA0024074	10/1/2022	10/31/2022	Monthly	1	1	Final Effluent	Flow	MGD	0.33	Monitor	Average Month	0.917	Monitor	Daily Maximum
PA0024074	11/1/2022	11/30/2022	Monthly	1	1	Final Effluent	Flow	MGD	0.411	Monitor	Average Month	1.272	Monitor	Daily Maximum
PA0024074	12/1/2022	12/31/2022	Monthly	1	1	Final Effluent	Flow	MGD	0.517	Monitor	Average Month	1.218	Monitor	Daily Maximum
PA0024074	1/1/2023	1/31/2023	Monthly	1	1	Final Effluent	Flow	MGD	0.515	Monitor	Average Month	0.944	Monitor	Daily Maximum
PA0024074	2/1/2023	2/28/2023	Monthly	1	1	Final Effluent	Flow	MGD	0.363	Monitor	Average Month	0.511	Monitor	Daily Maximum
PA0024074	3/1/2023	3/31/2023	Monthly	1	1	Final Effluent	Flow	MGD	0.417	Monitor	Average Month	1.143	Monitor	Daily Maximum
PA0024074	4/1/2023	4/30/2023	Monthly	1	1	Final Effluent	Flow	MGD	0.339	Monitor	Average Month	0.568	Monitor	Daily Maximum
PA0024074	5/1/2023	5/31/2023	Monthly	1	1	Final Effluent	Flow	MGD	0.385	Monitor	Average Month	1.365	Monitor	Daily Maximum
PA0024074	6/1/2023	6/30/2023	Monthly	1	1	Final Effluent	Flow	MGD	0.335	Monitor	Average Month	0.869	Monitor	Daily Maximum
PA0024074	7/1/2023	7/31/2023	Monthly	1	1	Final Effluent	Flow	MGD	0.41	Monitor	Average Month	1.785	Monitor	Daily Maximum
PA0024074	8/1/2023	8/31/2023	Monthly	1	1	Final Effluent	Flow	MGD	0.329	Monitor	Average Month	0.699	Monitor	Daily Maximum
PA0024074	9/1/2023	9/30/2023	Monthly	1	1	Final Effluent	Flow	MGD	0.401	Monitor	Average Month	0.912	Monitor	Daily Maximum
PA0024074	10/1/2023	10/31/2023	Monthly	1	1	Final Effluent	Flow	MGD	0.347	Monitor	Average Month	1.115	Monitor	Daily Maximum
PA0024074	11/1/2023	11/30/2023	Monthly	1	1	Final Effluent	Flow	MGD	0.287	Monitor	Average Month	0.832	Monitor	Daily Maximum
PA0024074	12/1/2023	12/31/2023	Monthly	1	1	Final Effluent	Flow	MGD	0.561	Monitor	Average Month	2.064	Monitor	Daily Maximum
PA0024074	1/1/2024	1/31/2024	Monthly	1	1	Final Effluent	Flow	MGD	0.642	Monitor	Average Month	1.786	Monitor	Daily Maximum
PA0024074	2/1/2024	2/29/2024	Monthly	1	1	Final Effluent	Flow	MGD	0.42	Monitor	Average Month	0.912	Monitor	Daily Maximum
PA0024074	3/1/2024	3/31/2024	Monthly	1	1	Final Effluent	Flow	MGD	0.584	Monitor	Average Month	1.508	Monitor	Daily Maximum
PA0024074	4/1/2024	4/30/2024	Monthly	1	1	Final Effluent	Flow	MGD	0.555	Monitor	Average Month	2.399	Monitor	Daily Maximum
PA0024074	5/1/2024	5/31/2024	Monthly	1	1	Final Effluent	Flow	MGD	0.416	Monitor	Average Month	0.718	Monitor	Daily Maximum
									0.404	Avg		1.043	Avg	
									0.642	Max		2.399	Max	
									0.625	99th percentile		2.265	99th percentile	

PA Stream Stats:

StreamStats Output Report-Shoemakersville STP-001					
State/Region ID	PA				
Workspace ID	PA20240614201359435000				
Latitude	40.49269				
Longitude	-75.97196				
Time	6/14/2024	4:14:22 PM			
Low-Flow Statistics Param	100.0 Percent Low Flow Region 2				
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	388	square mi	4.93	1280
PRECIP	Mean Annual Pr	49	inches	35	50.4
STRDEN	Stream Density	1.25	miles per	0.51	3.1
ROCKDEP	Depth to Rock	4.4	feet	3.32	5.65
CARBON	Percent Carbona	0.18	percent	0	99
Low-Flow Statistics Flow R	100.0 Percent Low Flow Region 2				
Statistic	Value	Unit	SE	ASEp	
7 Day 2 Year Low Flow	150	ft^3/s	38	38	
30 Day 2 Year Low Flow	184	ft^3/s	33	33	
7 Day 10 Year Low Flow	88.1	ft^3/s	51	51	
30 Day 10 Year Low Flow	108	ft^3/s	46	46	
90 Day 10 Year Low Flow	143	ft^3/s	36	36	
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USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Su					
USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purp					
Application Version: 4.20.1					
StreamStats Services Version: 1.2.22					
NSS Services Version: 2.2.1					

StreamStats Output Report-Just before Materion Brush 001					
State/Reg	PA				
Workspac	PA20240626203853155000				
Latitude	40.48949				
Longitude	-75.97106				
Time	6/26/2024	4:39:14 PM			
Low-Flow	100.0 Percent Low Flow Region 2				
Paramete	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	388	square m	4.93	1280
PRECIP	Mean Annual Precip	49	inches	35	50.4
STRDEN	Stream Density	1.25	miles per	0.51	3.1
ROCKDEP	Depth to Rock	4.4	feet	3.32	5.65
CARBON	Percent Carbonate	0.18	percent	0	99
Low-Flow	100.0 Percent Low Flow Region 2				
Statistic	Value	Unit	SE	ASEp	
7 Day 2 Ye	150	ft^3/s	38	38	
30 Day 2 Y	184	ft^3/s	33	33	
7 Day 10 Y	88.1	ft^3/s	51	51	
30 Day 10	108	ft^3/s	46	46	
90 Day 10	143	ft^3/s	36	36	
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StreamStats Output Report-Schuylkill River@ Leesport STP						
State/Region ID	PA					
Workspace ID	PA20240626235939745000					
Latitude	40.44446					
Longitude	-75.96621					
Time	6/26/2024	8:00:02 PM				
Low-Flow Statistics Paran	100.0 Percent Low Flow Region 2					
Parameter Code	Parameter Nam	Value	Units	Min Limit	Max Limit	
DRNAREA	Drainage Area	419	square m	4.93	1280	
PRECIP	Mean Annual Pr	48	inches	35	50.4	
STRDEN	Stream Density	1.28	miles per	0.51	3.1	
ROCKDEP	Depth to Rock	4.3	feet	3.32	5.65	
CARBON	Percent Carbona	0.48	percent	0	99	
Low-Flow Statistics Flow	100.0 Percent Low Flow Region 2					
Statistic	Value	Unit	SE	ASEp		
7 Day 2 Year Low Flow	142	ft^3/s	38	38		
30 Day 2 Year Low Flow	177	ft^3/s	33	33		
7 Day 10 Year Low Flow	81.1	ft^3/s	51	51		
30 Day 10 Year Low Flow	101	ft^3/s	46	46		
90 Day 10 Year Low Flow	137	ft^3/s	36	36		
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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descri						
Application Version: 4.21.0						
StreamStats Services Version: 1.2.22						
NSS Services Version: 2.2.1						

PA Stream Stats….at confluence w/ Maiden Creek, downstream of Shoemakersville and Leesport STPs…

StreamStats Output Report-confl w/ Maiden Crk						
State/Region	PA					
Workspace II	PA20240626204920855000					
Latitude	40.42313					
Longitude	-75.94956					
Time	6/26/2024	4:49:42 PM				
Low-Flow Sta	100.0 Percent Low Flow Region 2					
Parameter C	Parameter Nan	Value	Units	Min Limit	Max Limit	
DRNAREA	Drainage Area	425	square m	4.93	1280	
PRECIP	Mean Annual P	48	inches	35	50.4	
STRDEN	Stream Density	1.28	miles per	0.51	3.1	
ROCKDEP	Depth to Rock	4.3	feet	3.32	5.65	
CARBON	Percent Carbor	1.21	percent	0	99	
Low-Flow Sta	100.0 Percent Low Flow Region 2					
Statistic	Value	Unit	SE	ASEp		
7 Day 2 Year	146	ft^3/s	38	38		
30 Day 2 Yea	181	ft^3/s	33	33		
7 Day 10 Yea	83.5	ft^3/s	51	51		
30 Day 10 Ye	104	ft^3/s	46	46		
90 Day 10 Ye	141	ft^3/s	36	36		
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data - 2024-06-26T165144.966

Downstream point to capture DO recovery, for WQM 7.0 model…..

StreamStats Output Report-confl Schuylkill River & UNT 01984					
State/Region ID	PA				
Workspace ID	PA20240627001721883000				
Latitude	40.41144				
Longitude	-75.9695				
Time	########	8:17:43 PM			
Low-Flow Statistics Parar	100.0 Percent Low Flow Region 2				
Parameter Code	Paramete	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage /	644	square mi	4.93	1280
PRECIP	Mean Ann	48	inches	35	50.4
STRDEN	Stream De	1.31	miles per	0.51	3.1
ROCKDEP	Depth to F	4.3	feet	3.32	5.65
CARBON	Percent C	9.38	percent	0	99
Low-Flow Statistics Flow	100.0 Percent Low Flow Region 2				
Statistic	Value	Unit	SE	ASEp	
7 Day 2 Year Low Flow	252	ft^3/s	38	38	
30 Day 2 Year Low Flow	305	ft^3/s	33	33	
7 Day 10 Year Low Flow	151	ft^3/s	51	51	
30 Day 10 Year Low Flow	185	ft^3/s	46	46	
90 Day 10 Year Low Flow	238	ft^3/s	36	36	
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Application Version: 4.21.0					
StreamStats Services Version: 1.2.22					
NSS Services Version: 2.2.1					

Downstream point for TMS single discharger model……

StreamStats Output Report-downstrm pt -at mohrsville					
State/Region ID	PA				
Workspace ID	PA20240614200920297000				
Latitude	40.47287				
Longitude	-75.97192				
Time	6/14/2024	4:09:42 PM			
Low-Flow Statistics Para	100.0 Percent Low Flow Region 2				
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	389	square mi	4.93	1280
PRECIP	Mean Annual Prec	49	inches	35	50.4
STRDEN	Stream Density	1.25	miles per	0.51	3.1
ROCKDEP	Depth to Rock	4.4	feet	3.32	5.65
CARBON	Percent Carbonate	0.18	percent	0	99
Low-Flow Statistics Flov	100.0 Percent Low Flow Region 2				
Statistic	Value	Unit	SE	ASEp	
7 Day 2 Year Low Flow	150	ft^3/s	38	38	
30 Day 2 Year Low Flow	184	ft^3/s	33	33	
7 Day 10 Year Low Flow	88.3	ft^3/s	51	51	
30 Day 10 Year Low Flow	108	ft^3/s	46	46	
90 Day 10 Year Low Flow	144	ft^3/s	36	36	
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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only ar					
Application Version: 4.20.1					
StreamStats Services Version: 1.2.22					
NSS Services Version: 2.2.1					

StreamStats Gage Page

Gage Information | Gage Analysis

Gage Information

Name	Value
USGS Station Number	01470500
Station Name	Schuylkill River at Berne, Pa.
Station Type	Gaging Station, continuous record
Latitude	40.52259
Longitude	-75.99827
NWIS Latitude	40.5225932
NWIS Longitude	-75.99826819
Is regulated?	false
Agency	United States Geological Survey

Characteristic Name	Value	Units	Citation
Drainage Area	355	square miles	142

Precipitation Statistics

Characteristic Name	Value	Units	Citation
Mean Annual Precipitation	48.71	inches	139

Stream Channel Properties

Characteristic Name	Value	Units	Citation
Stream Density	1.21	miles per square mile	139

1 Day 10 Year Low Flow	69.2	cubic feet per second	✓	60	49	Statistic Date Range 4/1/1948 - 3/31/2008
7 Day 2 Year Low Flow	137	cubic feet per second	✓	60	49	Statistic Date Range 4/1/1948 - 3/31/2008
7 Day 10 Year Low Flow	82.3	cubic feet per second	✓	60	49	Statistic Date Range 4/1/1948 - 3/31/2008
30 Day 2 Year Low Flow	164	cubic feet per second	✓	60	49	Statistic Date Range 4/1/1948 - 3/31/2008
30 Day 10 Year Low Flow	102	cubic feet per second	✓	60	49	Statistic Date Range 4/1/1948 - 3/31/2008
90 Day 10 Year Low Flow	133	cubic feet per second	✓	60	49	Statistic Date Range 4/1/1948 - 3/31/2008

ations

D	Citation
39	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.
42	Roland, M.A., and Stuckey, M.H., 2008, Regression equations for estimating flood flows at selected recurrence intervals for ungaged streams in Pennsylvania: U.S. Geological Survey Scientific Investigations Report 2008-5102, 57p.

Using acute Partial Mix Factor (PMFa) of 0.33 to account for wide Schuylkill River and incomplete mixing….

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

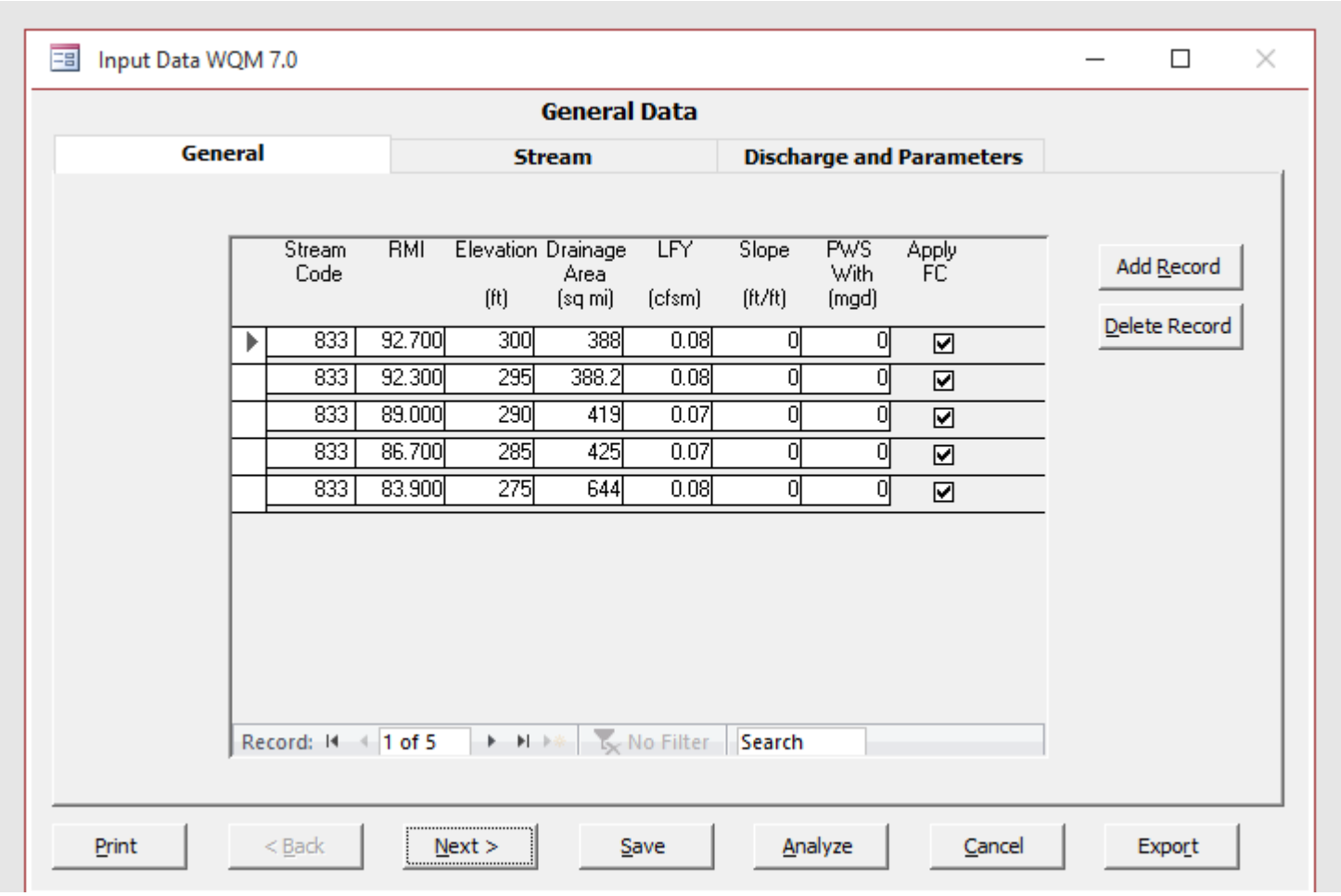
88.1	= Q stream (cfs)	0.5	= CV Daily
0.75	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.33	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 8.012	1.3.2.iii	WLA cfc = 23.626
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 2.986	5.1d	LTA_cfc = 13.735

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)**

(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Yc*Qs*0.011)/(1.547*Qd)....
....*EXP(-K*CFC_tc/1440)))+Xd+(CFC_Yc*Qs*Xs/1.547*Qd))*(1-FOS/100)



LFY values x 1/3 , to adjust for incomplete mixing in wide river

Input Data WQM 7.0

Stream Data

General | Stream | Discharge and Parameters

Design Condition ◉ Q7-10 ○ Q1-10 ○ Q30-10

RMI	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
92.700	0.00	0.00	0.000	0.00	0	0.00	0.00	25.00	7.00	0.000	0.00
92.300	0.00	0.00	0.000	0.00	0	0.00	0.00	25.00	7.00	0.000	0.00
89.000	0.00	0.00	0.000	0.00	0	0.00	0.00	25.00	7.00	0.000	0.00
86.700	0.00	0.00	0.000	0.00	0	0.00	0.00	25.00	7.00	0.000	0.00
83.900	0.00	0.00	0.000	0.00	0	0.00	0.00	25.00	7.00	0.000	0.00

Record: 1 of 5 | No Filter | Search

Print | < Back | Next > | Save | Analyze | Cancel | Export

Input Data WQM 7.0

Discharge and Parameter Data

General | Stream | Discharge and Parameters

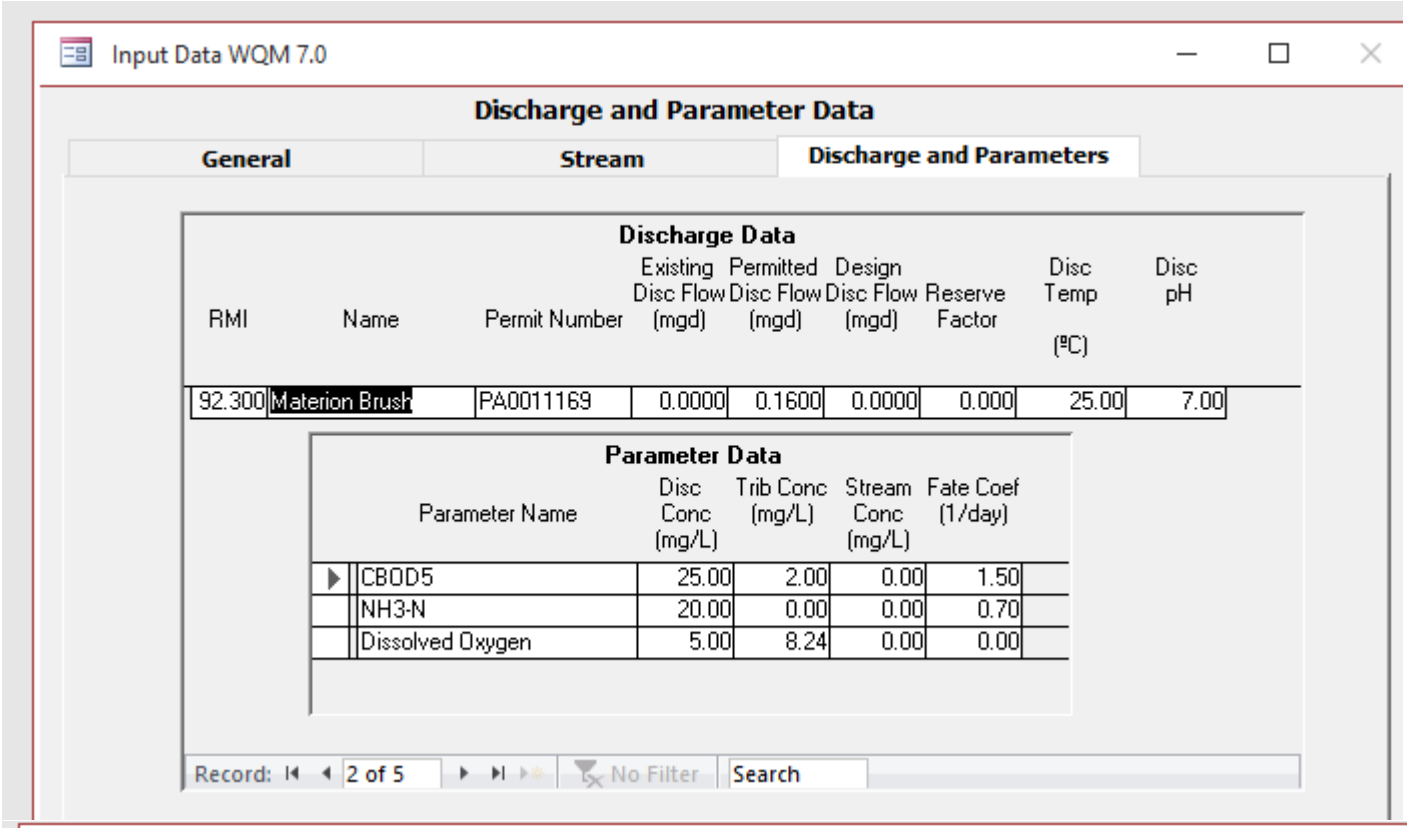
Discharge Data

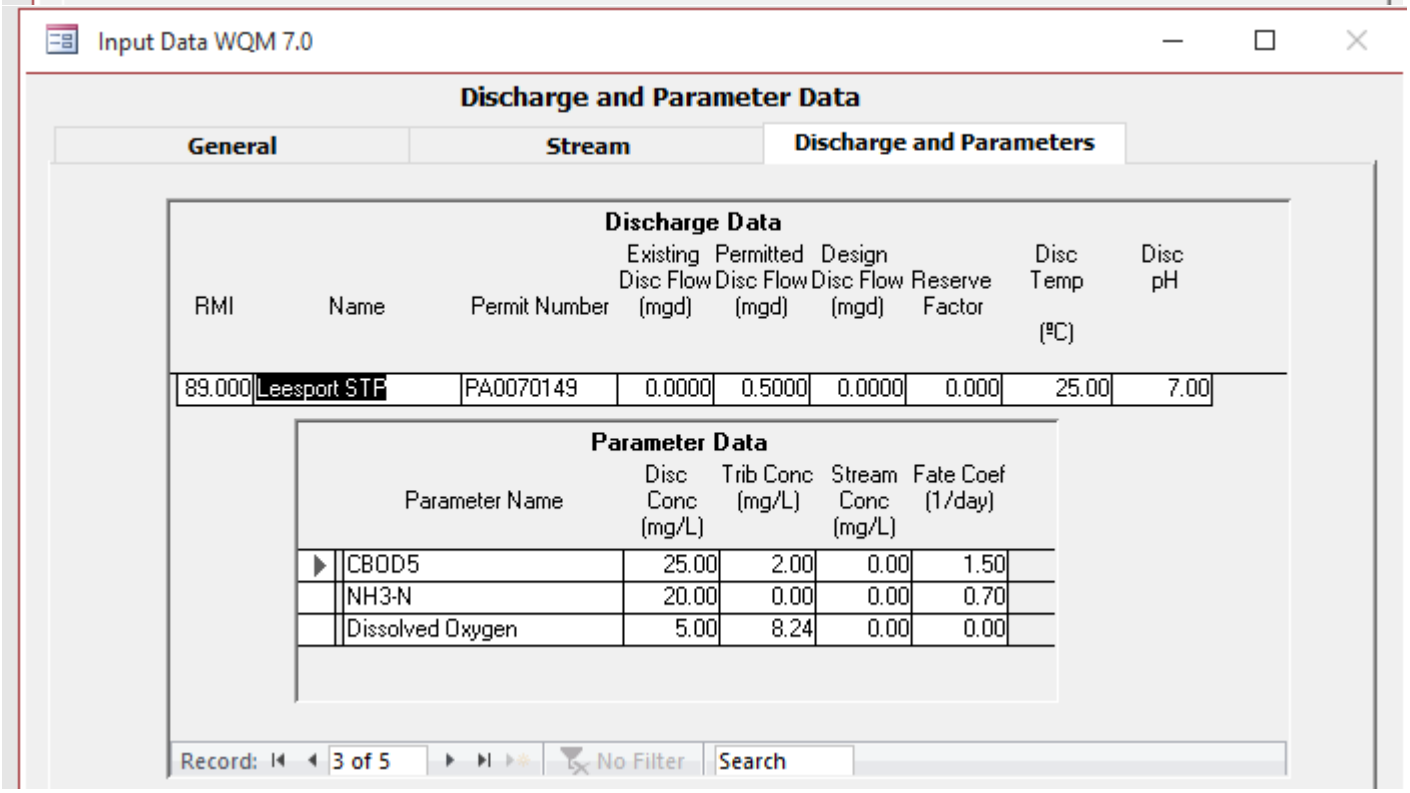
RMI	Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
92.700	Shoemakersville	PA0024074	0.0000	0.7500	0.0000	0.000	25.00	7.00

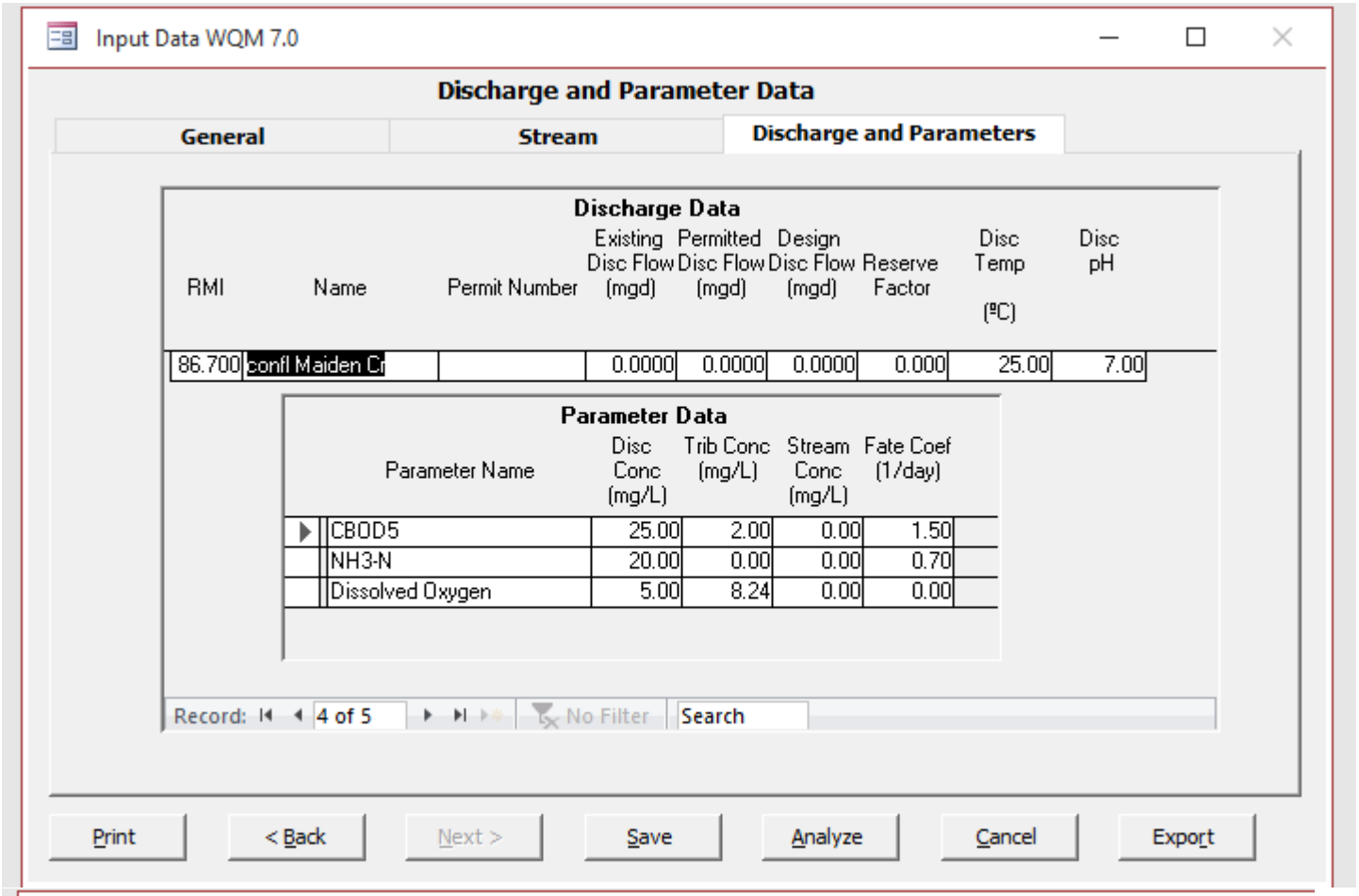
Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/day)
CBOD5	25.00	2.00	0.00	1.50
NH3-N	20.00	0.00	0.00	0.70
Dissolved Oxygen	5.00	8.24	0.00	0.00

Record: 1 of 5 | No Filter | Search


Input Data WQM 7.0
Discharge and Parameter Data
General
Stream
Discharge and Parameters
Discharge Data
RMI
Name
Permit Number
Existing Disc Flow (mgd)
Permitted Disc Flow (mgd)
Design Disc Flow (mgd)
Reserve Factor
Disc Temp (ºC)
Disc pH
92.300
Materion Brush
PA0011169
0.0000
0.1600
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/day)
CBOD5
25.00
2.00
0.00
1.50
NH3-N
20.00
0.00
0.00
0.70
Dissolved Oxygen
5.00
8.24
0.00
0.00
Record: 2 of 5
No Filter
Search


Input Data WQM 7.0
Discharge and Parameter Data
General
Stream
Discharge and Parameters
Discharge Data
RMI
Name
Permit Number
Existing Disc Flow (mgd)
Permitted Disc Flow (mgd)
Design Disc Flow (mgd)
Reserve Factor
Disc Temp (ºC)
Disc pH
89.000
Leesport STP
PA0070149
0.0000
0.5000
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/day)
CBOD5
25.00
2.00
0.00
1.50
NH3-N
20.00
0.00
0.00
0.70
Dissolved Oxygen
5.00
8.24
0.00
0.00
Record: 3 of 5
No Filter
Search


Input Data WQM 7.0
Discharge and Parameter Data
General
Stream
Discharge and Parameters
Discharge Data
RMI
Name
Permit Number
Existing Disc Flow (mgd)
Permitted Disc Flow (mgd)
Design Disc Flow (mgd)
Reserve Factor
Disc Temp (ºC)
Disc pH
86.700
confl Maiden Cr
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/day)
CBOD5
25.00
2.00
0.00
1.50
NH3-N
20.00
0.00
0.00
0.70
Dissolved Oxygen
5.00
8.24
0.00
0.00
Record: 4 of 5
No Filter
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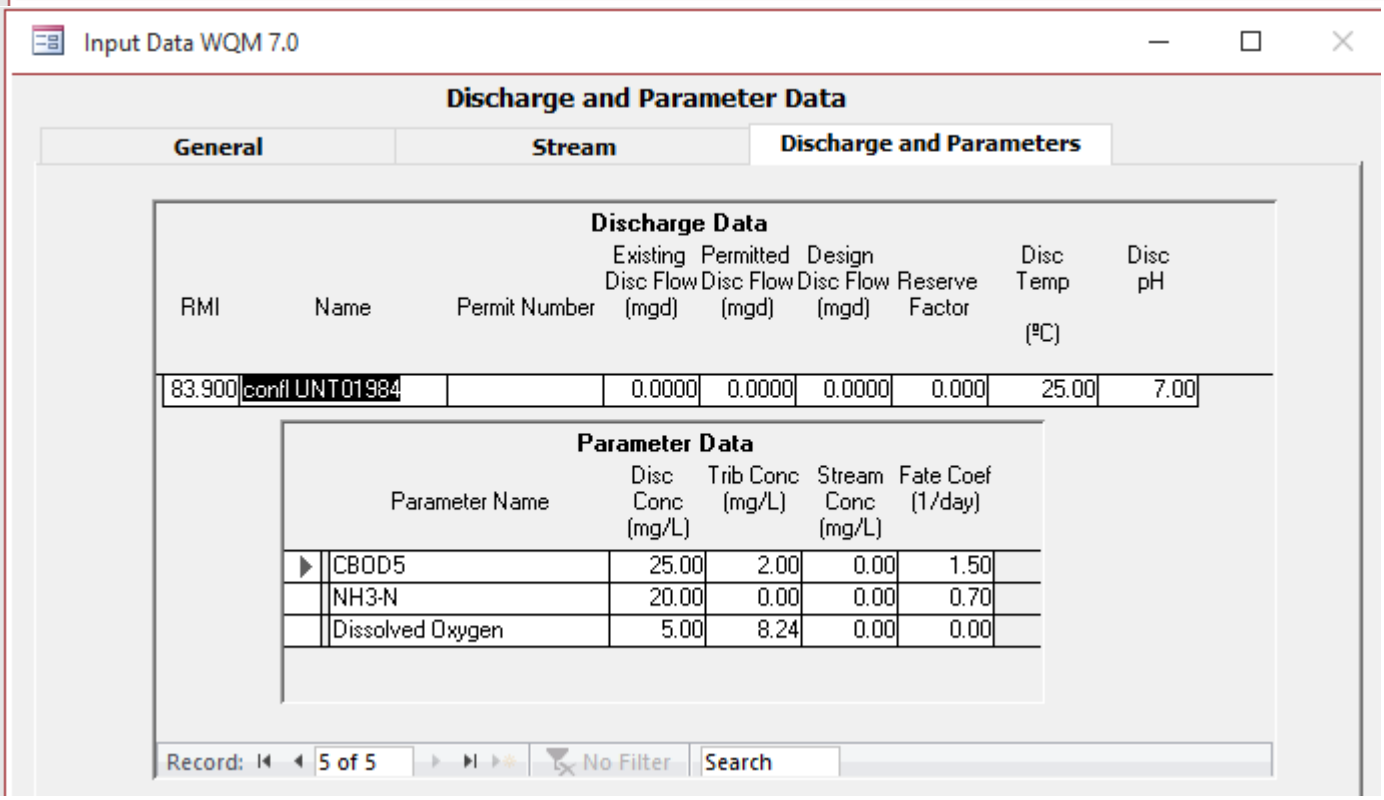
Save
Analyze
Cancel
Export


Input Data WQM 7.0
Discharge and Parameter Data
General
Stream
Discharge and Parameters
Discharge Data
RMI
Name
Permit Number
Existing Disc Flow (mgd)
Permitted Disc Flow (mgd)
Design Disc Flow (mgd)
Reserve Factor
Disc Temp (ºC)
Disc pH
83.900
confl UNT01984
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/day)
CBOD5
25.00
2.00
0.00
1.50
NH3-N
20.00
0.00
0.00
0.70
Dissolved Oxygen
5.00
8.24
0.00
0.00
Record: 5 of 5
No Filter
Search

Analysis Results WQM 7.0

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

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
36.700	1.410	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WD Ratio**	**Reach Velocity (fps)**
103.892	0.989	105.062	0.349
Reach C-BOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.24	0.142	0.39	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.146	1.238	Tsivoglou	5

Reach Travel Time (days): 0.491

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.049	2.22	0.37	5.22
0.098	2.20	0.35	5.30
0.147	2.18	0.34	5.38
0.196	2.16	0.32	5.45
0.245	2.15	0.30	5.53
0.295	2.13	0.29	5.60
0.344	2.11	0.27	5.68
0.393	2.09	0.26	5.75
0.442	2.07	0.25	5.82
0.491	2.05	0.24	5.89

Record: 4 of 4 | No Filter | Search

End of stream segment and DO recovering

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)
92.70	Shoemakersville	PA0024074	0.0000

Parameter	Effluent Limit 30 Day Average (mg/L)	Effluent Limit Maximum (mg/L)	Effluent Limit Minimum (mg/L)
CBOD5	25		
NH3-N	14.77	29.54	
Dissolved Oxygen			5

Record: 1 of 3 | No Filter | Search

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Shoemakersville STP** NPDES Permit No.: **PA0024074** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **domestic ww**

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
0.75	100	7						

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc	0 if left blank: Stream Conc	0.5 if left blank: Daily CV	0.5 if left blank: Hourly CV	0 if left blank: Strea m CV	0 if left blank: Fate Coeff	0 if left blank: FOS	1 if left blank: Criteri a Mod	1 if left blank: Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		1470									
	Chloride (PWS)	mg/L		428									
	Bromide	mg/L		0.83									
	Sulfate (PWS)	mg/L		300									
	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	mg/L		0.008									
	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	mg/L		0.054									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

Group 3	Carbon Tetrachloride	µg/L	<											
	Chlorobenzene	µg/L												
	Chlorodibromomethane	µg/L	<											
	Chloroethane	µg/L	<											
	2-Chloroethyl Vinyl Ether	µg/L	<											
	Chloroform	µg/L	<											
	Dichlorobromomethane	µg/L	<											
	1,1-Dichloroethane	µg/L	<											
	1,2-Dichloroethane	µg/L	<											
	1,1-Dichloroethylene	µg/L	<											
	1,2-Dichloropropane	µg/L	<											
	1,3-Dichloropropylene	µg/L	<											
	1,4-Dioxane	µg/L	<											
	Ethylbenzene	µg/L	<											
	Methyl Bromide	µg/L	<											
	Methyl Chloride	µg/L	<											
	Methylene Chloride	µg/L	<											
	1,1,2,2-Tetrachloroethane	µg/L	<											
	Tetrachloroethylene	µg/L	<											
	Toluene	µg/L	<											
	1,2-trans-Dichloroethylene	µg/L	<											
	1,1,1-Trichloroethane	µg/L	<											
	1,1,2-Trichloroethane	µg/L	<											
	Trichloroethylene	µg/L	<											
	Vinyl Chloride	µg/L	<											
Group 4	2-Chlorophenol	µg/L	<											
	2,4-Dichlorophenol	µg/L	<											
	2,4-Dimethylphenol	µg/L	<											
	4,6-Dinitro-o-Cresol	µg/L	<											
	2,4-Dinitrophenol	µg/L	<											
	2-Nitrophenol	µg/L	<											
	4-Nitrophenol	µg/L	<											
	p-Chloro-m-Cresol	µg/L	<											
	Pentachlorophenol	µg/L	<											
	Phenol	µg/L	<											
	2,4,6-Trichlorophenol	µg/L	<											
Group 5	Acenaphthene	µg/L	<											
	Acenaphthylene	µg/L	<											
	Anthracene	µg/L	<											
	Benzidine	µg/L	<											
	Benzo(a)Anthracene	µg/L	<											
	Benzo(a)Pyrene	µg/L	<											
	3,4-Benzofluoranthene	µg/L	<											
	Benzo(ghi)Perylene	µg/L	<											
	Benzo(k)Fluoranthene	µg/L	<											
	Bis(2-Chloroethoxy)Methane	µg/L	<											
	Bis(2-Chloroethyl)Ether	µg/L	<											
	Bis(2-Chloroisopropyl)Ether	µg/L	<											
	Bis(2-Ethylhexyl)Phthalate	µg/L	<											
	4-Bromophenyl Phenyl Ether	µg/L	<											
	Butyl Benzyl Phthalate	µg/L	<											
	2-Chloronaphthalene	µg/L	<											
	4-Chlorophenyl Phenyl Ether	µg/L	<											
	Chrysene	µg/L	<											
	Dibenzo(a,h)Anthrancene	µg/L	<											
	1,2-Dichlorobenzene	µg/L	<											
	1,3-Dichlorobenzene	µg/L	<											
	1,4-Dichlorobenzene	µg/L	<											
	3,3-Dichlorobenzidine	µg/L	<											
	Diethyl Phthalate	µg/L	<											
	Dimethyl Phthalate	µg/L	<											
	Di-n-Butyl Phthalate	µg/L	<											
	2,4-Dinitrotoluene	µg/L	<											

	2,6-Dinitrotoluene	µg/L	<										
	Di-n-Octyl Phthalate	µg/L	<										
	1,2-Diphenylhydrazine	µg/L	<										
	Fluoranthene	µg/L	<										
	Fluorene	µg/L	<										
	Hexachlorobenzene	µg/L	<										
	Hexachlorobutadiene	µg/L	<										
	Hexachlorocyclopentadiene	µg/L	<										
	Hexachloroethane	µg/L	<										
	Indeno(1,2,3-cd)Pyrene	µg/L	<										
	Isophorone	µg/L	<										
	Naphthalene	µg/L	<										
	Nitrobenzene	µg/L	<										
	n-Nitrosodimethylamine	µg/L	<										
	n-Nitrosodi-n-Propylamine	µg/L	<										
	n-Nitrosodiphenylamine	µg/L	<										
	Phenanthrene	µg/L	<										
	Pyrene	µg/L	<										
	1,2,4-Trichlorobenzene	µg/L	<										
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L		0.00496									
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Shoemakersville STP, NPDES Permit No. PA0024074, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Schuylkill River**

No. Reaches to Model: **1**

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	000833	92.7	300	388			Yes
End of Reach 1	000833	91.3	293	389			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	92.7	0.23										100	7		
End of Reach 1	91.3	0.23													

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	92.7														
End of Reach 1	91.3														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Shoemakersville STP, NPDES Permit No. PA0024074, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.132 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

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	156	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	910	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	1,335	Chem Translator of 0.978 applied
PCBs, Total	0	0		0	N/A	N/A	N/A	

☑ ***CFC*** CCT (min): 720 PMF: 0.913 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

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	665	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	227	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	8,538	Chem Translator of 0.986 applied
PCBs, Total	0	0		0	0.014	0.014	1.	

☑ ***THH*** CCT (min): 720 PMF: 0.913 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	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	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
PCBs, Total	0	0		0	N/A	N/A	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	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
PCBs, Total	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): ###### 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	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	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
PCBs, Total	0	0		0	0.000064	0.00006	0.021	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

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

☑ ***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	0.1	mg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	N/A	N/A	Discharge Conc < TQL
Total Zinc	0.86	mg/L	Discharge Conc ≤ 10% WQBEL
PCBs, Total	0.021	µg/L	Discharge Conc ≤ 25% WQBEL

Separate TMS Simulation to assess Total Chromium and Phenol, parameters included in Textiles ELGs:

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Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Shoemakersville** NPDES Permit No.: **PA0024074** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **dom.ww, SIU, ELG parameters**

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
0.75	100	7						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		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											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	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		500									
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	mg/L											
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L											
	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	mg/L											

1.0 mg/l = MUA's local limit for Total Chromium = 1000 ug/l ;
SIU < 50% of total ww to STP, so use 500 ug/l as dischg conc after dilution with non-SIU ww

Group 4	2-Chlorophenol	µg/L	<										
	2,4-Dichlorophenol	µg/L	<										
	2,4-Dimethylphenol	µg/L	<										
	4,6-Dinitro-o-Cresol	µg/L	<										
	2,4-Dinitrophenol	µg/L	<										
	2-Nitrophenol	µg/L	<										
	4-Nitrophenol	µg/L	<										
	p-Chloro-m-Cresol	µg/L	<										
	Pentachlorophenol	µg/L	<										
	Phenol	µg/L		5									
	2,4,6-Trichlorophenol	µg/L	<										
	Acenaphthene	µg/L	<										

No local limit established for Phenol. Forced TMS to calculate a WQBEL by entering a discharge concentration in model.

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Shoemakersville, NPDES Permit No. PA0024074, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | (●) All ( ) Inputs ( ) Results ( ) Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.132 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

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 Chromium (III)	0	0		0	569.763	1,803	20,088	Chem Translator of 0.316 applied
Phenol	0	0		0	N/A	N/A	N/A	

☑ ***CFC*** CCT (min): 720 PMF: 0.913 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

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 Chromium (III)	0	0		0	74.115	86.2	6,141	Chem Translator of 0.86 applied
Phenol	0	0		0	N/A	N/A	N/A	

☑ ***THH*** CCT (min): 720 PMF: 0.913 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 Chromium (III)	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	285,044	

☑ ***CRL*** CCT (min): ###### 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 Chromium (III)	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

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

☑ ***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 Chromium (III)	6,141	µg/L	Discharge Conc ≤ 10% WQBEL
Phenol	285,044	µg/L	Discharge Conc ≤ 25% WQBEL

DMRs, discharge concentration for Total Copper :

													adjusted conc's:									
													avg.mo.	d.max.								
PA0024074	1/1/2021	1/31/2021	Copper, Total	lbs/day	0.04	Monitor	Average Month	0.04	Monitor	Daily Maximu	mg/L		0.013	0.013	0.013	Monitor	Average Mo	0.013	Monitor	Daily Ma	1/month	
PA0024074	2/1/2021	2/28/2021	Copper, Total	lbs/day	0.03	Monitor	Average Month	0.03	Monitor	Daily Maximu	mg/L		0.01	0.01	0.01	Monitor	Average Mo	0.01	Monitor	Daily Ma	1/month	
PA0024074	3/1/2021	3/31/2021	Copper, Total	lbs/day	0.03	Monitor	Average Month	0.03	Monitor	Daily Maximu	mg/L		0.009	0.009	0.009	Monitor	Average Mo	0.009	Monitor	Daily Ma	1/month	
PA0024074	4/1/2021	4/30/2021	Copper, Total	lbs/day	0.05	Monitor	Average Month	0.05	Monitor	Daily Maximu	mg/L		0.014	0.014	0.014	Monitor	Average Mo	0.014	Monitor	Daily Ma	1/month	
PA0024074	5/1/2021	5/31/2021	Copper, Total	lbs/day	0.03	Monitor	Average Month	0.03	Monitor	Daily Maximu	mg/L		0.009	0.009	0.009	Monitor	Average Mo	0.009	Monitor	Daily Ma	1/month	
PA0024074	6/1/2021	6/30/2021	Copper, Total	lbs/day	0.03	Monitor	Average Month	0.03	Monitor	Daily Maximu	mg/L		0.009	0.009	0.009	Monitor	Average Mo	0.009	Monitor	Daily Ma	1/month	
PA0024074	7/1/2021	7/31/2021	Copper, Total	lbs/day	0.01	Monitor	Average Month	0.01	Monitor	Daily Maximu	mg/L		0.005	0.005	0.005	Monitor	Average Mo	0.005	Monitor	Daily Ma	1/month	
PA0024074	8/1/2021	8/31/2021	Copper, Total	lbs/day	0.02	Monitor	Average Month	0.02	Monitor	Daily Maximu	mg/L		0.009	0.009	0.009	Monitor	Average Mo	0.009	Monitor	Daily Ma	1/month	
PA0024074	9/1/2021	9/30/2021	Copper, Total	lbs/day	0.02	Monitor	Average Month	0.02	Monitor	Daily Maximu	mg/L		0.006	0.006	0.006	Monitor	Average Mo	0.006	Monitor	Daily Ma	1/month	
PA0024074	10/1/2021	10/31/2021	Copper, Total	lbs/day	0.01	Monitor	Average Month	0.01	Monitor	Daily Maximu	mg/L		0.005	0.005	0.005	Monitor	Average Mo	0.005	Monitor	Daily Ma	1/month	
PA0024074	11/1/2021	11/30/2021	Copper, Total	lbs/day	0.02	Monitor	Average Month	0.02	Monitor	Daily Maximu	mg/L		0.008	0.008	0.008	Monitor	Average Mo	0.008	Monitor	Daily Ma	1/month	
PA0024074	12/1/2021	12/31/2021	Copper, Total	lbs/day	0.02	Monitor	Average Month	0.02	Monitor	Daily Maximu	mg/L		0.01	0.01	0.01	Monitor	Average Mo	0.01	Monitor	Daily Ma	1/month	
PA0024074	1/1/2022	1/31/2022	Copper, Total	lbs/day	0.03	Monitor	Average Month	0.03	Monitor	Daily Maximu	mg/L		0.009	0.009	0.009	Monitor	Average Mo	0.009	Monitor	Daily Ma	1/month	
PA0024074	2/1/2022	2/28/2022	Copper, Total	lbs/day	0.02	Monitor	Average Month	0.02	Monitor	Daily Maximu	mg/L		0.007	0.007	0.007	Monitor	Average Mo	0.007	Monitor	Daily Ma	1/month	
PA0024074	3/1/2022	3/31/2022	Copper, Total	lbs/day	0.01	Monitor	Average Month	0.01	Monitor	Daily Maximu	mg/L		0.003	0.003	0.003	Monitor	Average Mo	0.003	Monitor	Daily Ma	1/month	
PA0024074	4/1/2022	4/30/2022	Copper, Total	lbs/day	0.1	Monitor	Average Month	0.1	Monitor	Daily Maximu	mg/L		0.01	0.01	0.01	Monitor	Average Mo	0.01	Monitor	Daily Ma	1/month	
PA0024074	5/1/2022	5/31/2022	Copper, Total	lbs/day	0.4	Monitor	Average Month	0.01	Monitor	Daily Maximu	mg/L		0.004	0.004	0.004	Monitor	Average Mo	0.004	Monitor	Daily Ma	1/month	
PA0024074	6/1/2022	6/30/2022	Copper, Total	lbs/day	0.08	Monitor	Average Month	0.08	Monitor	Daily Maximu	mg/L		0.016	0.016	0.016	Monitor	Average Mo	0.016	Monitor	Daily Ma	1/month	
PA0024074	7/1/2022	7/31/2022	Copper, Total	lbs/day	0.03	Monitor	Average Month	0.03	Monitor	Daily Maximu	mg/L		0.014	0.014	0.014	Monitor	Average Mo	0.014	Monitor	Daily Ma	1/month	
PA0024074	8/1/2022	8/31/2022	Copper, Total	lbs/day	<0.04	Monitor	Average Month	<0.04	Monitor	Daily Maximu	mg/L		0.013	0.013	0.13	Monitor	Average Mo	0.13	Monitor	Daily Ma	1/month	Daily Effl Suppl. DMR shows 1 sample collected in month: 0.013 mg/l, calc'd mass load of 0.04 lbs/day.
PA0024074	9/1/2022	9/30/2022	Copper, Total	lbs/day	0.04	Monitor	Average Month	0.04	Monitor	Daily Maximu	mg/L		0.008	0.008	0.008	Monitor	Average Mo	0.008	Monitor	Daily Ma	1/month	
PA0024074	10/1/2022	10/31/2022	Copper, Total	lbs/day	39*	Monitor	Average Month	39**	Monitor	Daily Maximu	mg/L		0.012	0.012	97	Monitor	Average Mo	120	Monitor	Daily Ma	1/month	Daily Effl Suppl. DMR shows 1 sample collected in month: 0.012 mg/l, calc'd mass load of 0.03 lbs/day.
PA0024074	11/1/2022	11/30/2022	Copper, Total	lbs/day	0.02	Monitor	Average Month	0.02	Monitor	Daily Maximu	mg/L		0.008	0.008	0.008	Monitor	Average Mo	0.008	Monitor	Daily Ma	1/month	
PA0024074	12/1/2022	12/31/2022	Copper, Total	lbs/day	0.07	Monitor	Average Month	0.07	Monitor	Daily Maximu	mg/L		0.024	0.024	0.024	Monitor	Average Mo	0.024	Monitor	Daily Ma	1/month	
PA0024074	1/1/2023	1/31/2023	Copper, Total	lbs/day	0.9	Monitor	Average Month	0.03	Monitor	Daily Maximu	mg/L		0.008	0.008	0.008	Monitor	Average Mo	0.008	Monitor	Daily Ma	1/month	
PA0024074	2/1/2023	2/28/2023	Copper, Total	lbs/day	0.02	Monitor	Average Month	0.02	Monitor	Daily Maximu	mg/L		0.006	0.006	0.006	Monitor	Average Mo	0.006	Monitor	Daily Ma	1/month	
PA0024074	3/1/2023	3/31/2023	Copper, Total	lbs/day	0.03	Monitor	Average Month	0.03	Monitor	Daily Maximu	mg/L		0.006	0.006	0.006	Monitor	Average Mo	0.006	Monitor	Daily Ma	1/month	
PA0024074	4/1/2023	4/30/2023	Copper, Total	lbs/day	0.03	Monitor	Average Month	0.03	Monitor	Daily Maximu	mg/L		0.009	0.009	0.009	Monitor	Average Mo	0.009	Monitor	Daily Ma	1/month	
PA0024074	5/1/2023	5/31/2023	Copper, Total	lbs/day	0.02	Monitor	Average Month	0.02	Monitor	Daily Maximu	mg/L		0.007	0.007	0.007	Monitor	Average Mo	0.007	Monitor	Daily Ma	1/month	
PA0024074	6/1/2023	6/30/2023	Copper, Total	lbs/day	0.04	Monitor	Average Month	0.04	Monitor	Daily Maximu	mg/L		0.008	0.008	0.008	Monitor	Average Mo	0.008	Monitor	Daily Ma	1/month	
PA0024074	7/1/2023	7/31/2023	Copper, Total	lbs/day	0.03	Monitor	Average Month	0.03	Monitor	Daily Maximu	mg/L		0.004	0.004	0.004	Monitor	Average Mo	0.004	Monitor	Daily Ma	1/month	
PA0024074	8/1/2023	8/31/2023	Copper, Total	lbs/day	0.01	Monitor	Average Month	0.01	Monitor	Daily Maximu	mg/L		0.004	0.004	0.004	Monitor	Average Mo	0.004	Monitor	Daily Ma	1/month	
PA0024074	9/1/2023	9/30/2023	Copper, Total	lbs/day	0.03	Monitor	Average Month	0.03	Monitor	Daily Maximu	mg/L		0.005	0.005	0.005	Monitor	Average Mo	0.005	Monitor	Daily Ma	1/month	
PA0024074	10/1/2023	10/31/2023	Copper, Total	lbs/day	0.01	Monitor	Average Month	0.01	Monitor	Daily Maximu	mg/L		0.004	0.004	0.004	Monitor	Average Mo	0.004	Monitor	Daily Ma	1/month	
PA0024074	11/1/2023	11/30/2023	Copper, Total	lbs/day	0.3	Monitor	Average Month	0.01	Monitor	Daily Maximu	mg/L		0.005	0.005	0.005	Monitor	Average Mo	0.005	Monitor	Daily Ma	1/month	
PA0024074	12/1/2023	12/31/2023	Copper, Total	lbs/day	0.02	Monitor	Average Month	0.02	Monitor	Daily Maximu	mg/L		0.003	0.003	0.003	Monitor	Average Mo	0.003	Monitor	Daily Ma	1/month	
PA0024074	1/1/2024	1/31/2024	Copper, Total	lbs/day	0.03	Monitor	Average Month	0.03	Monitor	Daily Maximu	mg/L		0.006	0.006	9	Monitor	Average Mo	9	Monitor	Daily Ma	1/month	Daily Effl Suppl DMR shows 1 sample collected in month: 0.006 mg/l, calc'd mass load of 0.03 lbs/day. E
PA0024074	2/1/2024	2/29/2024	Copper, Total	lbs/day	0.02	Monitor	Average Month	0.02	Monitor	Daily Maximu	mg/L		0.005	0.005	0.005	Monitor	Average Mo	0.005	Monitor	Daily Ma	1/month	
PA0024074	3/1/2024	3/31/2024	Copper, Total	lbs/day	0.05	Monitor	Average Month	0.05	Monitor	Daily Maximu	mg/L		0.008	0.008	0.008	Monitor	Average Mo	0.008	Monitor	Daily Ma	1/month	
PA0024074	4/1/2024	4/30/2024	Copper, Total	lbs/day	0.03	Monitor	Average Month	0.03	Monitor	Daily Maximu	mg/L		0.006	0.006	0.006	Monitor	Average Mo	0.006	Monitor	Daily Ma	1/month	
PA0024074	5/1/2024	5/31/2024	Copper, Total	lbs/day	0.01	Monitor	Average Month	0.01	Monitor	Daily Maximu	mg/L		0.004	0.004	0.004	Monitor	Average Mo	0.004	Monitor	Daily Ma	1/month	
													0.0081	0.0081	2.5959	Avg		3.15688	Avg			
		* should be 0	**should be 0.03 lbs/day per Suppl DMR										0.024	0.024	97	Max		120	Max			
												median	0.008									