

Application Type Renewal  
Facility Type Municipal  
Major / Minor Minor

**NPDES PERMIT FACT SHEET  
INDIVIDUAL SEWAGE**

Application No. PA0024686  
APS ID 1072488  
Authorization ID 1412242

**Applicant and Facility Information**

Applicant Name	<u>Mid Mon Valley Water Pollution Control Authority</u>	Facility Name	<u>Mid Mon Valley WPCA STP</u>
Applicant Address	<u>1 Anderson Street</u> <u>Allenport, PA 15412-0197</u>	Facility Address	<u>1 Anderson Street</u> <u>Allenport, PA 15412-0197</u>
Applicant Contact	<u>Dave Syrko</u>	Facility Contact	<u>Dave Syrko</u>
Applicant Phone	<u>(724) 326-4491</u>	Facility Phone	<u>(724) 326-4491</u>
Client ID	<u>62424</u>	Site ID	<u>271356</u>
Ch 94 Load Status	<u>Existing Hydraulic Overload</u>	Municipality	<u>Allenport Borough</u>
Connection Status		County	<u>Washington</u>
Date Application Received	<u>September 30, 2022</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>December 1, 2022</u>	If No, Reason	
Purpose of Application	<u>NPDES permit renewal application.</u>		

**Summary of Review**

The PA Department of Environmental Protection (PADEP/Department) received an NPDES renewal application from K LH Engineers, Inc. on behalf of Mid Mon Valley Water Pollution Control Authority (MMVWPCA/Authority/permittee) on September 30, 2022 for permittee's MMVWPCA STP (facility). The facility is in Allenport Borough, Washington County and the treated effluent is discharged into Monongahela River in state watershed 19-C. The current permit will expire on March 31, 2023. The terms and conditions of the current permit is automatically extended since the renewal application was received at least 180 days prior to the expiration date. Renewal NPDES permit applications under Clean Water program are not covered by PADEP's PDG per 021-2100-001.


This fact sheet is developed in accordance with 40 CFR §124.56.

Changes in this renewal: E. Coli monitoring added

Sludge use and disposal description and location(s): The digested biosolids are dewatered in three on-site drying beds and then disposed at Westmoreland Waste landfill.

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.

Approve	Deny	Signatures	Date
√		Reza H. Chowdhury, E.I.T. / Project Manager 	December 8, 2022
X		<b>Pravin Patel</b> Pravin C. Patel, P.E. / Environmental Engineer Manager	12/09/2022

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.7
Latitude	40° 6' 28"	Longitude	-79° 50' 53"
Quad Name	Fayette City	Quad Code	1807
Wastewater Description: Sewage Effluent			
Receiving Waters	Monongahela River (WWF)	Stream Code	37185
NHD Com ID	99410198	RMI	45.91
Drainage Area	5,190 mi <sup>2</sup>	Yield (cfs/mi <sup>2</sup> )	0.077
Q <sub>7-10</sub> Flow (cfs)	400/100	Q <sub>7-10</sub> Basis	USGS StreamStats
Elevation (ft)	757	Slope (ft/ft)	
Watershed No.	19-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Background/Ambient Data		Data Source	
pH (SU)	7.7	WQN0702, median Jul-Sep, 1999-2019	
Temperature (°C)	25	WQN0702, median Jul-Sep, 1999-2019	
Hardness (mg/L)	116	WQN0702, median Jul-Sep, 1999-2019	
Other:			
Nearest Downstream Public Water Supply Intake	Belle Vernon Boro Municipal Authority		
PWS Waters	Monongahela River	Flow at Intake (cfs)	
PWS RMI	44.56	Distance from Outfall (mi)	1.4

Changes Since Last Permit Issuance: None

Other Comments:

Stream flow:

USGS's web based watershed delineation tool StreamStats (accessible at <https://streamstats.usgs.gov/ss/>, accessed on December 1, 2022) was utilized to determine the drainage area and low flow statistics of the receiving stream at discharge point. The StreamStats delineation report shows a drainage area at the Outfall 001 to be 5,190 mi<sup>2</sup>, Q<sub>7-10</sub> of 400 cfs, and Q<sub>30-10</sub> of 468 cfs.

Yield: 400/5190 or 0.077 cfs/mi<sup>2</sup>  
Q<sub>30-10</sub>: Q<sub>1-10</sub> = 8.2/5.69 or 1.44

Default Q<sub>1-10</sub>:Q<sub>7-10</sub> of 0.64 will be used in modeling, if needed.

DEP's SOP BCW-PMT-033 page 4.II.B.4 states that where a facility is eligible for technology-based limits of CBOD<sub>5</sub> exceeding 25 mg/l, application managers will evaluate a WQBEL for CBOD<sub>5</sub> as follows:

- a. Model the discharge using the Toxics Management Spreadsheet (TMS)
- b. Multiply the acute partial mix factor by the Q<sub>7-10</sub> of the receiving waters
- c. Run the WQM 7.0 model using the adjusted Q<sub>7-10</sub> and apply the WQBEL in the permit, if less than the technology-based limits

- d. Establish the average monthly concentration limit for TSS at the same concentration as for CBOD<sub>5</sub> using BPJ, if the CBOD<sub>5</sub> limit is a WQBEL

The attached PENTOXSD model suggested a PMFa of 5.9%. A partial mixing factor is used to describe the fractional portion of the stream that mixes with the discharge at the criteria compliance times. The partial mix factor is a value between 0 and 1; 1 presenting complete mixing and less than 1 represents there is incomplete mixing between the discharge and the stream. EPA’s manual (NPDES Permit Writers Manual (EPA-833-K-10-001, September 2010) Chapter 6.2.5.2) indicates a maximum of 25% of stream width available for acute mixing. Considering above guideline and the facility’s performance, it is decided that PMFa of 25% will be used. Therefore, the revised Q<sub>7-10</sub> will be **400 cfs \* 0.25 or 100 cfs.**

**PWS Intake:** The nearest downstream PWS intake is Belle Vernon Municipal Authority near Belle Vernon Borough, Fayette County, on Monongahela River at RMI 44.56. The intake is approximately 1.4 miles downstream of Outfall 001. Due to the distance, dilution at Mon river, effluent limitations, and the fact that the intake is located on the other side of the river, it is expected that the discharge from this facility won’t affect the PWS intake.

**Wastewater Characteristics:**

A pH of 7.2 (median July- September 2022), default temperature of 25°C (Default per 391-2000-007), and default Hardness value of 100 mg/l will be used for modeling, if needed.

**Background data:**

The nearest WQN station is WQN0702 on C Vance Deicas Memorial Bridge, Monongahela River @ Charleroi, North Charleroi Borough, Washington County, at approximate RMI 41.4 mile. Stream data at this station was analyzed for the low flow months for the years 1999-2019, and the resulting median pH is 7.7 S.U., temperature is 25°C, and hardness of 116.

**Antidegradation (93.4):**

The effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. The receiving streams are designated as Warm-Water Fishes (WWF). No High-Quality stream or Exceptional Value water is impacted by this discharge; therefore, no Antidegradation Analysis is performed for the discharge.

**Class A Wild Trout Fisheries:**

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

**Biosolids Management:** The digested biosolids are dewatered in three on-site drying beds and then disposed at Westmoreland Waste landfill.

Treatment Facility Summary				
<b>Treatment Facility Name:</b> Mid Mon Valley WPCA STP				
<b>WQM Permit No.</b>	<b>Issuance Date</b>			
6321404	11/2/2021			
6321403	11/2/2021			
6321402	11/2/2021			
6315401	10/7/2015			
<b>Waste Type</b>	<b>Degree of Treatment</b>	<b>Process Type</b>	<b>Disinfection</b>	<b>Avg Annual Flow (MGD)</b>
Sewage	Tertiary	Activated Sludge with Solids Removal	Gas Chlorine	0.7
<b>Hydraulic Capacity (MGD)</b>	<b>Organic Capacity (lbs/day)</b>	<b>Load Status</b>	<b>Biosolids Treatment</b>	<b>Biosolids Use/Disposal</b>
0.7	1191	Existing Hydraulic Overload	Drying	Landfill

**Treatment Plant Description**

Mid Mon Valley WPCA (MMVWPCA) STP is a minor sewage treatment facility with an Average Annual Design Flow and hydraulic Design Capacity of 0.7 MGD and Organic Design Capacity of 1,191 lbs./day. The facility discharges treated sewage effluent through Outfall 001 into Monongahela River at RMI 45.91. Per the application *“the influent enters the plant at the metering chamber and then flows through a diversion box with bar screens. This flow is then divided into aeration/clarification tanks, identical to each other. After digestion, the flow enters the clarifiers where settling takes place. Sludge from the clarifiers enters the re-aeration tanks where it is further digested. Effluent from the clarifiers is then joined and enters a single chlorine contact tank. after disinfection, the flow proceeds to the outfall in the Monongahela River. The digested solids are then dewatered at three on-site drying beds and then disposed of at a landfill.”*

The facility serves the following municipalities:

TRIBUTARY INFORMATION				
Municipalities Served	Flow Contribution (%)	Type of Sewer System		Population
		Separate (%)	Combined (%)	
Allenport Borough	25	100		537
Roscoe Borough	37	100		812
Elco Borough	14	100		323
Stockdale Borough	24	100		502

The sewer system tributary to the MMVWPCA STP was at once time a combined system. Under the Authority’s LTCP, the sewer system was separated. The separation project was completed in May of 2008. Due to the fact that the CSO outfalls were capped without addressing the I&I issues first or addressing illegal connections, the separation project resulted in several SSOs. MMVWPCA received an NOV in 2012 regarding the SSOs. MMVWPCA identified 254 illegal connections amongst other issues at the time. A Corrective Action Plan (CAP) was approved on June 19, 2017 that recounts the difficulty of having illegal connections removed in the tributary systems. The CAP requires the Authority to take all necessary actions to prevent unpermitted discharges, basement flooding, and the associated public health hazards. The CAP requires submission of Annual Tap Control Plan by January 31 each year until such time as the CAP is terminated. In addition, the CAP requires submission of progress reports every six months by July 30 and January 31 of each year. A review of submitted Ch. 94 report for the operating year 2021 indicated that the facility has little hydraulic capacity left and no concern on organic loading. The Authority stated that there is no current or projected overload resulted from the Ch. 94 spreadsheet. A review of the CAP Progress Report submitted for first half of 2022 (submitted on August 12, 2022) identified the following:

1. Six (6) of the SSO outfalls were re-categorized as “emergency” outfalls for the pump stations. These outfalls are SSO #2 (PS #1), SSO #3 (PS #2), SSO #6 (PS #3), SSO #11 (PS #4), SSO #12 (PS #5), and SSO #9 (PS #6).
2. The outfalls that are categorized as SSO Outfalls and remain on the schedule to be closed are: SSO #5 (October 2017), SSO #10 (December 2021), and SSO #7 (December 2023).
3. Install flow meters in SSOs: Completed. Flow meters were installed between April 1, 2017 to April 7, 2017. The monitors are set to collect data on 1-hr interval. This data is regularly downloaded and compiled into an Excel spreadsheet.
4. Perform I&I repairs North of plant: Completed. Minor repairs were performed and the SSO at this location didn’t record any discharges during the period monitored.
5. Close SSO #9: This SSO was closed on January 9, 2018; however, as this SSO has been re-classified as an emergency outfall for PS #6, it was re-opened and the flow monitor re-installed. No discharge has been recorded.
6. Smoke and Dye Test Roscoe Borough: This work was performed between June 26<sup>th</sup> and June 28<sup>th</sup> of 2017. The report submitted to MMVWPCA identified eighteen (18) locations where storm water was entering the system.
7. Perform I&I repairs Roscoe Borough: Roscoe Borough completed the repairs on Spring Street, however, repairs are still underway in Roscoe. The Authority televised the line along Chester Street and several defects were noted. This included a collapsed pipe and several break-in taps that require repairs.
8. Close SSO #8: Closed on January 10, 2018.
9. Close SSO #5: This SSO was not closed as the defects identified above are still allowing infiltration into the sanitary system. If the SSO was closed, backups in the system would still occur.
10. Perform I&I repairs Elco Borough: Elco Borough hasn’t performed any repairs to the deficiencies noted during the smoke testing, resulting in non-compliance with the CAP schedule.

- 11. Close SSO #2: This item was added to the list of emergency outfalls for the Pump Stations. It will not be closed, but monitoring will remain. This item is considered as 100% complete.
- 12. Smoke and Dye test Stroal Acres: Completed.
- 13. Close SSO #3: This SSO was re-classified as one of the emergency outfalls and will remain open. It is considered as 100% complete.
- 14. Perform I&I repairs Stroal Acres: This item is considered 90% complete as Allenport Borough removed one stormwater inlet from the system and letter were sent to violators. They also have replaced the collection system in the area between Railroad Street and Elm Street. Flow monitoring will continue to determine effectiveness of these repairs.
- 15. Smoke and Dye test Stockdale Borough: 100% complete.
- 16. Perform I&I repairs in Stockdale Borough: In 2021, Stockdale Borough completed a sewer separation project on Hickory Street, removing seven (7) catch basins on Hickory and Bow, and Hickory and Railroad street, from the sanitary sewer system. 100% complete.
- 17. Smoke and Dye test Allenport Borough: 100% complete.

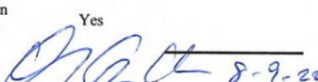
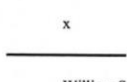
No new connections were permitted during the reporting period of January 1- June 30, 2022. A summary is provided in next page of this fact sheet. In summary, the CAP is extended until 2023.

**Existing limits**

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum 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	Recorded
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Maximum	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	146	222	XXX	25.0	38.0	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	Report	XXX	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	Report	XXX	1/week	8-Hr Composite
Total Suspended Solids	175	263	XXX	30.0	45.0	60	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	Report	XXX	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	Grab

**NPDES Permit Fact Sheet  
Mid Mon Valley WPCA STP**

**NPDES Permit No. PA0024686**

Mid Mon Valley Water Pollution Control Authority - Corrective Action Plan Progress Report					REPORTING PERIOD	
Allenport Borough		Washington County		NPDES Permit No. PA0024686		FROM: 1/1/2022 TO: 6/30/2022
Task Description	Proposed Start Date	Actual Start Date	Required Completion Date	Actual Completion Date	Percent Complete	Comments
Install Flow Meters in SSO's	April 1, 2017	April 1, 2017	April 7, 2017	April 7, 2017	100	
Perform I&I Repairs N. of Plant	May 1, 2017	May 1, 2017	July 31, 2017	July 31, 2017	100	
Close SSO # 009	August 1, 2017	August 1, 2017	August 31, 2017	January 9, 2018	100	This SSO reopened as it was reclassified as emergency outfall for P.S. #6
Smoke and Dye Test Roscoe Borough	May 1, 2017	June 26, 2017	July 1, 2017	June 28, 2017	100	Completed, letters sent to violators
Perform I&I Repairs Roscoe Borough	June 1, 2017	June 29, 2017	August 31, 2017		90	Letters sent to violators. Roscoe Borough has not removed all stormwater inlets from sanitary system. (Spring Street)
Close SSO #008	September 1, 2017	September 1, 2017	September 30, 2017	January 10, 2018	100	
Close SSO # 005	October 1, 2017	October 1, 2017	October 31, 2017		0	Letters sent to violators. Roscoe Borough has not removed stormwater inlets from sanitary system. (Coal & Howard Streets)
Perform I&I Repairs Elco Borough	March 1, 2018	March 1, 2018	November 30, 2018		10	Elco Borough is currently working on removing Stormwater Inlets
Close SSO #002	December 1, 2018	N/A	December 31, 2018	N/A	100	Reclassified as Emergency Outlet - Will Remain Open
Smoke and Dye Test Stroal Acres	May 1, 2018	March 26, 2018	June 1, 2018	March 28, 2018	100	Completed. Letters sent to violators
Perform I&I Repairs Stroal Acres	June 1, 2019		November 30, 2019		95	Allenport Borough replaced collection system
Close SSO #003	December 1, 2019	N/A	December 31, 2019	N/A	100	Reclassified as Emergency Outlet - Will Remain Open
Smoke and Dye Test Stockdale Borough	May 1, 2019	March 19, 2018	June 1, 2019	March 20, 2018	100	Completed. Letters sent to violators
Perform I&I Repairs Stockdale Borough	June 1, 2020	January 1, 2020	November 30, 2020	December 31, 2020	100	Stockdale Borough completed sewer separation project on Hickory St. in 2020
Close SSO # 006	December 1, 2020		December 31, 2020	N/A	100	Reclassified as Emergency Outlet - Will Remain Open
Smoke and Dye Test Allenport Borough	May 1, 2021	March 26, 2018	June 1, 2021	March 28, 2018	100	Completed. Letters sent to violators
Close SSO #010	December 1, 2021	N/A	December 31, 2021	N/A	100	Reclassified as Emergency Outlet - Will Remain Open
Perform any Additional I&I Repairs in Stockdale Borough	June 1, 2021	2021	November 30, 2021	December 31, 2021	100	
Close SSO #011	December 1, 2022	N/A	December 31, 2022	N/A	100	Reclassified as Emergency Outlet - Will Remain Open
Perform I&I Repairs Allenport Borough	June 1, 2023		November 30, 2023			Allenport Borough is currently working on removing Stormwater Inlets
Close SSO #007	December 1, 2023		December 31, 2023		0	
Perform any Additional I&I Repairs in Entire System	June 1, 2023		November 30, 2023		0	
Close SSO #012	December 1, 2023	N/A	December 31, 2023	N/A	100	Reclassified as Emergency Outlet - Will Remain Open
TAPs Allocated for this Year		0		TAPs Utilized This Reporting Period		0
Based on the above information, are you in compliance with the approved schedule?						
Yes		No		x		
Engineer	David A. Coldren, P.E.		8-9-22	Municipal Official	William Sezawich	
	Name	Signature / Date			Name	Signature / Date

Topographic and Discharge Information - Sanitary Sewer Overflows								
SSO No.	Name	Location						Frequency (5 Years)
		Latitude			Longitude			
		Degrees	Minutes	Seconds	Degrees	Minutes	Seconds	
002	Elco	40	04	37	79	52	24	37
003	Agnes Alley	40	04	36	79	52	02	7
005	Howard Street	40	04	37	79	51	49	17
006	River Street	40	04	40	79	51	35	24
007	Locust Street	40	04	55	79	50	47	28
009	North of Plant	40	06	36	79	50	55	1
010	Elm Street	40	04	46	79	51	31	35
011	Pump Station #4	40	04	50	79	51	10	34
012	Pump Station #5	40	05	55	79	50	41	15

- I **Overflows occur during significant rain events that exceed the hydraulic capacity of the collection system due to infiltration and inflow.**
- II **Per the Corrective Action Plan and Progress Reports, the following actions will be accomplished to eliminate the SSOs:**
  - A. **SSO's 002, 003, 006, 011, 012, & 009 will be converted to Emergency Outfalls to prevent catastrophic events should mechanical failure occur at the down stream pump stations.**
  - B. **SSO's 005, 007 & 010 will be eliminated through smoke testing and infiltration and inflow reduction methods. Will work with each Borough and their collection system for sewer rehabilitation.**

Compliance History

DMR Data for Outfall 001 (from November 1, 2021 to October 31, 2022)

Parameter	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21
Flow (MGD) Average Monthly	0.27	0.31	0.30	0.23	0.28	0.43	0.45	0.40	0.59	0.57	0.52	
Flow (MGD) Daily Maximum	0.99	0.64	0.58	0.53	0.66	1.29	1.02	0.64	1.06	1.39	1.15	
pH (S.U.) Instantaneous Minimum	6.8	6.8	7.0	7.0	7.0	6.8	6.7	6.6	6.7	7.1	7.1	
pH (S.U.) IMAX	7.4	7.4	7.4	7.4	7.4	7.4	7.1	7.3	7.5	7.6	7.5	
DO (mg/L) Instantaneous Minimum	6.0	6.7	6.8	7.1	7.2	7.3	6.4	6.4	6.8	7.0	6.8	
TRC (mg/L) Average Monthly	0.41	0.23	0.26	0.14	0.20	0.22	0.28	0.43	0.37	0.28	0.34	
TRC (mg/L) IMAX	0.71	0.35	0.40	0.63	0.39	0.42	0.42	1.13	0.57	0.58	0.64	
CBOD5 (lbs/day) Average Monthly	7.4	11.9	7.8	6.0	6.9	6.2	8.6	6.3	14.2	9.3	9.4	
CBOD5 (lbs/day) Weekly Average	10.9	24.6	10.3	7.3	11.0	10.3	10.0	7.8	24.3	10.8	18.0	
CBOD5 (mg/L) Average Monthly	3.8	3.9	3.1	3.4	2.5	2.1	2.3	2.0	2.9	2.2	2.0	
CBOD5 (mg/L) Weekly Average	5.7	4.6	4.1	4.0	3.2	2.6	2.9	2.2	4.7	2.5	2.0	
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	30.6	33.0	33.4	14.8	42.8	28.4	37.1	18.6	60.7	29.1	63.8	
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	66.1	52.9	54.3	29.0	81.2	53.3	60.0	23.1	83.9	38.0	130.6	
BOD5 (mg/L) Raw Sewage Influent Average Monthly	17.8	12.0	14.2	8.2	20.6	10.7	9.6	6.5	15.0	7.1	132.5	
BOD5 (mg/L) Raw Sewage Influent Weekly Average	44.0	23.5	24.0	15.1	48.7	21.8	18.1	9.9	30.5	11.1	16.8	
TSS (lbs/day) Average Monthly	11.4	17.0	12.3	8.9	14.8	14.6	27.1	19.9	33.2	21.8	23.5	
TSS (lbs/day) Raw Sewage Influent Average Monthly	44.3	77.5	71.0	40.7	91.9	32.4	39.1	49.3	292.4	36.0	146.0	



**NPDES Permit Fact Sheet  
Mid Mon Valley WPCA STP**

**NPDES Permit No. PA0024686**

TSS (lbs/day) Raw Sewage Influent Daily Maximum	57.0	165.5	97.6	65.2	198.2	56.9	61.9	78.9	1015.8	43.4	324.3	
TSS (lbs/day) Weekly Average	14.6	26.7	12.5	9.6	27.5	25.9	44.2	25.7	52.5	27.1	45.0	
TSS (mg/L) Average Monthly	6.0	6.0	5.0	5.0	5.0	5.0	6.8	6.8	7.0	5.0	5.0	
TSS (mg/L) Raw Sewage Influent Average Monthly	24.5	24.5	31.2	22.8	32	12.0	9.3	16.0	52.5	8.8	29.0	
TSS (mg/L) Raw Sewage Influent Weekly Average	38.0	37.0	48.0	34.0	52	22.0	14.0	22.0	174.0	12.0	36.0	
TSS (mg/L) Weekly Average	8.0	8.0	5.0	5.0	5.0	5.0	10.0	11.0	9.0	5.0	5.0	
Fecal Coliform (No./100 ml) Geometric Mean	8	12	3	73	37	8	11	16	31	83	10	
Fecal Coliform (No./100 ml) IMAX	10	46	4	430	184	42	34	183	42	388	46	
Total Nitrogen (mg/L) Daily Maximum		8.21			8.8			7.5			5.34	
Ammonia (mg/L) Average Monthly	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7	0.2	
Ammonia (mg/L) Weekly Average	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.1	0.3	
Total Phosphorus (mg/L) Daily Maximum		0.7			0.4			0.3			0.8	

**Compliance History**

No eDMR violation noted for the evaluation period of 12 months.

Inspection Summary:

January 18, 2018: CEI conducted. No details are available.

**Development of Effluent Limitations**

<b>Outfall No.</b> <u>001</u>	<b>Design Flow (MGD)</b> <u>0.7</u>
<b>Latitude</b> <u>40° 6' 28.00"</u>	<b>Longitude</b> <u>-79° 50' 53.00"</u>
<b>Wastewater Description:</b> <u>Sewage Effluent</u>	

**Technology-Based Limitations**

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
CBOD <sub>5</sub>	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

**Water Quality-Based Limitations**

**WQM 7.0:**

WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate effluent limits for CBOD<sub>5</sub>, NH<sub>3</sub>-N and DO. The model simulates two basic processes. In the NH<sub>3</sub>-N module, the model simulates the mixing and degradation of NH<sub>3</sub>-N in the stream and compares calculated instream NH<sub>3</sub>-N concentrations to NH<sub>3</sub>-N water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of CBOD<sub>5</sub> and NH<sub>3</sub>-N and compares calculated instream D.O. concentrations to D.O. water quality criteria. The model was utilized for this permit renewal by using updated Q<sub>7-10</sub> and historic background water quality levels of the river. The following data were used in the attached computer model of the stream:

- Discharge pH 7.2 (median Jul-Sep, 2022, eDMR data)
- Discharge Temperature 25°C (Default)
- Discharge Hardness 100 mg/l (Default)
- Stream pH 7.7 (WQN0702, Jul-Sep, 1999-2019)
- Stream Temperature 25°C (WQN0702, Jul-Sep, 1999-2019)
- Stream Hardness 116 mg/l (WQN0702, Jul-Sep, 1999-2019)

The following nodes were considered in modeling:

Node 1: Outfall 001 at Outfall 001 on Monongahela River (37185)  
 Elevation: 757 ft (USGS National Map viewer, 12/2/2022)  
 Drainage Area: 5,190 mi<sup>2</sup> (StreamStat Version 3.0, 12/2/2022)  
 River Mile Index: 45.91 (PA DEP eMapPA)  
 Low Flow Yield: 0.077 cfs/mi<sup>2</sup>  
 Discharge Flow: 0.7 MGD

Node 2: At confluence with Speers Run (39817)  
 Elevation: 743.66 ft (USGS National Map viewer, 12/2/2022)  
 Drainage Area: 5,200 mi<sup>2</sup> (StreamStat Version 3.0, 12/2/2022)  
 River Mile Index: 43.72 (PA DEP eMapPA)  
 Low Flow Yield: 0.077 cfs/mi<sup>2</sup>  
 Discharge Flow: 0.0 MGD

NH<sub>3</sub>-N:

WQM 7.0 suggested 25.0 mg/l is protective to the receiving stream, and 25.0 mg/l is model input. Therefore, year-round monitoring is still valid and will be carried over.

CBOD<sub>5</sub>:

The WQM 7.0 model confirms the existing limits are still protective. Existing limits will be carried over.

Dissolved Oxygen (DO):

The existing permit has a minimum DO of 4.0 mg/l which is supported by WQM output as protective and will be carried over.

**Toxics:**

Based on the available data, PADEP utilizes Toxics Management Spreadsheet (TMS) to (1) evaluate reasonable potential for toxic pollutants to cause or contribute to an excursion above the water quality standards and (2) develop WQBELs for those such toxic pollutants (i.e., 40 CFR § 122.44(d)(1)(i)). It is noteworthy that some of these pollutants that may be reported as “non-detect”, but still exceeded the criteria, were determined to be candidates for modeling because the method detection levels used to analyze those pollutants were higher than target QLs and/or the most stringent Chapter 93 criteria. The permittee submitted sample results for few metals as required by the permit. Those metals are Total Copper, Total Lead, and Total Zinc. The following is the model output:

*Recommended WQBELs & Monitoring Requirements*

No. Samples/Month: **4**

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

There is no concern of metals from this facility.

TDS and its constituents:

TMS suggests no RP for TDS and its constituents. Therefore, no monitoring or limits requirement will be placed in the permit.

**Additional Considerations**

---

Fecal Coliform:

The recent coliform guidance in 25 Pa. code § 92a.47.(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean and an instantaneous maximum not greater than 1,000/100ml and § 92a.47.(a)(5) requires a winter limit of 2,000/100ml as a geometric mean and an instantaneous maximum not greater than 10,000/100ml. These are existing limits that will be carried over.

E. Coli:

DEP’s SOP titled “Establishing Effluent Limitations for Individual Sewage Permits (BCW-PMT-033, revised March 24, 2021) recommends quarterly E. Coli monitoring for all sewage dischargers with design flows ≥ 0.05 MGD and < 1.0 MGD. This requirement will be applied from this permit term.

pH:

The TBEL for pH is above 6.0 and below 9.0 S.U. (40 CFR §133.102(c) and Pa Code 25 § 95.2(1)) which are existing limits and will be carried over.

Total Suspended Solids (TSS):

There is no water quality criterion for TSS. The existing limits of 30 mg/L average monthly, 45 mg/l average weekly, and 60 mg/L instantaneous maximum will remain in the permit based on the minimum level of effluent quality attainable by secondary treatment, 25 Pa. Code § 92a.47 and 40CFR 133.102(b). The mass based average monthly and weekly average limits are calculated to be 175 lbs./day and 263 lbs./day respectively. These are all existing limits that will be carried over.

Total Residual Chlorine (TRC):

The attached computer printout utilizes the equation and calculations as presented in the Department's 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID#391-2000-015) for developing chlorine limitations. The attached printout indicates that the existing limits are still protective and will be carried over.

Flow and Influent BOD<sub>5</sub> and TSS Monitoring Requirement:

The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii). Influent BOD<sub>5</sub> and TSS monitoring requirements are established in the permit per the requirements set in Pa Code 25 Chapter 94.

**Best Professional Judgement (BPJ):**

Total Phosphorus:

Pa Code 25 §92.61 requires monitoring TP. PADEP's SOP BCW-PMT-033 suggests monitoring requirement, at a minimum, for facilities with design flow greater than 2,000 GPD. This requirement is applied for all facilities meeting the flow criteria. This is an existing parameter with monitoring requirement that will be carried over.

Total Nitrogen:

Pa Code 25 §92.61 requires monitoring TN. PADEP's SOP BCW-PMT-033 suggests monitoring requirement, at a minimum, for facilities with design flow greater than 2,000 GPD. This requirement is applied for all facilities meeting the flow criteria. This is an existing parameter with monitoring requirement that will be carried over.

Monitoring Frequency and Sample Types:

Otherwise specified above, the monitoring frequency and sample type of compliance monitoring for existing parameters are recommended by DEP's SOP and Permit Writers Manual and/or on a case-by-case basis using best professional judgment (BPJ).

**Anti-Backsliding**

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

**Proposed Effluent Limitations and Monitoring Requirements**

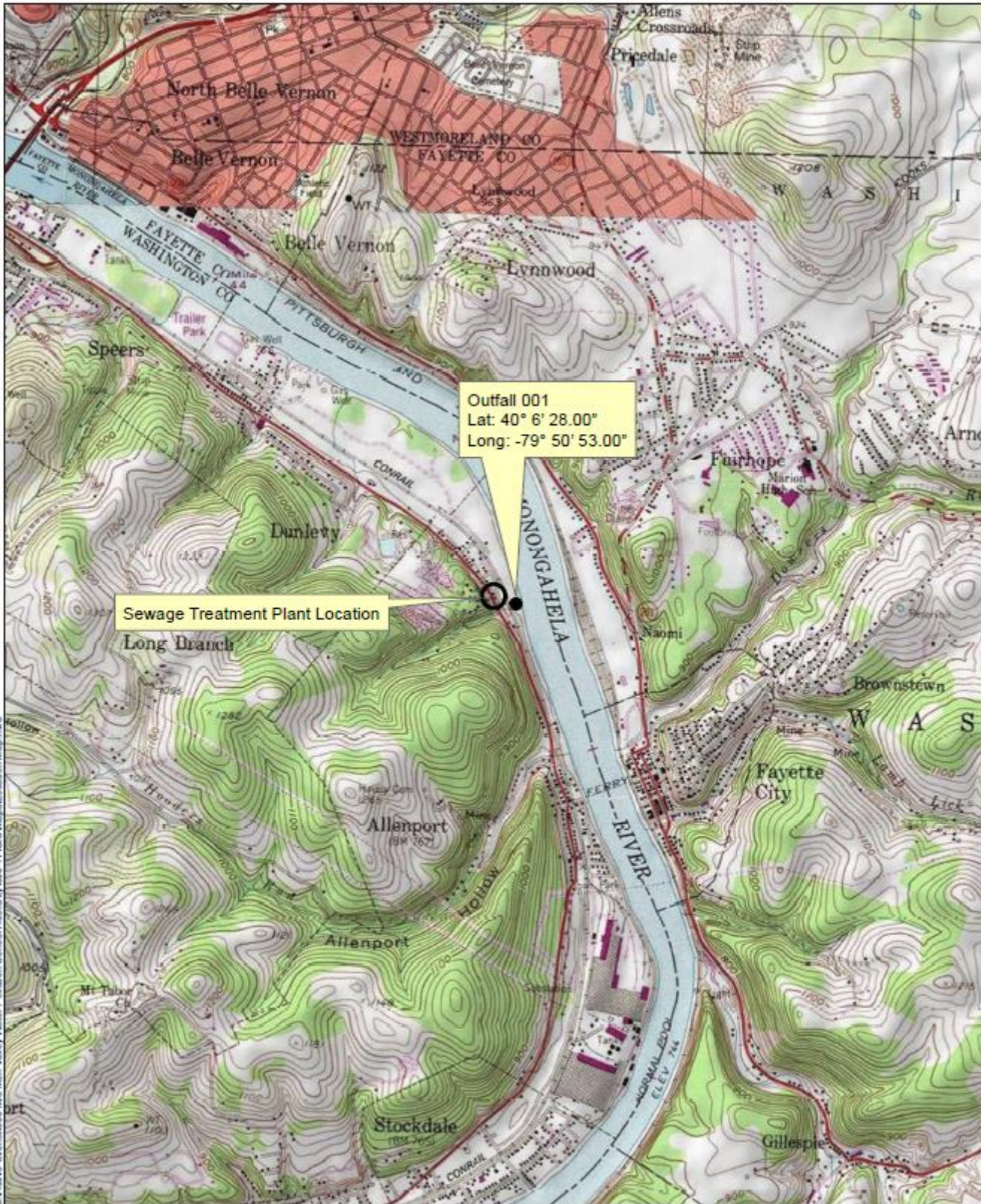
The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants).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


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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> 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	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	146	222	XXX	25.0	38.0	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	Report	XXX	1/week	8-Hr Composite
TSS	175	263	XXX	30.0	45.0	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	Report	XXX	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E-Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	Grab
Ammonia	XXX	XXX	XXX	Report	Report	XXX	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	Grab

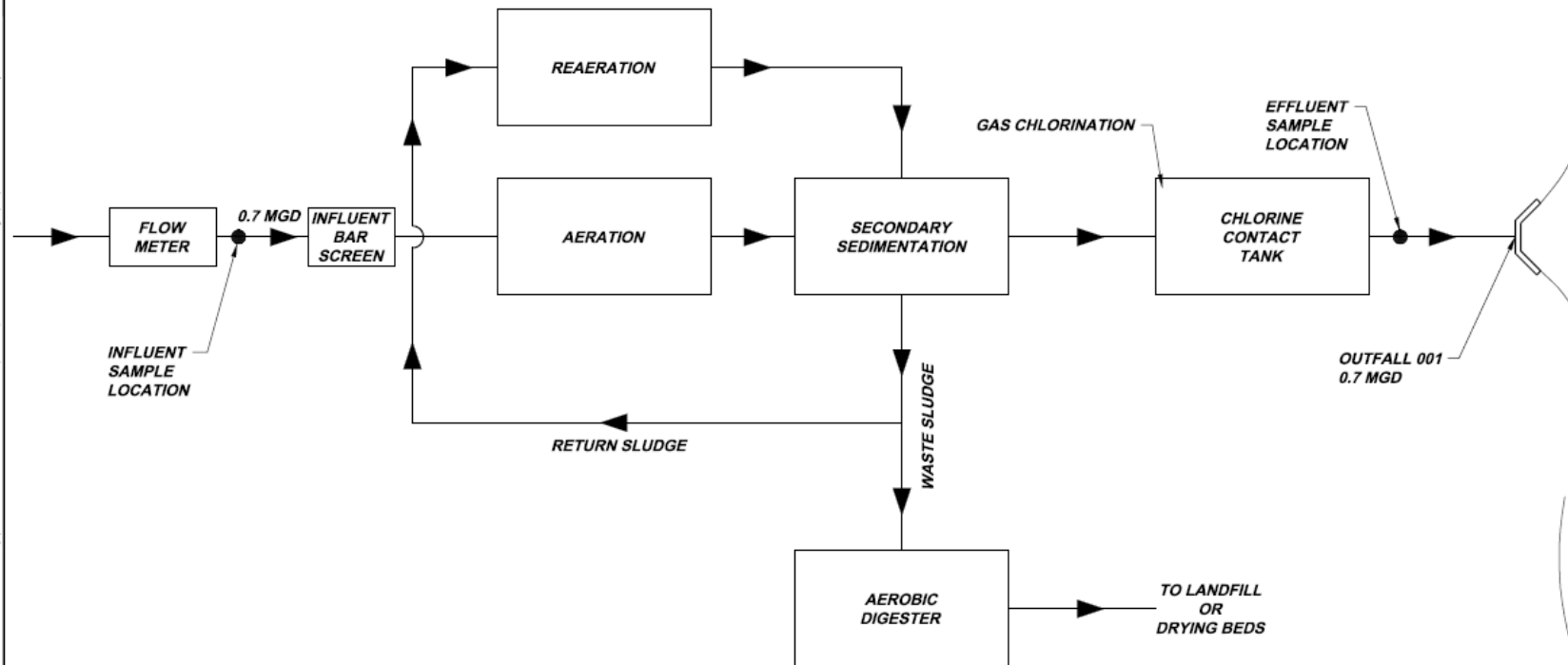
Compliance Sampling Location: At Outfall 001

Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment [redacted])
<input checked="" type="checkbox"/>	Toxics Management Spreadsheet (see Attachment [redacted])
<input checked="" type="checkbox"/>	TRC Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 385-2000-011, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
<input type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
<input type="checkbox"/>	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
<input type="checkbox"/>	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
<input type="checkbox"/>	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
<input type="checkbox"/>	Design Stream Flows, 391-2000-023, 9/98.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	SOP: BCW-PMT-033
<input type="checkbox"/>	Other: [redacted]



<p><b>509-17</b></p>	<p><b>1:24,000</b></p>	<p><b>MID MON VALLEY                  WATER POLLUTION CONTROL AUTHORITY                  WASHINGTON COUNTY, PENNSYLVANIA                  LOCATION MAP</b></p>	<p><b>KLH</b>                  ENGINEERS, INC.</p> <p><small>5115 Casselman Drive                  Pittsburgh, PA 15206                  Phone: 412-261-1100                  Fax: 412-261-1101                  www.klh-engineers.com</small></p>	
<p><b>40079a7                  FAYETTE CITY</b></p>	<p><small>Author: A.B.                  Date: 7/10/2012                  NAD 1983 StatePlane Pennsylvania South FIPS 3202 Feet                  Projection: Lambert Conformal Conic</small></p>			

**MID MON VALLEY WATER POLLUTION CONTROL AUTHORITY**  
**NPDES PA0024686**  
**PROCESS FLOW DIAGRAM**  
**WASHINGTON COUNTY, PA.**



MONONGAHELA RIVER

S:\Active Clients\509 Mid Mon Valley Water Pollution Control Authority\509-17 2022 NPDES Permit Renewal\509-17 Exhibit-1.dwg 9/29/2022 8:47 AM Plotted By: Jason Ambrose

5170 Campbells Run Road Phone: 412-841-0810 Fax: 412-841-0818 info@klh-engineers.com		Revisions Date Date
		Date Date
<b>MID MON VALLEY WATER POLLUTION CONTROL AUTHORITY</b> WASHINGTON COUNTY, PENNSYLVANIA NPDES PA0024686 <b>PROCESS FLOW DIAGRAM</b>		
Scale: As Shown Date: September 2022 Drawn By: JDA Checked By: RV Approved By: RV	Order No. <b>509-17</b> Drawing No. EXHIBIT-1 Sheet No. <b>1 of 1</b>	Date Date



# PA0024686 at 001


Region ID: PA

Workspace ID: PA20221202012804553000

Clicked Point (Latitude, Longitude): 40.10828, -79.84717

Time: 2022-12-01 20:28:29 -0500



 Collapse All

## ➤ Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5190	square miles
ELEV	Mean Basin Elevation	1845	feet

## ➤ Low-Flow Statistics

Permit No. PA0024686

### Low-Flow Statistics Parameters [99.9 Percent (5190 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5190	square miles	2.26	1400
ELEV	Mean Basin Elevation	1845	feet	1050	2580

### Low-Flow Statistics Disclaimers [99.9 Percent (5190 square miles) Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

### Low-Flow Statistics Flow Report [99.9 Percent (5190 square miles) Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	687	ft <sup>3</sup> /s
30 Day 2 Year Low Flow	912	ft <sup>3</sup> /s
7 Day 10 Year Low Flow	400	ft <sup>3</sup> /s
30 Day 10 Year Low Flow	468	ft <sup>3</sup> /s
90 Day 10 Year Low Flow	696	ft <sup>3</sup> /s

#### *Low-Flow Statistics Citations*

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

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Permit No. PA0024686

## PA0024686 at node 2


Region ID: PA

Workspace ID: PA20221202014147254000

Clicked Point (Latitude, Longitude): 40.12790, -79.88275

Time: 2022-12-01 20:42:11 -0500



 Collapse All

### > Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5200	square miles
ELEV	Mean Basin Elevation	1844	feet

### > Low-Flow Statistics

Permit No. PA0024686

Low-Flow Statistics Parameters [99.9 Percent (5200 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5200	square miles	2.26	1400
ELEV	Mean Basin Elevation	1844	feet	1050	2580

Low-Flow Statistics Disclaimers [99.9 Percent (5200 square miles) Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [99.9 Percent (5200 square miles) Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	688	ft <sup>3</sup> /s
30 Day 2 Year Low Flow	913	ft <sup>3</sup> /s
7 Day 10 Year Low Flow	401	ft <sup>3</sup> /s
30 Day 10 Year Low Flow	469	ft <sup>3</sup> /s
90 Day 10 Year Low Flow	697	ft <sup>3</sup> /s

*Low-Flow Statistics Citations*

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

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Permit No. PA0024686

### Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
19A	37185	MONONGAHELA RIVER	45.910	757.00	5190.00	0.00000	0.00	<input checked="" type="checkbox"/>

#### Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.077	100.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.70	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

#### Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
MMVWPCA STP	PA0024686	0.7000	0.7000	0.7000	0.000	25.00	7.20

#### Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0024686

**Input Data WQM 7.0**

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
19A	37185	MONONGAHELA RIVER	43.780	743.66	5191.00	0.00000	0.00	<input checked="" type="checkbox"/>

**Stream Data**

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary		Stream	
									Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.080	132.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.70	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data							
Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Belle Vernon MA	PA0092355	0.9500	0.9500	0.9500	0.000	20.00	7.00

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

Permit No. PA0024686

### Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
19A	37185	MONONGAHELA RIVER	43.720	743.60	5200.00	0.00000	0.00	<input checked="" type="checkbox"/>

#### Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary		Stream	
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	Temp	pH	Temp	pH
Q7-10	0.080	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.70	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data							
Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	7.00
Parameter Data							
Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)			
CBOD5	25.00	2.00	0.00	1.50			
Dissolved Oxygen	3.00	8.24	0.00	0.00			
NH3-N	25.00	0.00	0.00	0.70			

Permit No. PA0024686

### WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
19A		37185				MONONGAHELA RIVER						
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)	
<b>Q7-10 Flow</b>												
45.910	100.00	0.00	100.00	1.0829	0.00119	1.22	203.31	166.64	0.41	0.319	25.00	7.69
43.780	232.00	0.00	232.00	2.5525	0.00019	1.264	314.48	248.85	0.59	0.006	24.97	7.69
<b>Q1-10 Flow</b>												
45.910	64.00	0.00	64.00	1.0829	0.00119	NA	NA	NA	0.32	0.409	25.00	7.68
43.780	148.48	0.00	148.48	2.5525	0.00019	NA	NA	NA	0.46	0.008	24.95	7.68
<b>Q30-10 Flow</b>												
45.910	144.00	0.00	144.00	1.0829	0.00119	NA	NA	NA	0.50	0.261	25.00	7.69
43.780	334.08	0.00	334.08	2.5525	0.00019	NA	NA	NA	0.72	0.005	24.98	7.69



Permit No. PA0024686

### WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.44	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	4		

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### WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
19A	37185	MONONGAHELA RIVER

#### NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
45.910	MMWPCA STP	3.15	50	3.15	50	0	0
43.780	Belle Vernon MA	3.17	50	3.2	50	0	0

#### NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
45.910	MMWPCA STP	.91	25	.91	25	0	0
43.780	Belle Vernon MA	.91	25	.91	25	0	0

#### Dissolved Oxygen Allocations

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
45.91	MMWPCA STP	25	25	25	25	4	4	0	0
43.78	Belle Vernon MA	25	25	25	25	5	5	0	0

Permit No. PA0024686

### WQM 7.0 D.O. Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>			
19A	37185	MONONGAHELA RIVER			
<hr/>					
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>		<u>Analysis pH</u>	
45.910	0.700	25.000		7.690	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>		<u>Reach Velocity (fps)</u>	
203.313	1.220	166.642		0.408	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>		<u>Reach Kn (1/days)</u>	
2.25	0.138	0.27		1.029	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>		<u>Reach DO Goal (mg/L)</u>	
8.198	2.539	Tsivoglou		4	
<u>Reach Travel Time (days)</u>					
0.319					
	<b>Subreach Results</b>				
	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>	
	0.032	2.23	0.26	7.54	
	0.064	2.22	0.25	7.54	
	0.096	2.21	0.24	7.54	
	0.128	2.20	0.23	7.54	
	0.160	2.18	0.23	7.54	
	0.192	2.17	0.22	7.54	
	0.224	2.16	0.21	7.54	
	0.256	2.15	0.21	7.54	
	0.287	2.14	0.20	7.54	
	0.319	2.13	0.19	7.54	
<hr/>					
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>		<u>Analysis pH</u>	
43.780	1.650	24.969		7.685	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>		<u>Reach Velocity (fps)</u>	
314.475	1.264	248.854		0.590	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>		<u>Reach Kn (1/days)</u>	
2.20	0.149	0.24		1.028	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>		<u>Reach DO Goal (mg/L)</u>	
7.919	0.587	Tsivoglou		4	
<u>Reach Travel Time (days)</u>					
0.006					
	<b>Subreach Results</b>				
	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>	
	0.001	2.20	0.24	7.54	
	0.001	2.20	0.24	7.54	
	0.002	2.20	0.24	7.54	
	0.002	2.20	0.24	7.54	
	0.003	2.20	0.24	7.54	
	0.004	2.20	0.24	7.54	
	0.004	2.20	0.24	7.54	
	0.005	2.20	0.24	7.54	
	0.006	2.20	0.24	7.54	
	0.006	2.20	0.24	7.54	
<hr/>					

Permit No. PA0024686

### WQM 7.0 Effluent Limits

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
19A		37185		MONONGAHELA RIVER			
RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
45.910	MMWPCA STP	PA0024686	0.700	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4
RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
43.780	Belle Vernon MA	PA0092355	0.950	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5



## Discharge Information

Instructions Discharge Stream

Facility: Mid Mon Valley WPCA STP NPDES Permit No.: PA0024686 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Treated Sewage

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q <sub>7-10</sub>	Q <sub>h</sub>
0.7	100	7.2						

Discharge Pollutant	Units	Max Discharge Conc	0 if left blank		0.5 if left blank		0 if left blank		1 if left blank			
			Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl	
Group 1	Total Dissolved Solids (PWS)	mg/L	393									
	Chloride (PWS)	mg/L	52									
	Bromide	mg/L	< 0.2									
	Sulfate (PWS)	mg/L	119.8									
	Fluoride (PWS)	mg/L										
Group 2	Total Aluminum	µg/L										
	Total Antimony	µg/L										
	Total Arsenic	µg/L										
	Total Barium	µg/L										
	Total Beryllium	µg/L										
	Total Boron	µg/L										
	Total Cadmium	µg/L										
	Total Chromium (III)	µg/L										
	Hexavalent Chromium	µg/L										
	Total Cobalt	µg/L										
	Total Copper	µg/L	< 10									
	Free Cyanide	µg/L										
	Total Cyanide	µg/L										
	Dissolved Iron	µg/L										
	Total Iron	µg/L										
	Total Lead	µg/L	< 0.5									
	Total Manganese	µg/L										
	Total Mercury	µg/L										
	Total Nickel	µg/L										
	Total Phenols (Phenolics) (PWS)	µg/L										
Total Selenium	µg/L											
Total Silver	µg/L											
Total Thallium	µg/L											
Total Zinc	µg/L	< 10										
Total Molybdenum	µg/L											
Acrolein	µg/L	<										
Acrylamide	µg/L	<										
Acrylonitrile	µg/L	<										
Benzene	µg/L	<										
Bromoform	µg/L	<										







## Stream / Surface Water Information

Mid Mon Valley WPCA STP, NPDES Permit No. PA0024686, Outfall 001

Instructions Discharge **Stream**

Receiving Surface Water Name: Monongahela River

No. Reaches to Model: 1

- Statewide Criteria
- Great Lakes Criteria
- ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi <sup>2</sup> )*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	037185	45.91	757	5190			Yes
End of Reach 1	037185	43.72	743.88	5200			Yes

Q<sub>7-10</sub>

Location	RMI	LFY (cfs/mi <sup>2</sup> )*	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	45.91	0.077										118	7.7		
End of Reach 1	43.72	0.077										118	7.7		

Q<sub>n</sub>

Location	RMI	LFY (cfs/mi <sup>2</sup> )*	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	45.91														
End of Reach 1	43.72														





## Model Results

Mid Mon Valley WPCA STP, NPDES Permit No. PA0024686, Outfall 001

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

All

Inputs

Results

Limits

Hydrodynamics

Wasteload Allocations

AFC

CCT (min):

PMF:

Analysis Hardness (mg/l):

Analysis pH:

Pollutants	Stream Conc (unit)	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	15.388	16.0	364	Chem Translator of 0.96 applied
Total Lead	0	0		0	75.380	97.9	2,223	Chem Translator of 0.77 applied
Total Zinc	0	0		0	132.199	135	3,070	Chem Translator of 0.978 applied

CFC

CCT (min):

PMF:

Analysis Hardness (mg/l):

Analysis pH:

Pollutants	Stream Conc (unit)	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	10.159	10.6	1,603	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.954	3.84	581	Chem Translator of 0.77 applied
Total Zinc	0	0		0	133.867	136	20,562	Chem Translator of 0.986 applied

THH

CCT (min):

PMF:

Analysis Hardness (mg/l):

Analysis pH:

Pollutants	Stream Conc (unit)	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	

**CRL**      CCT (min):       PMF:       Analysis Hardness (mg/l):       Analysis pH:

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

**Recommended WQBELs & Monitoring Requirements**

No. Samples/Month:

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

**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	233	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	N/A	N/A	Discharge Conc < TQL
Total Zinc	1,968	µg/L	Discharge Conc ≤ 10% WQBEL

TRC\_CALC

TRC EVALUATION					
Input appropriate values in A3:A9 and D3:D9					
100	= Q stream (cfs)		0.5	= CV Daily	
0.7	= Q discharge (MGD)		0.5	= CV Hourly	
30	= no. samples		1	= AFC_Partial Mix Factor	
0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
0	= % Factor of Safety (FOS)			= Decay Coefficient (K)	
Source	Reference	AFC Calculations		Reference	CFC Calculations
TRC	1.3.2.iii	WLA_afc = 29.477		1.3.2.iii	WLA_cfc = 28.730
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373		5.1c	LTAMULT_cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc = 10.984		5.1d	LTA_cfc = 16.702
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	$(.019/e^{-k \cdot AFC\_tc}) + [(AFC\_Yc \cdot Qs \cdot .019 / Qd \cdot e^{-k \cdot AFC\_tc}) \dots + Xd + (AFC\_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$				
LTAMULT_afc	$EXP((0.5 \cdot LN(cvh^2 + 1)) - 2.326 \cdot LN(cvh^2 + 1)^{0.5})$				
LTA_afc	$wla\_afc \cdot LTAMULT\_afc$				
WLA_cfc	$(.011/e^{-k \cdot CFC\_tc}) + [(CFC\_Yc \cdot Qs \cdot .011 / Qd \cdot e^{-k \cdot CFC\_tc}) \dots + Xd + (CFC\_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$				
LTAMULT_cfc	$EXP((0.5 \cdot LN(cvd^2 / no\_samples + 1)) - 2.326 \cdot LN(cvd^2 / no\_samples + 1)^{0.5})$				
LTA_cfc	$wla\_cfc \cdot LTAMULT\_afc$				
AML_MULT	$EXP(2.326 \cdot LN((cvd^2 / no\_samples + 1)^{0.5}) - 0.5 \cdot LN(cvd^2 / no\_samples + 1))$				
AVG MON LIMIT	$MIN(BAT\_BPJ, MIN(LTA\_afc, LTA\_cfc) \cdot AML\_MULT)$				
INST MAX LIMIT	$1.5 \cdot ((av\_mon\_limit / AML\_MULT) / LTAMULT\_afc)$				