pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0023701**
Facility Type	**Municipal**	APS ID	**604253**
Major / Minor	**Major**	Authorization ID	**1256182**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Midland Borough Municipal Authority Beaver County (MABM)**	Facility Name	**Midland STP**
Applicant Address	946 Railroad Avenue Midland, PA 15059-1521	Facility Address	State Route 68 Midland, PA 15059
Applicant Contact	Brigid Darbut	Facility Contact	Daniel Sell
Applicant Phone	(724) 643-4920	Facility Phone	(724) 847-1696
Client ID	43156	Site ID	271938
Ch 94 Load Status	Not Overloaded	Municipality	Midland Borough
Connection Status	No Limitations	County	Beaver
Date Application Received	December 21, 2018	EPA Waived?	No
Date Application Accepted	December 26, 2018	If No, Reason	Major Facility

Purpose of Application: NPDES Permit Renewal for Discharge of Treated Sewage Effluent.

Summary of Review

The Midland Borough Municipal Authority in Beaver County (MABM) has applied for a renewal of their NPDES Permit No. PA0023701. The application was sent on December 21, 2018 and it was on time before the renewal due date. NPDES Permit No. PA0023701 was issued on June 12, 2014 and got expired on June 30, 2019. The permit authorized a discharge of 1.25 MGD from the Midland Sewage Treatment Plant to Ohio River (WWF).

The Midland STP is a trickling filter treatment system with primary and final clarification. The STP is designed to treat an average daily wastewater flow of 1.25 MGD and an organic loading of 1875 lbs. BOD5/day.

Total flow received by this STP is divided as 78% from Midland Municipality, and the 22% remaining is generated from Industrial Municipality who own and maintain their respective collection system.

Per Part C 123B “The permittee is authorized to discharge non-polluting stormwater from its site, alone or in combination with other wastewaters, through the following outfalls:

Outfall No.	Latitude	Longitude	Description
010	40° 38’ 38”	-80° 28’ 13”	East Side of Plant Discharge To Ohio River.
011	40° 38’ 37”	-80° 28’ 14”	West Side of Plant Discharge To Ohio River.

Approve	Deny	Signatures	Date
X		Hazim Aldalli / Environmental Engineering Specialist	January 20, 2023
X		Mahbuba Iasmin / Mahbuba Iasmin, Ph.D. P.E. / Environmental Engineering Manager	October 28, 2024

Summary of Review

Outfalls 010, and 011 are again permitted for the discharge of uncontaminated storm water runoff and conditions will be added to Part C of the permit.
A Preparedness, Prevention and Contingency (PPC) Planning was set to be submitted, but not received with the renewal application. The KLH engineer submitted the plan on May 12, 2022. The plan was reviewed and compared to the previous permit requirements and found that it qualifies as the facility PPC plan based on the current regulations and SOPs.

No industrial users are discharging to this STP.

DEP asked the engineer about the work done under WQM No. 0471406 A-2 issued on August 17, 2017 and the foreseen developments/upgrades within the STP mentioned in the application. The engineer mentioned that the Midland Authority applied for a USDA grant for this work, and the Authority is still waiting on grant award status before moving forward with bidding and construction.

Per application page 3, Sec.7 Midland STP has no plan set for peak flows; Part C 9 stated that "The permittee shall develop a High Flow Management Plan (HFMP) to be used to address the impact of high flows to the treatment plant during wet weather'. Part C 9 will be added to the permit.

Last inspection report dated on March 29, 2022 reported that the facility is in compliance and no violations were noted.

For Fecal Coliforms, changes were made to ORSANCO's Bacteria discharge requirements to include an *E. coli* bacteria limit in equivalent terms of Fecal Coliform limit in the NPDES permit. Using Part C 136 will ensure the control of disease producing organisms for recreational and health purposes.

Midland Borough Municipal Authority CSO

The facility has only one combined sewer overflow (CSO) outfall (i.e., Outfall 002) which is located inside the STP as identified in the permit renewal application.

Outfall 002 will be permitted as a CSO necessitated by storm water entering the sewer system and exceeding the hydraulic capacity of the sewers and/or the treatment plant.

Part C 106 CSO condition will be added to the permit. The condition states, "The permittee is authorized to discharge from the combined sewer overflow (CSO) outfalls identified in Part A of this permit when flows in combined sewer systems (CSSs) exceed the design capacity of the conveyance or treatment facilities of the system during or immediately after wet weather periods, provided that the discharge complies with paragraphs B and C of this section.'

The CSO long term control plan (LTCP) of the facility was approved by the Department on January 24, 2013. The Authority chose to implement the Presumption Approach criteria of the EPA CSO Policy. The proposed projects were included to the LTCP approval letter, including system inspections, eliminate all identified CSO discharge locations, provide CSO discharge flow monitoring, demonstrate that MABM already capturing the minimum 85% of the annual average sanitary and stormwater flow received in the combined portions of the collection system. The LTCP is completely implemented and CSO outfall 002 must now achieve 85% capture of all wet weather flow on an annual average basis.

The Nine Minimum Control (NMC) plan of the facility was submitted to the Department on March 29, 1996 and was approved on May, 2003.

Annual CSO status was adequately reported within the CH94 reports reviewed; 2020 report listed two issues with implementing the NMC as follows:

- NMC 7 Pollution preventing programs to reduce contamination in relevant CSOs. Web based program not complete.

- NMC 9 Monitoring to characterize CSO impacts and the efficiency of CSO controls.

The 2021 CH94 indicate that the problem raised within the above-mentioned controls are being evaluated and improvements for the controls now in place as detailed below:

Summary of Review

- NMC 7 Pollution preventing programs to reduce contamination in relevant CSOs. The Authority's website and customer billing database are being updated to include pollution prevention information.
- NMC 9 Monitoring to characterize CSO impacts and the efficiency of CSO controls. The CSO is visually checked daily. Any discharge noted is recorded for frequency, duration, rainfall, and volume. Discharges from the CSO bypass is immediately reported to DEP. A flow meter is installed to record all CSO discharges.

MABM sent their Post Construction Control Monitoring Plan (PCCMP) in 2015 as a requirement of their approved LTCP, the document was reviewed by the permit reviewer and offered the following deficiencies:

- Sec. 2.3 shows the Authority intends to adhere to DEP suggestions about passing more CSO discharges to the treatment plant and reduce the bypass from CSO Outfall 002 by raising outfall's weir. The CH94 reports shows flow meter calibration and some reports have a rainfall and CSO logs, but no information found on setting the weir level raise.

- The authority reported that they were in the process of seeking funds to investigate any stream or stormwater and other illegal connections to the sewer system including unpermitted outfalls. Please provide an update on such fund acquisition(s) and investigation(s).

- The monitoring plan under Sections 4&5 fulfills the EPA and LTCP requirements for receiving water body monitoring and it is in alignment with PA DEP monitoring program, addressing pollutants included in the Ohio River water quality criteria under ORSANCO, and includes biological parameter (Fecal Coliform) in the monitoring program. However, two issues need to be addressed:

  - *E. Coli* sampling needs to be added to the Ohio River sampling in Sec. 4.1.
  - The list of constituents for the Wet Weather CSO discharge sampling in Sec. 4.2 needs to be updated and include Temperature.

- The sampling plan needs to be revised regarding the sampling frequencies to reflect the minimum requirements per DEP's CSO monitoring Book. The QA & QC measures, and data evaluation are all appropriate to have a successful monitoring plan.

DEP sent a conditional approval letter based on satisfying the deficiencies above, engineer responded back with a revised plan document that respond to DEP's remarks. On May 2, 2024 DEP finally approved the PCCMP revised document and authorized MABM to start implementing the plan from the effective date of the letter.

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 **(l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.**

Summary of Review

The facility is not seeking to relax the previously permitted effluent limits.

An appropriate evidence of the Act – 14 PL 834 Municipal Notification was provided by 3/12/2018 and 5/30/2018 letters, and no comments were received.

Sludge use and disposal description and location(s): The sludge from the primary clarifier is sent to the two (2) sludge holding tanks. Aerobic digestion is performed in the sludge holding tanks. From the holding tanks, the liquid sewage sludge is sent to disposal and the supernatant is recirculated back to the influent junction manhole. The sludge from the final setting tanks is recirculated back into the Parshall flume. Total sewage sludge/biosolids production within the STP for 2018 is 424.34 Dry Tons. Under DEP NPDES Permit PA101677 Dalton Service Co., the STP is sending their biosolids disposal to a permitted 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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	1.25
Latitude	40º 38' 38"	Longitude	-80º 28' 18"
Quad Name	Midland	Quad Code	40080F4
Wastewater Description:	Sewage Effluent		
Receiving Waters	Ohio River (WWF)	Stream Code	32317
NHD Com ID	120007553	RMI	2.18
Drainage Area	23000	Yield (cfs/mi^2)	0.256
Q_{7-10} Flow (cfs)	**5880**	Q_{7-10} Basis	USACE As of Dec. 1, 2017
Elevation (ft)	665	Slope (ft/ft)	0.00037
Watershed No.	20-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None.	Exceptions to Criteria	None.
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	East Liverpool Water Dept. (West Virginia)		
PWS Waters	Ohio River	Flow at Intake (cfs)	5880
PWS RMI		Distance from Outfall (mi)	2.5

Changes Since Last Permit Issuance:

- Q7-10 flow, elevation, drainage area, and low flow yield were all updated to match USGS Stream Stats new data and USACE records (see Appendix G).

- DEP updated its WQM 7.0 criteria for Ammonia-Nitrogen (NH_3-N) in 2019. Limits and conditions of this permit need to be redeveloped to an adequate level to protect water quality.

- ORSANCO updated its pollution standards in 2019. New Mercury and Fecal Coliform criteria were applied to facilities that discharge directly to Ohio river main stem.

- *E. Coli* monitoring requirements will be introduced to this renewal which is in compliance with DEP SOP No. BCW-PMT-033 revised February 5, 2024.

Other Comments: None.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0
Latitude	40º 38' 37"	Longitude	-80º 28' 12"
Quad Name	Midland	Quad Code	40080F4
Wastewater Description:	Combined Sewer Overflow		
Receiving Waters	Ohio River (WWF)	Stream Code	32317
NHD Com ID		RMI	
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	20-B	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)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake			
PWS Waters		Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Changes Since Last Permit Issuance: None.

Other Comments: None.

Treatment Facility Summary

Treatment Facility Name: Midland Borough STP

WQM Permit No.	Issuance Date
0471406	July 19, 1971
0471406 A-2	August 17, 2017
0421406	November 03, 2021

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Trickling Filter With Settling	Chlorine with dechlorination	0.61

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
1.25	1875	Not Overloaded	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance:

1- WQM 0471406 A-2 approved the construction and operation of sewage facilities consisting of:

- A 3.0 MGD mechanical bar screen.
- A sodium hypochlorite chlorination system.
- A sodium bisulfite de-chlorination system.
- And a manually cleaned bar rack and adjustable weir in junction manhole 2.

2- WQM 0421406 approved the construction of sewage facilities consisting of:

- Sewage lift station designed to accommodate 29,580 gpd (74 EDUs).
- Two (2) 3-HP submersible grinder pumps located in the wet well.
- 2” and 4” force main to convey sewage from new development to the sewage lift station.

Other Comments: Per this application, the sodium hypochlorite chlorination system, and the adjustable weir in junction manhole 2 are not being constructed yet. The application back in December 2018 mentioned that the designs were prepared to replace the overflow weir in the influent junction manhole to achieve a peak of 2.5 MGD during rain events. Also designs included replacement of the comminutor with a mechanically cleaned screen and washer/compactor. This is not implemented yet per Engineer’s email on 2/23/2022.

Operations Compliance Check Summary Report

Facility: Midland STP
NPDES Permit No.: PA0023701
Compliance Review Period: 2/2017 – 2/2022
Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
3206884	06/16/2021	Administrative/File Review	PA Dept of Environmental Protection	Administratively Closed
3184027	04/29/2021	Administrative/File Review	PA Dept of Environmental Protection	Administratively Closed
3167190	03/25/2021	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted
2900846	07/01/2019	Combined Sewer Overflow-Non-Sampling	PA Dept of Environmental Protection	Violation(s) Noted
2860283	03/28/2019	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted
2761803	08/07/2018	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted
2637901	09/18/2017	Compliance Evaluation	PA Dept of Environmental Protection	Violation(s) Noted
2618257	07/24/2017	Administrative/File Review	PA Dept of Environmental Protection	No Violations Noted

Violation Summary:

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE	INSP ID
855030	07/01/2019	CSO-NMC7	NPDES CSO - 92A.47(B)NMC7 Failure to implement required NMC #7 (Pollution prevention programs)	07/08/2019	2900846
855031	07/01/2019	CSO-NMC9	NPDES CSO - 92A.47(B)NMC9 Failure to implement required NMC #9 (Monitoring)	07/08/2019	2900846
804305	09/18/2017	92A.41(A)10A	NPDES - Failure to retain records required by the permit	12/18/2017	2637901
804306	09/18/2017	92A.44	NPDES - Violation of effluent limits in Part A of permit	12/18/2017	2637901

Open Violations by Client ID:
No open CW violations for Client ID 43156

Enforcement Summary:

ENF ID	ENF TYPE	EXECUTED DATE	VIOLATIONS	ENF FINALSTATUS	ENF CLOSED DATE
376836	NOV	07/08/2019	CSO-NMC7; CSO-NMC9	Administrative Close Out	04/12/2021
360334	NOV	12/18/2017	92A.41(A)10A; 92A.44	Administrative Close Out	08/20/2019

DMR Violation Summary:

MONITORING END DATE	OUTFALL	PARAMETER	STATISTICAL BASE CODE	PERMIT VALUE	SAMPLE VALUE	UNIT OF MEASURE
7/31/2021	1	Fecal Coliform	Instantaneous Maximum	400	649	CFU/100 ml
5/31/2019	1	Fecal Coliform	Instantaneous Maximum	400	> 2400	CFU/100 ml
7/31/2017	1	Total Residual Chlorine (TRC)	Average Monthly	0.5	0.8	mg/L

Compliance Status: Operations will monitor DMR exceedances. Permit issuance is recommended.
Completed by: John Murphy
Completed date: 2/14/2022

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 1.25
Latitude 40º 38' 38.00" **Longitude** -80º 28' 18.00"
Wastewater Description: Treated Sewage Effluent

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis, BPJ, and ORSANCO (Pollution Control Standards Rev. 2019) criteria been applied where applicable:

Pollutant	Limit (mg/L)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	400 / 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)
D.O. (mg/L)	4.0	Min	-	BPJ
NH3-N (mg/L)	25	Average Monthly	-	BPJ
	50	IMAX		
Total N (mg/L)	Report	Average Monthly	-	92a.61
Total P (mg/L)	Report	Average Monthly	-	92a.61
E. Coli (No./100 ml)	Report	IMAX	-	92a.61

Comments: The existing discharge was evaluated using WQM 7.0 to evaluate the $CBOD_5$, Ammonia Nitrogen and Dissolved Oxygen parameters.

The Total Suspended Solids, pH, and Fecal Coliform parameters are not evaluated using WQM 7.0. The bases for the proposed technology-based limitations are listed in the above table.

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (Appendix A, B, and H):

Parameter	Limit (mg/L)	SBC	Model
TRC	0.5	Average Monthly	DEP TRC
CBOD5 (May1-Oct 31)	25	Average Monthly	WQM7.0
CBOD5 (Nov 1- Apr 30)	25	Average Monthly	WQM7.0
NH3-N (May1-Oct 31)	25	Average Monthly	WQM7.0
NH3-N (Nov 1- Apr 30)	25	Average Monthly	WQM7.0
Dissolved Oxygen	4.0	Minimum	WQM7.0

Comments: DEP policy allows new parameters introduced into renewed permits, in which the application manager desires for the permittee to collect data to verify reasonable potential for the subsequent permit application review to select any reasonable monitoring frequency that is greater than or equal to once per year.

Best Professional Judgment (BPJ) Limitations

A minimum Dissolved Oxygen (DO) WQBEL of 6.0 mg/L should be maintained based on DEP water quality model WQM 7.0 version 1.10. This is also compatible with ORSANCO Dissolved Oxygen water criteria of (>5.0 mg/L).

Per DEP-SOP – Establishing Effluent Limitations for Individual Sewage Permits Revised, February 5, 2024, for existing discharges, if WQM modeling results for summer indicates that an average monthly limit of 25 mg/L for Ammonia-Nitrogen is acceptable, the application manager will generally establish a year-round monitoring requirement for Ammonia-Nitrogen, at a minimum.

DEP WQM 7.0 ver. 1.1 was used to determine the newly imposed limit for Ammonia Nitrogen NH3-N of (25.0 mg/L) yearly around.

Checking on the eDMR, the facility can meet the newly imposed Ammonia limit of 25 mg/L. The plant has achieved effluent sampling results of NH3-N lower than this limit; no compliance schedule is necessary (see Appendix C for the last five years of Ammonia eDMRs).

WQM 7.0 generated $CBOD_5$ WQBEL year around limits of AML 25.0 mg/L, Weekly Average of 40.0 mg/L, and Ins. Max of 50.0 mg/L, these limits are matching the previous permit limits for $CBOD_5$.

Total Dissolved Solids (TDS) and its Major Constituents

Total Dissolved Solids (TDS) and its major constituents including sulfate, chloride, and bromide have emerged as pollutants of concern. The conservative nature of these solids allows them to accumulate in surface waters and they may remain a concern even if the immediate downstream public water supply is not directly impacted. Bromide has been linked to formation of disinfection byproducts at increased levels in public water systems.

Because of actions associated with Triennial Review 13, the Environmental Quality Board has directed DEP to collect additional data if the Bromide is greater than 1 mg/L (0.47 mg/L as of 12/20/2018) and the TDS is greater than 1000 mg/L (532 mg/L as of 12/20/2018) or the TDS exceeds 20,000 lbs/day.

Monitoring is not required for Bromide, Chloride, and Sulfate. Bromide is less than 1 mg/L.

Mass Loadings

Mass loading limits are applicable for publicly owned treatment works (POTW). Current policy requires average monthly mass loading limits be established for CBOD5, TSS, and NH_3-N and average weekly mass loading limits be established for CBOD5 and TSS.

Average monthly mass loading limits (lbs/day) are based on the formula: design flow (MGD) x concentration limit (mg/L) x conversion factor (8.34).

Disinfection

Per previous Permit Part A.I.B. TRC limitation, and Part C.VII. A.2" The permittee shall achieve compliance with final effluent limitations for TRC as stated in Part A.1.B of this Permit or terminate this discharge", DEP issued the WQM permit No. 0471406 A-2 on August 17, 2017 which approved the construction of a new chlorination/de-chlorination system, a mechanical bar screen, and a manual screen at its CSO manhole influent to the plant to help remove floatable solids. Construction has not been commenced yet. However, Part A.I.B TRC limits became effective from the beginning of 37th month during the previous permit cycle.

The DEP TRC Calculation Sheet (see Appendix H) was used and generated a BAT limit of 0.5 mg/L average monthly is acceptable. The previous permit limits for TRC matches the calculated WQBEL; no compliance schedule is needed.

TN and TP Monitoring

Nutrient monitoring is required to establish the nutrient load from the wastewater treatment facility and the impacts that load may have on the quality of the receiving stream(s). Sewage discharges with design flows > 2,000 gpd require monitoring, at a minimum, for Total Nitrogen and Total Phosphorus in new and reissued permits. A frequency of 1/quarter is recommended for majors per Chapter 92.a.61.

Reasonable Potential

The Toxics Management Screening Analysis Spreadsheet (TMS) was used to evaluate toxic parameters of concern for water quality modeling and to facilitate determinations of "reasonable potential" to cause an excursion above water quality standards. The maximum concentrations reported in the permit application for Groups 1-5 pollutants were evaluated.

Appendix D includes results of TMS analysis of the initial analytical data received as part of the permit renewal application. A Pre-Draft Survey was shared with the permittee, and the permittee opted to perform additional sampling. Appendix E includes results of TMS analysis including the additional sampling. TMS results showed no reasonable potential for the toxic parameters and recommended monitoring for a total of four (4) pollutants, i.e., Total Copper, Total Mercury, Dissolved Iron, and Total Aluminum.

During this permit renewal, Total Mercury is the new parameter that has been added to the effluent limitation/monitoring table.

TOXCONC can be used by applying DMR/eDMR data to generate the Average Monthly Effluent Concentration (AMEC) and the daily coefficient of variations for each parameter. TOXCONC was used for the parameters that had at least 10 sample results.

Total Mercury

ORSANCO has stated on their (Pollution Control Standards Rev. 2019) criteria that all water works who discharge directly to the Ohio River stem must monitor for Mercury using a method that will detect down to a level of 12 nanograms/liter (ng/L) which is the limit at the end of pipe.

This is more stringent than the water quality criteria in Chapter 93 of DEP Rules and Regulations for Mercury (50 µg/L for Human Health). ORSANCO's reasoning for requiring such limit at the end of the pipe is that, "Starting in October of 2015, mixing zones will not be permitted for bio-accumulative pollutants including Mercury. If reasonable potential exists to violate this limit, then effluent monitoring for Mercury may be imposed in the NPDES permit, along with a compliance schedule and pollution reduction plan".

The average monthly effluent concentration produced by DEP TMS (see Appendix D) is 0.012 µg/L.
This parameter was not included in the last permit effluent limitation, so it's not shown in the reviewed eDMR, as for the submitted application effluent sampling results showed Maximum value of (0.2 µg/l) and a monthly average of (<0.2 µg/L).

Since these values are greater than ORSANCO criteria and DEP QL, then new stringent limit is recommended, and a pre-draft survey can be done to investigate the sources of contamination.

Applicant chose to resample for Total mercury following an EPA more sensitive analysis method of 1631 revision E that employ Cold Vapor-Atomic Fluorescence Spectroscopy (CVAFS). The Quantitation Limit for such analysis is 0.001 µg/L, which is less than ORSANCO criteria and DEP QL.

On July 29, 2022 DEP sent a pre-draft request for Total Mercury pursuant to DEP's Pre-Draft Permit Survey for Toxic Pollutants letter sent on June 24, 2022.

On September 7, 2022 MABM's engineer (KLH) sent the resampling results report (see Appendix E) that contain 10 rounds of resampling for Total Mercury from August 3, 2022 to August 24, 2022. These results were all detected (QL of 1.0 ng/L) and checked below ORSANCO criteria of 12 ng/L.

Per DEP SOP-*Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers* SOP No. BCW-PMT-037, Revised, May 20, 2021, DEP TOXCONC (ver 2.0) model generated an AMEC of 4.5 ng/L, which was used in TMS and no RP was generated. Weekly reporting requirements will be imposed for this renewal.

Fecal Coliform

Changes were made to ORSANCO's Bacteria discharge requirements to include an *E. coli* bacteria limit of 130/100 ml as a 90-day geometric mean for the period April through October, and not to exceed 240/100 ml in more than 25% of the samples.

The following correlation analysis was made to show that extending the warmer period Fecal Coliform limits to include the month of April will be adequate to meet the above *E. coli* limit. ORSANCO has not objected to the use of this analysis:

The equations below are taken from the Ohio Environmental Protection Agency:

Current Warmer Period Avg. Monthly limit for Fecal Coliform (FC) = 200/100 ml
Using the equation for NE area of Ohio, *E. coli* = 0.667 x (FC)^1.034 = 159.73/100 ml
Using the equation for the rest of Ohio, *E. Coli* = 0.403 x (FC)^1.028 = 93.49/100 ml
Average of two values = (159.73 + 93.49)/2 = 126.61/100 ml < 130/100 ml

In summary, the discharge meets the ORSANCO *E. coli* effluent standard of 130/100 ml by maintaining an effluent Fecal Coliform Avg. Monthly limit of 200/100 ml from April through October, which becomes the new recreational season period. Using the same equations for a maximum Fecal Coliform count of 400/100 ml at 10% of the time exceedance is more restrictive than the 25% exceedance at 240/100 ml *E. coli*.

The treatment plant can meet the new stringent limits for Fecal Coliform as it achieved lower values through the reviewed DMRs; no compliance schedule is necessary.

Monthly monitoring will be imposed for *E. coli* per State Regulation 92a.61 and DEP SOP – *Establishing Effluent Limitations for Individual Sewage Permits* Revised, February 5, 2024.

Part C 136 will be added to the permit.

PFAS

Pursuant to 25 Pa. code § 92a.61(b), annual monitoring for PFAS will be imposed at Outfall 001 to determine if PFAS will be a pollutant of concern, which is consistent with DEP SOP No. BCW-PMT-033 revised February 5, 2024 under Section G.3.

The permittee shall conduct monitoring at its treatment plant that, at a minimum, includes annual effluent analysis for the four (4) PFAS parameters detectable by EPA Method 1633. Monitoring data for any analytes listed in EPA Method 1633 shall be summarized and submitted as part of the Annual Report.

Influent Monitoring

For POTWs with design flows greater than 2,000 GPD, influent BOD_5 and TSS monitoring must be established in the permit, and the monitoring should be consistent with the same frequency and sample type as is used for other effluent parameters.

Monitoring Frequency Considerations

For pH, Dissolved Oxygen (DO) and Total Residual Chlorine (TRC), a monitoring frequency of 1/day will be imposed. The daily monitoring frequencies are consistent with current policy and Table 6-3 of DEP's Technical Guidance for the Development and Specification of Effluent Limitations.

Whole Effluent Toxicity Summary

Per DEP-SOP Whole Effluent Toxicity (WET) SOP No. BPNPSM-PMT-031, revised May 13, 2014, the facility tests show that no reasonable potential exists, and no limits will be imposed for this renewal period. (See Appendix F).

The test frequency will be 1/year. Part C 114 will be included in the permit. Additional WET information is added below.

Whole Effluent Toxicity (WET)

For Outfall 001, ☐ **Acute** ☒ **Chronic** WET Testing was completed:

☒ For the permit renewal application (4 tests).
☐ Quarterly throughout the permit term.
☐ Quarterly throughout the permit term and a TIE/TRE was conducted.
☐ Other:

The dilution series used for the tests was: 100%, 60%, 30%, 2%, and 1%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 0.02.

Summary of Four Most Recent Test Results

TST Data Analysis

(NOTE – In lieu of recording information below, the application manager may attach the DEP WET Analysis Spreadsheet).

Test Date	*Ceriodaphnia* Results (Pass/Fail)		*Pimephales* Results (Pass/Fail)	
	Survival	Reproduction	Survival	Growth
6/23/2015	Pass	Pass	Pass	Pass
10/4/2016	Pass	Pass	Pass	Pass
7/4/2017	Pass	Pass	Pass	Pass
7/24/2018	Pass	Pass	Pass	Pass

***** *A "passing" result is that in which the replicate data for the TIWC is not statistically significant from the control condition. This is exhibited when the calculated t value ("T-Test Result") is greater than the critical t value. A "failing" result is exhibited when the calculated t value ("T-Test Result") is less than the critical t value.*

Is there reasonable potential for an excursion above water quality standards based on the results of these tests? (*NOTE – In general, reasonable potential is determined anytime there is at least one test failure in the previous four tests).*

☐ **YES** ☒ **NO**

Comments: None.

Evaluation of Test Type, IWC and Dilution Series for Renewed Permit

Acute Partial Mix Factor (PMFa): **0.0004** Chronic Partial Mix Factor (PMFc): **0.0024**

1. Determine IWC – Acute (IWCa):

$(Q_d \times 1.547) / ((Q_{7\text{-}10} \times PMFa) + (Q_d \times 1.547))$

[(1.25 MGD x 1.547) / ((5880 cfs x 0.0004) + (1.25 MGD x 1.547))] x 100 = 45.12**%**

Is IWCa < 1%? ☐ **YES** ☒ **NO**

Type of Test for Permit Renewal: **Chronic**

2b. Determine Target IWCc (If Chronic Tests Required)

$(Q_d \times 1.547) / (Q_{7\text{-}10} \times PMFc) + (Q_d \times 1.547)$

[(1.25 MGD x 1.547) / ((5880 cfs x 0.0024) + (1.25 MGD x 1.547))] x 100 = **12.05%**

3. Determine Dilution Series

(NOTE – check Attachment C of WET SOP for dilution series based on TIWCa or TIWCc, whichever applies).

Dilution Series = 100%, 56%, 12%, 6%, and 3%. **TIWCc 12%**

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

Will WET limits be established in the permit? ☐ YES ☒ NO

Part C 114 will be added to the permit for whole effluent toxicity measures and conditions.

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	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 Max	XXX	1/day	Grab
DO	XXX	XXX	6.0	XXX	XXX	XXX	1/day	Grab
CBOD5	261	417	XXX	25	40	50	2/week	24-Hr Composite
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS	313	469	XXX	30	45	60	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Ammonia-Nitrogen	261	XXX	XXX	25	XXX	50	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) Nov 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/week	Grab
Fecal Coliform (No./100 ml) May 1 - Oct 31	XXX	XXX	XXX	200 Geo Mean	XXX	400	2/week	Grab
Total Aluminum	Report	XXX	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite
Total Copper	Report	XXX	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite
Dissolved Iron	Report	XXX	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite

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		
Total Mercury	Report	XXX	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	24-Hr Composite
PFOA* (ng/L)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
PFOS* (ng/L)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
HFPO-DA* (ng/L)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
PFBS* (ng/L)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab

** The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in 4 consecutive monitoring periods indicate non-detect results at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittees must enter a No Discharge Indicator (NODI) Code of "GG" on DMRs.*

Compliance Sampling Location: Outfall 001 at end of pipe.
Other Comments: None.

Appendix A – WQM 7.0 Modeling – Summer Conditions

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
20E	32317	OHIO RIVER	**2.180**	665.00	23000.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.256	0.00	5880.00	0.000	0.000	0.0	0.00	0.00	0.00	0.00	25.00	7.00
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
Midland STP	PA0023701	1.2500	1.2500	1.2500	0.000	25.00	7.00

Parameter Data

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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
20E	32317	OHIO RIVER	**0.600**	659.00	23500.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.250	0.00	5880.00	0.000	0.000	0.0	0.00	0.00	0.00	0.00	25.00	7.00
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
Midland STP	PA0023701	1.2500	1.2500	1.2500	0.000	25.00	7.00

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
2.180	5880.00	0.00	5880.00	1.9338	0.00072	.15712	163.38	77642.1	3.09	0.031	25.00	7.00
Q1-10 Flow												
2.180	3763.20	0.00	3763.20	1.9338	0.00072	NA	NA	NA	2.40	0.040	25.00	7.00
Q30-10 Flow												
2.180	7996.80	0.00	7996.80	1.9338	0.00072	NA	NA	NA	3.67	0.026	25.00	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☑
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☑
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☐
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.180	1.250	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
12163.380	0.157	77642.100	3.087
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.01	0.006	0.01	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.242	10.356	Tsivoglou	5
Reach Travel Time (days)			
0.031			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.003	2.01	0.01	7.54
0.006	2.01	0.01	7.54
0.009	2.01	0.01	7.54
0.013	2.01	0.01	7.54
0.016	2.01	0.01	7.54
0.019	2.01	0.01	7.54
0.022	2.01	0.01	7.54
0.025	2.01	0.01	7.54
0.028	2.01	0.01	7.54
0.031	2.01	0.01	7.54

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO 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
2.180	Midland STP	11.07	50	11.07	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
2.180	Midland STP	1.37	25	1.37	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
2.18	Midland STP	25	25	25	25	4	4	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO 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)
2.180	Midland STP	PA0023701	1.250	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

Appendix B – WQM 7.0 Modeling – Winter Conditions

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
20E	32317	OHIO RIVER	**2.180**	665.00	23000.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.512	0.00	5880.00	0.000	0.000	0.0	0.00	0.00	0.00	0.00	5.00	7.00
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
Midland STP	PA0023701	1.2500	1.2500	1.2500	0.000	15.00	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	4.00	12.51	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
20E	32317	OHIO RIVER	**0.600**	659.00	23500.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.500	0.00	5880.00	0.000	0.000	0.0	0.00	0.00	0.00	0.00	5.00	7.00
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
Midland STP	PA0023701	1.2500	1.2500	1.2500	0.000	15.00	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	4.00	12.51	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
2.180	5880.00	0.00	5880.00	1.9338	0.00072	.15712	163.38	77642.1	3.09	0.031	5.00	7.00
Q1-10 Flow												
2.180	3763.20	0.00	3763.20	1.9338	0.00072	NA	NA	NA	2.40	0.040	5.01	7.00
Q30-10 Flow												
2.180	7996.80	0.00	7996.80	1.9338	0.00072	NA	NA	NA	3.67	0.026	5.00	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☑
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☑
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☐
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.180	1.250	5.003	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
12163.380	0.157	77642.100	3.087
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.01	0.006	0.01	0.221
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
12.507	10.356	Tsivoglou	5
Reach Travel Time (days)			
0.031			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.003	2.01	0.01	11.45
0.006	2.01	0.01	11.45
0.009	2.01	0.01	11.45
0.013	2.01	0.01	11.45
0.016	2.01	0.01	11.45
0.019	2.01	0.01	11.45
0.022	2.01	0.01	11.45
0.025	2.01	0.01	11.45
0.028	2.01	0.01	11.45
0.031	2.01	0.01	11.45

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO 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
2.180	Midland STP	24.1	50	24.1	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
2.180	Midland STP	4.36	25	4.36	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
2.18	Midland STP	25	25	25	25	4	4	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO 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)
2.180	Midland STP	PA0023701	1.250	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

Appendix C – Ammonia-Nitrogen Date Monitoring Reports – July 2017 to April 2021

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

National Pollutant Discharge Elimination System (NPDES)
Electronic Discharge Monitoring Report (eDMR)

4/26/2022 8:55:20 AM

Region: SWRO
County: 04 - Beaver
Municipality: All
Permit #: PA0023701
Monitoring Period Date Range: 7/1/2017 To 4/1/2022
Client: All
Parameter: Ammonia-Nitrogen (00610)

Permit #:	**PA0023701**	Facility Address:	**MIDLAND BORO STP STATE ROUTE 68 MIDLAND, PA 15059**
Client ID / Name:	**43156 - MIDLAND BORO MUNI AUTH BEAVER CNTY**		
Primary Facility ID / Name:	**295078 - MIDLAND BORO STP**	County:	**Beaver**
Major Facility:	**Yes**	Municipality:	**Midland Boro**
Region:	**SWRO**	Latitude / Longitude:	**40.643333 / -80.471667**

Monitoring Period Begin Date	Monitoring Period End Date	DMR Received Date	Outfall	Discharge	Monitoring Location	Parameter Name	Parameter Code	DMR Value	Permit Limit	Units	Statistical Base Code
07/01/2017	07/31/2017	08/18/2017	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	2	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.3	Monitor and Report	mg/L	Average Monthly
08/01/2017	08/31/2017	09/19/2017	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	1	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.5	Monitor and Report	mg/L	Average Monthly
09/01/2017	09/30/2017	10/23/2017	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	1	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.4	Monitor and Report	mg/L	Average Monthly
10/01/2017	10/31/2017	11/20/2017	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.7	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	2	Monitor and Report	lbs/day	Average Monthly
11/01/2017	11/30/2017	12/19/2017	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 1.0	Monitor and Report	mg/L	Average Monthly

SSRS_NPDES_036 Ver 1.1

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National Pollutant Discharge Elimination System (NPDES)
Electronic Discharge Monitoring Report (eDMR)

4/26/2022 8:55:20 AM

11/01/2017	11/30/2017	12/19/2017	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	4	Monitor and Report	lbs/day	Average Monthly
12/01/2017	12/31/2017	01/17/2018	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	5	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	2.1	Monitor and Report	mg/L	Average Monthly
01/01/2018	01/31/2018	02/22/2018	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	3.1	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	13	Monitor and Report	lbs/day	Average Monthly
02/01/2018	02/28/2018	03/22/2018	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 1.8	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	10	Monitor and Report	lbs/day	Average Monthly
03/01/2018	03/31/2018	04/25/2018	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	7	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	1.4	Monitor and Report	mg/L	Average Monthly
04/01/2018	04/30/2018	05/21/2018	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	9	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.7	Monitor and Report	mg/L	Average Monthly
05/01/2018	05/31/2018	06/26/2018	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.8	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	3	Monitor and Report	lbs/day	Average Monthly
06/01/2018	06/30/2018	07/27/2018	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.4	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	1	Monitor and Report	lbs/day	Average Monthly
07/01/2018	07/31/2018	08/23/2018	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	1	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.4	Monitor and Report	mg/L	Average Monthly
08/01/2018	08/31/2018	09/19/2018	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	0.3	Monitor and Report	mg/L	Average Monthly

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National Pollutant Discharge Elimination System (NPDES)
Electronic Discharge Monitoring Report (eDMR)

4/26/2022 8:55:20 AM

08/01/2018	08/31/2018	09/19/2018	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	1	Monitor and Report	lbs/day	Average Monthly
09/01/2018	09/30/2018	10/23/2018	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	6	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	0.6	Monitor and Report	mg/L	Average Monthly
10/01/2018	10/31/2018	11/20/2018	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.5	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	2	Monitor and Report	lbs/day	Average Monthly
11/01/2018	11/30/2018	12/18/2018	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.4	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	3	Monitor and Report	lbs/day	Average Monthly
12/01/2018	12/31/2018	01/24/2019	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	4	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	0.8	Monitor and Report	mg/L	Average Monthly
01/01/2019	01/31/2019	02/19/2019	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	0.9	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	6	Monitor and Report	lbs/day	Average Monthly
02/01/2019	02/28/2019	03/25/2019	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	1.1	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	13	Monitor and Report	lbs/day	Average Monthly
03/01/2019	03/31/2019	04/24/2019	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	1.6	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	9	Monitor and Report	lbs/day	Average Monthly
04/01/2019	04/30/2019	05/21/2019	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	6	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 1.2	Monitor and Report	mg/L	Average Monthly
05/01/2019	05/31/2019	06/24/2019	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	3	Monitor and Report	lbs/day	Average Monthly

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National Pollutant Discharge Elimination System (NPDES)
Electronic Discharge Monitoring Report (eDMR)

4/26/2022 8:55:20 AM

05/01/2019	05/31/2019	06/24/2019	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.6	Monitor and Report	mg/L	Average Monthly
06/01/2019	06/30/2019	07/23/2019	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.3	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	4	Monitor and Report	lbs/day	Average Monthly
07/01/2019	07/31/2019	08/21/2019	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	1	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.3	Monitor and Report	mg/L	Average Monthly
08/01/2019	08/31/2019	09/23/2019	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.5	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	1	Monitor and Report	lbs/day	Average Monthly
09/01/2019	09/30/2019	10/23/2019	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.6	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	2	Monitor and Report	lbs/day	Average Monthly
10/01/2019	10/31/2019	11/19/2019	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	2	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.8	Monitor and Report	mg/L	Average Monthly
11/01/2019	11/30/2019	12/18/2019	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	3	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.9	Monitor and Report	mg/L	Average Monthly
12/01/2019	12/31/2019	01/23/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	7	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 1.3	Monitor and Report	mg/L	Average Monthly
01/01/2020	01/31/2020	02/20/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.9	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	6	Monitor and Report	lbs/day	Average Monthly
02/01/2020	02/29/2020	03/23/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	14	Monitor and Report	lbs/day	Average Monthly

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National Pollutant Discharge Elimination System (NPDES)
Electronic Discharge Monitoring Report (eDMR)

4/26/2022 8:55:20 AM

02/01/2020	02/29/2020	03/23/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	2.5	Monitor and Report	mg/L	Average Monthly
03/01/2020	03/31/2020	04/20/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 1.2	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	6	Monitor and Report	lbs/day	Average Monthly
04/01/2020	04/30/2020	05/26/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	1	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.3	Monitor and Report	mg/L	Average Monthly
05/01/2020	05/31/2020	06/22/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	1	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.4	Monitor and Report	mg/L	Average Monthly
06/01/2020	06/30/2020	07/20/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.3	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 1	Monitor and Report	lbs/day	Average Monthly
07/01/2020	07/31/2020	08/19/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 1	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.3	Monitor and Report	mg/L	Average Monthly
08/01/2020	08/31/2020	09/23/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 1	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.3	Monitor and Report	mg/L	Average Monthly
09/01/2020	09/30/2020	10/15/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.5	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 2	Monitor and Report	lbs/day	Average Monthly
10/01/2020	10/31/2020	11/24/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 3	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 1	Monitor and Report	mg/L	Average Monthly
11/01/2020	11/30/2020	12/28/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	11	Monitor and Report	lbs/day	Average Monthly

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National Pollutant Discharge Elimination System (NPDES)
Electronic Discharge Monitoring Report (eDMR)

4/26/2022 8:55:20 AM

11/01/2020	11/30/2020	12/28/2020	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	2.7	Monitor and Report	mg/L	Average Monthly
12/01/2020	12/31/2020	01/27/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	3.0	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	11	Monitor and Report	lbs/day	Average Monthly
01/01/2021	01/31/2021	02/28/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	6	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	1.7	Monitor and Report	mg/L	Average Monthly
02/01/2021	02/28/2021	03/11/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 3.1	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 17	Monitor and Report	lbs/day	Average Monthly
03/01/2021	03/31/2021	04/27/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	4	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	1.0	Monitor and Report	mg/L	Average Monthly
04/01/2021	04/30/2021	05/25/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 2	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.4	Monitor and Report	mg/L	Average Monthly
05/01/2021	05/31/2021	06/28/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 5	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.8	Monitor and Report	mg/L	Average Monthly
06/01/2021	06/30/2021	07/27/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 1	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.3	Monitor and Report	mg/L	Average Monthly
07/01/2021	07/31/2021	08/27/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	1	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.3	Monitor and Report	mg/L	Average Monthly
08/01/2021	08/31/2021	09/27/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 2	Monitor and Report	lbs/day	Average Monthly

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National Pollutant Discharge Elimination System (NPDES)
Electronic Discharge Monitoring Report (eDMR)

4/26/2022 8:55:20 AM

08/01/2021	08/31/2021	09/27/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.4	Monitor and Report	mg/L	Average Monthly
09/01/2021	09/30/2021	10/28/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.3	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 1	Monitor and Report	lbs/day	Average Monthly
10/01/2021	10/31/2021	11/28/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 1	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.4	Monitor and Report	mg/L	Average Monthly
11/01/2021	11/30/2021	12/27/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 2	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.5	Monitor and Report	mg/L	Average Monthly
12/01/2021	12/31/2021	01/27/2022	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	1.2	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	6	Monitor and Report	lbs/day	Average Monthly
01/01/2022	01/31/2022	03/15/2022	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.8	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 4	Monitor and Report	lbs/day	Average Monthly
02/01/2022	02/28/2022	03/24/2022	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	1.1	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	8	Monitor and Report	lbs/day	Average Monthly

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Appendix D – Toxics Management Spreadsheet (TMS) Analysis

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Midland STP** NPDES Permit No.: **PA0023701** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Sewage Effluent**

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
1.25	176	7.9						

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc		0.5 if left blank: Daily CV	Hourly CV	0 if left blank: Strea m CV	Fate Coeff	FOS	1 if left blank: Criteri a Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		532									
	Chloride (PWS)	mg/L		130									
	Bromide	mg/L		0.47									
	Sulfate (PWS)	mg/L		70									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		100									
	Total Antimony	µg/L		0.3									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		34									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L		200									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L		1.4									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L		0.5									
	Total Copper	µg/L		11									
	Free Cyanide	µg/L		4									
	Total Cyanide	µg/L		6									
	Dissolved Iron	µg/L		280									
	Total Iron	µg/L		60									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		128									
	Total Mercury	µg/L		0.2									
	Total Nickel	µg/L		3.6									
	Total Phenols (Phenolics) (PWS)	µg/L		25									
	Total Selenium	µg/L		1									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L	<	1									
	Total Zinc	µg/L		22									
	Total Molybdenum	µg/L		3									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L											
	Acrylonitrile	µg/L	<	2									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									

Group 3	Carbon Tetrachloride	µg/L	<	0.5									
	Chlorobenzene	µg/L	<	0.5									
	Chlorodibromomethane	µg/L		0.7									
	Chloroethane	µg/L	<	0.5									
	2-Chloroethyl Vinyl Ether	µg/L	<	5									
	Chloroform	µg/L		15.5									
	Dichlorobromomethane	µg/L		3.3									
	1,1-Dichloroethane	µg/L	<	0.5									
	1,2-Dichloroethane	µg/L	<	0.5									
	1,1-Dichloroethylene	µg/L	<	0.5									
	1,2-Dichloropropane	µg/L	<	0.5									
	1,3-Dichloropropylene	µg/L	<	0.5									
	1,4-Dioxane	µg/L	<	5									
	Ethylbenzene	µg/L	<	0.5									
	Methyl Bromide	µg/L	<	0.5									
	Methyl Chloride	µg/L	<	0.5									
	Methylene Chloride	µg/L	<	0.5									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5									
	Tetrachloroethylene	µg/L	<	0.5									
	Toluene	µg/L	<	0.5									
	1,2-trans-Dichloroethylene	µg/L	<	0.5									
	1,1,1-Trichloroethane	µg/L	<	0.5									
	1,1,2-Trichloroethane	µg/L	<	0.5									
	Trichloroethylene	µg/L	<	0.5									
	Vinyl Chloride	µg/L	<	0.5									
Group 4	2-Chlorophenol	µg/L	<	10									
	2,4-Dichlorophenol	µg/L	<	10									
	2,4-Dimethylphenol	µg/L	<	10									
	4,6-Dinitro-o-Cresol	µg/L	<	10									
	2,4-Dinitrophenol	µg/L	<	10									
	2-Nitrophenol	µg/L	<	10									
	4-Nitrophenol	µg/L	<	10									
	p-Chloro-m-Cresol	µg/L	<	10									
	Pentachlorophenol	µg/L	<	10									
	Phenol	µg/L	<	10									
	2,4,6-Trichlorophenol	µg/L	<	10									
Group 5	Acenaphthene	µg/L	<	2.5									
	Acenaphthylene	µg/L	<	2.5									
	Anthracene	µg/L	<	2.5									
	Benzidine	µg/L	<	50									
	Benzo(a)Anthracene	µg/L	<	2.5									
	Benzo(a)Pyrene	µg/L	<	2.5									
	3,4-Benzofluoranthene	µg/L	<	2.5									
	Benzo(ghi)Perylene	µg/L	<	2.5									
	Benzo(k)Fluoranthene	µg/L	<	2.5									
	Bis(2-Chloroethoxy)Methane	µg/L	<	5									
	Bis(2-Chloroethyl)Ether	µg/L	<	5									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5									
	4-Bromophenyl Phenyl Ether	µg/L	<	5									
	Butyl Benzyl Phthalate	µg/L	<	5									
	2-Chloronaphthalene	µg/L	<	5									
	4-Chlorophenyl Phenyl Ether	µg/L	<	5									
	Chrysene	µg/L	<	2.5									
	Dibenzo(a,h)Anthrancene	µg/L	<	2.5									
	1,2-Dichlorobenzene	µg/L	<	0.5									
	1,3-Dichlorobenzene	µg/L	<	0.5									
	1,4-Dichlorobenzene	µg/L	<	5									
	3,3-Dichlorobenzidine	µg/L	<	5									
	Diethyl Phthalate	µg/L	<	5									
	Dimethyl Phthalate	µg/L	<	5									
	Di-n-Butyl Phthalate	µg/L	<	5									
	2,4-Dinitrotoluene	µg/L	<	5									

	2,6-Dinitrotoluene	µg/L	<	5									
	Di-n-Octyl Phthalate	µg/L	<	5									
	1,2-Diphenylhydrazine	µg/L	<	5									
	Fluoranthene	µg/L	<	2.5									
	Fluorene	µg/L	<	2.5									
	Hexachlorobenzene	µg/L	<	5									
	Hexachlorobutadiene	µg/L	<	0.5									
	Hexachlorocyclopentadiene	µg/L	<	5									
	Hexachloroethane	µg/L	<	5									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2.5									
	Isophorone	µg/L	<	5									
	Naphthalene	µg/L	<	0.5									
	Nitrobenzene	µg/L	<	5									
	n-Nitrosodimethylamine	µg/L	<	5									
	n-Nitrosodi-n-Propylamine	µg/L	<	5									
	n-Nitrosodiphenylamine	µg/L	<	5									
	Phenanthrene	µg/L	<	2.5									
	Pyrene	µg/L	<	2.5									
	1,2,4-Trichlorobenzene	µg/L	<	0.5									
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	<										
	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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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Midland STP, NPDES Permit No. PA0023701, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: **Ohio River WWF**

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	032317	2.18	665	23000			Yes
End of Reach 1	032317	0.6	659	23500			Yes

Q_{7-10}

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	2.18	0.256	5880									140	7		
End of Reach 1	0.6	0.25	5880									140	7		

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	2.18														
End of Reach 1	0.6														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Midland STP, NPDES Permit No. PA0023701, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.000 Analysis Hardness (mg/l): 157.42 Analysis pH: 7.24

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 Aluminum	0	0		0	750	750	1,550	
Total Antimony	0	0		0	1,100	1,100	2,273	
Total Arsenic	0	0		0	340	340	703	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	43,403	
Total Boron	0	0		0	8,100	8,100	16,741	
Total Cadmium	0	0		0	3.130	3.38	6.99	Chem Translator of 0.925 applied
Total Chromium (III)	0	0		0	826.195	2,615	5,404	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	33.7	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	196	
Total Copper	0	0		0	20.608	21.5	44.4	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	45.5	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	105.451	145	301	Chem Translator of 0.725 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	3.4	Chem Translator of 0.85 applied
Total Nickel	0	0		0	687.343	689	1,423	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	7.020	8.26	17.1	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	134	
Total Zinc	0	0		0	172.116	176	364	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	6.2	

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Acrylonitrile	0	0		0	650	650	1,343	
Benzene	0	0		0	640	640	1,323	
Bromoform	0	0		0	1,800	1,800	3,720	
Carbon Tetrachloride	0	0		0	2,800	2,800	5,787	
Chlorobenzene	0	0		0	1,200	1,200	2,480	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	37,202	
Chloroform	0	0		0	1,900	1,900	3,927	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	31,002	
1,1-Dichloroethylene	0	0		0	7,500	7,500	15,501	
1,2-Dichloropropane	0	0		0	11,000	11,000	22,735	
1,3-Dichloropropylene	0	0		0	310	310	641	
Ethylbenzene	0	0		0	2,900	2,900	5,994	
Methyl Bromide	0	0		0	550	550	1,137	
Methyl Chloride	0	0		0	28,000	28,000	57,870	
Methylene Chloride	0	0		0	12,000	12,000	24,802	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	2,067	
Tetrachloroethylene	0	0		0	700	700	1,447	
Toluene	0	0		0	1,700	1,700	3,514	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	14,054	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	6,200	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	7,027	
Trichloroethylene	0	0		0	2,300	2,300	4,754	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,157	
2,4-Dichlorophenol	0	0		0	1,700	1,700	3,514	
2,4-Dimethylphenol	0	0		0	660	660	1,364	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	165	
2,4-Dinitrophenol	0	0		0	660	660	1,364	
2-Nitrophenol	0	0		0	8,000	8,000	16,534	
4-Nitrophenol	0	0		0	2,300	2,300	4,754	
p-Chloro-m-Cresol	0	0		0	160	160	331	
Pentachlorophenol	0	0		0	11.089	11.1	22.9	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	951	
Acenaphthene	0	0		0	83	83.0	172	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	620	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.03	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	62,004	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	9,301	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	558	
Butyl Benzyl Phthalate	0	0		0	140	140	289	

2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	1,695	
1,3-Dichlorobenzene	0	0		0	350	350	723	
1,4-Dichlorobenzene	0	0		0	730	730	1,509	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	8,267	
Dimethyl Phthalate	0	0		0	2,500	2,500	5,167	
Di-n-Butyl Phthalate	0	0		0	110	110	227	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	3,307	
2,6-Dinitrotoluene	0	0		0	990	990	2,046	
1,2-Diphenylhydrazine	0	0		0	15	15.0	31.0	
Fluoranthene	0	0		0	200	200	413	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	10	10.0	20.7	
Hexachlorocyclopentadiene	0	0		0	5	5.0	10.3	
Hexachloroethane	0	0		0	60	60.0	124	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	20,668	
Naphthalene	0	0		0	140	140	289	
Nitrobenzene	0	0		0	4,000	4,000	8,267	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	35,135	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	620	
Phenanthrene	0	0		0	5	5.0	10.3	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	269	

☑ ***CFC*** CCT (min): 720 PMF: 0.002 Analysis Hardness (mg/l): 144.29 Analysis pH: 7.05

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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	1,846	
Total Arsenic	0	0		0	150	150	1,259	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	34,403	
Total Boron	0	0		0	1,600	1,600	13,426	
Total Cadmium	0	0		0	0.317	0.36	2.98	Chem Translator of 0.894 applied
Total Chromium (III)	0	0		0	100.073	116	976	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	87.2	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	159	
Total Copper	0	0		0	12.251	12.8	107	Chem Translator of 0.96 applied

Free Cyanide	0	0		0	5.2	5.2	43.6	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	4,562,586	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.742	5.07	42.6	Chem Translator of 0.738 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	7.6	Chem Translator of 0.85 applied
Total Nickel	0	0		0	70.921	71.1	597	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	41.9	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	109	
Total Zinc	0	0		0	161.181	163	1,372	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	25.2	
Acrylonitrile	0	0		0	130	130	1,091	
Benzene	0	0		0	130	130	1,091	
Bromoform	0	0		0	370	370	3,105	
Carbon Tetrachloride	0	0		0	560	560	4,699	
Chlorobenzene	0	0		0	240	240	2,014	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	29,368	
Chloroform	0	0		0	390	390	3,272	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	26,012	
1,1-Dichloroethylene	0	0		0	1,500	1,500	12,586	
1,2-Dichloropropane	0	0		0	2,200	2,200	18,460	
1,3-Dichloropropylene	0	0		0	61	61.0	512	
Ethylbenzene	0	0		0	580	580	4,867	
Methyl Bromide	0	0		0	110	110	923	
Methyl Chloride	0	0		0	5,500	5,500	46,150	
Methylene Chloride	0	0		0	2,400	2,400	20,138	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	1,762	
Tetrachloroethylene	0	0		0	140	140	1,175	
Toluene	0	0		0	330	330	2,769	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	11,747	
1,1,1-Trichloroethane	0	0		0	610	610	5,118	
1,1,2-Trichloroethane	0	0		0	680	680	5,706	
Trichloroethylene	0	0		0	450	450	3,776	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	923	
2,4-Dichlorophenol	0	0		0	340	340	2,853	
2,4-Dimethylphenol	0	0		0	130	130	1,091	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	134	
2,4-Dinitrophenol	0	0		0	130	130	1,091	
2-Nitrophenol	0	0		0	1,600	1,600	13,426	
4-Nitrophenol	0	0		0	470	470	3,944	

p-Chloro-m-Cresol	0	0		0	500	500	4,195	
Pentachlorophenol	0	0		0	8.508	8.51	71.4	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	764	
Acenaphthene	0	0		0	17	17.0	143	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	495	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.84	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	50,346	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	7,636	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	453	
Butyl Benzyl Phthalate	0	0		0	35	35.0	294	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	1,343	
1,3-Dichlorobenzene	0	0		0	69	69.0	579	
1,4-Dichlorobenzene	0	0		0	150	150	1,259	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	6,713	
Dimethyl Phthalate	0	0		0	500	500	4,195	
Di-n-Butyl Phthalate	0	0		0	21	21.0	176	
2,4-Dinitrotoluene	0	0		0	320	320	2,685	
2,6-Dinitrotoluene	0	0		0	200	200	1,678	
1,2-Diphenylhydrazine	0	0		0	3	3.0	25.2	
Fluoranthene	0	0		0	40	40.0	336	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	2	2.0	16.8	
Hexachlorocyclopentadiene	0	0		0	1	1.0	8.39	
Hexachloroethane	0	0		0	12	12.0	101	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	17,621	
Naphthalene	0	0		0	43	43.0	361	
Nitrobenzene	0	0		0	810	810	6,797	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	28,529	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	495	
Phenanthrene	0	0		0	1	1.0	8.39	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	218	

☑ ***THH*** CCT (min): 720 PMF: 0.002 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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	47.0	
Total Arsenic	0	0		0	10	10.0	83.9	
Total Barium	0	0		0	1,000	1,000	8,391	
Total Boron	0	0		0	3,100	3,100	26,012	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	1,300	1,300	10,908	
Free Cyanide	0	0		0	4	4.0	33.6	
Dissolved Iron	0	0		0	300	300	2,517	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	8,391	
Total Mercury	0	0		0	0.012	0.012	0.1	
Total Nickel	0	0		0	610	610	5,118	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	2.01	
Total Zinc	0	0		0	7,400	7,400	62,093	
Acrolein	0	0		0	3	3.0	25.2	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	839	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	277	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	68	68.0	571	

Methyl Bromide	0	0		0	47	47.0	394	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	478	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	839	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	83,910	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	30	30.0	252	
2,4-Dichlorophenol	0	0		0	10	10.0	83.9	
2,4-Dimethylphenol	0	0		0	100	100.0	839	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	16.8	
2,4-Dinitrophenol	0	0		0	10	10.0	83.9	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	33,564	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	587	
Anthracene	0	0		0	300	300	2,517	
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	1,678	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	0.84	
2-Chloronaphthalene	0	0		0	800	800	6,713	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	420	420	3,524	
1,3-Dichlorobenzene	0	0		0	7	7.0	58.7	
1,4-Dichlorobenzene	0	0		0	63	63.0	529	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	5,035	
Dimethyl Phthalate	0	0		0	2,000	2,000	16,782	
Di-n-Butyl Phthalate	0	0		0	20	20.0	168	
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	

2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	20	20.0	168	
Fluorene	0	0		0	50	50.0	420	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	4	4.0	33.6	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	34	34.0	285	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	83.9	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	168	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.59	

☑ ***CRL*** CCT (min): 720 PMF: 0.003 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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	

Total Silver	0	0		0	50	50.0	1,293	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.051	0.051	1.32	
Benzene	0	0		0	0.58	0.58	15.0	
Bromoform	0	0		0	4.3	4.3	111	
Carbon Tetrachloride	0	0		0	0.4	0.4	10.3	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.4	0.4	10.3	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	147	
Dichlorobromomethane	0	0		0	0.55	0.55	14.2	
1,2-Dichloroethane	0	0		0	0.38	0.38	9.82	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.5	0.5	12.9	
1,3-Dichloropropylene	0	0		0	0.27	0.27	6.98	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	4.6	4.6	119	
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	4.39	
Tetrachloroethylene	0	0		0	0.69	0.69	17.8	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.55	0.55	14.2	
Trichloroethylene	0	0		0	0.6	0.6	15.5	
Vinyl Chloride	0	0		0	0.02	0.02	0.52	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	0.78	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	36.2	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.000086	0.00009	0.002	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.026	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.003	

3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.026	
Benzo(k)Fluoranthene	0	0		0	0.0038	0.004	0.098	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.78	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	8.27	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.0038	0.004	0.098	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.003	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.021	0.021	0.54	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	1.29	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	1.29	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.78	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.002	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.26	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	2.59	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.026	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.00069	0.0007	0.018	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.13	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	85.3	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	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
Total Aluminum	Report	Report	Report	Report	Report	µg/L	994	AFC	Discharge Conc > 10% WQBEL (no RP)

Total Copper	Report	Report	Report	Report	Report	µg/L	28.4	AFC	Discharge Conc > 10% WQBEL (no RP)
Dissolved Iron	Report	Report	Report	Report	Report	µg/L	2,517	THH	Discharge Conc > 10% WQBEL (no RP)
Total Mercury	0.0001	0.0002	0.012	0.019	0.03	µg/L	0.012	THH	Discharge Conc ≥ 50% WQBEL (RP)

☑ ***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 Antimony	47.0	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	8,391	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	10,730	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	2.98	µg/L	Discharge Conc < TQL
Total Chromium (III)	976	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	21.6	µg/L	Discharge Conc < TQL
Total Cobalt	126	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	29.1	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Total Iron	4,562,586	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	42.6	µg/L	Discharge Conc < TQL
Total Manganese	8,391	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	597	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	41.9	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	10.9	µg/L	Discharge Conc < TQL
Total Thallium	2.01	µg/L	Discharge Conc < TQL
Total Zinc	233	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	3.97	µg/L	Discharge Conc < TQL
Acrylonitrile	1.32	µg/L	Discharge Conc < TQL
Benzene	15.0	µg/L	Discharge Conc < TQL
Bromoform	111	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	10.3	µg/L	Discharge Conc < TQL
Chlorobenzene	839	µg/L	Discharge Conc < TQL
Chlorodibromomethane	10.3	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	23,845	µg/L	Discharge Conc < TQL

Chloroform	147	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	14.2	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	9.82	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	277	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	12.9	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	6.98	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	571	µg/L	Discharge Conc < TQL
Methyl Bromide	394	µg/L	Discharge Conc < TQL
Methyl Chloride	37,092	µg/L	Discharge Conc < TQL
Methylene Chloride	119	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	4.39	µg/L	Discharge Conc < TQL
Tetrachloroethylene	17.8	µg/L	Discharge Conc < TQL
Toluene	478	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	839	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	3,974	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	14.2	µg/L	Discharge Conc < TQL
Trichloroethylene	15.5	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.52	µg/L	Discharge Conc < TQL
2-Chlorophenol	252	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	83.9	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	839	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	16.8	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	83.9	µg/L	Discharge Conc < TQL
2-Nitrophenol	10,598	µg/L	Discharge Conc < TQL
4-Nitrophenol	3,047	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	212	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.78	µg/L	Discharge Conc < TQL
Phenol	33,564	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	36.2	µg/L	Discharge Conc < TQL
Acenaphthene	110	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	2,517	µg/L	Discharge Conc < TQL
Benzidine	0.002	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.026	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.003	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.026	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.098	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.78	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	1,678	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	8.27	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	358	µg/L	Discharge Conc < TQL

Butyl Benzyl Phthalate	0.84	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	6,713	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	0.098	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.003	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	1,086	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	58.7	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	529	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	0.54	µg/L	Discharge Conc < TQL
Diethyl Phthalate	5,035	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	3,312	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	146	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	1.29	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	1.29	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.78	µg/L	Discharge Conc < TQL
Fluoranthene	168	µg/L	Discharge Conc < TQL
Fluorene	420	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.00008	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.01	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	6.62	µg/L	Discharge Conc < TQL
Hexachloroethane	2.59	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.026	µg/L	Discharge Conc < TQL
Isophorone	285	µg/L	Discharge Conc < TQL
Naphthalene	185	µg/L	Discharge Conc < TQL
Nitrobenzene	83.9	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.018	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.13	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	85.3	µg/L	Discharge Conc < TQL
Phenanthrene	6.62	µg/L	Discharge Conc < TQL
Pyrene	168	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.59	µg/L	Discharge Conc < TQL

Appendix E – Pre-Draft Total Mercury Resampling Results & Analysis–

596-26: Midland Borough Municipal Authority - Midland STP NPDES PA0023701
Additional Mercury Testing per EPA Method 1631E

DATE	RESULTS (ng/l)	PADEP WQBEL Average (ng/l)	PADEP WQBEL Max Weekly Avg. (ng/l)	PADEP WQBEL Maximum (ng/l)	ORSANCO Criteria (ng/l)
8/3/2022	4.5	12	19	30	12
8/4/2022	4.4	12	19	30	12
8/8/2022	3.9	12	19	30	12
8/10/2022	3.8	12	19	30	12
8/12/2022	4.1	12	19	30	12
8/16/2022	3.1	12	19	30	12
8/17/2022	3.2	12	19	30	12
8/18/2022	4.4	12	19	30	12
8/23/2022	4.9	12	19	30	12
8/24/2022	3.6	12	19	30	12
Average Results	3.99				
Max	4.9				

Date	Average Monthly (ng/L)	Maximum Daily (ng/L)	IMAX (ng/L)	DEP QL (ng/L)	ORSANCO Criteria (ng/L)	Results (ng/L)
8/3/2022	12	19	30	200	12	4.5
8/4/2022	12	19	30	200	12	4.4
8/8/2022	12	19	30	200	12	3.9
8/10/2022	12	19	30	200	12	3.8
8/12/2022	12	19	30	200	12	4.1
8/16/2022	12	19	30	200	12	3.1
8/17/2022	12	19	30	200	12	3.2
8/18/2022	12	19	30	200	12	4.4
8/23/2022	12	19	30	200	12	4.9
8/24/2022	12	19	30	200	12	3.6
					Avg. Monthly (using TOXCONC) (µg/L)	0.0045000

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Midland STP** NPDES Permit No.: **PA0023701** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Sewage Effluent**

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
1.25	176	7.9						

					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		532									
	Chloride (PWS)	mg/L		130									
	Bromide	mg/L		0.47									
	Sulfate (PWS)	mg/L		70									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		100									
	Total Antimony	µg/L		0.3									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		34									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L		200									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L		1.4									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L		0.5									
	Total Copper	µg/L		11									
	Free Cyanide	µg/L		4									
	Total Cyanide	µg/L		6									
	Dissolved Iron	µg/L		280									
	Total Iron	µg/L		60									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		128									
	Total Mercury	µg/L		0.0045									
	Total Nickel	µg/L		3.6									
	Total Phenols (Phenolics) (PWS)	µg/L		25									
	Total Selenium	µg/L		1									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L	<	1									
	Total Zinc	µg/L		22									
	Total Molybdenum	µg/L		3									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L											
	Acrylonitrile	µg/L	<	2									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									

Group 3	Carbon Tetrachloride	µg/L	<	0.5										
	Chlorobenzene	µg/L	<	0.5										
	Chlorodibromomethane	µg/L		0.7										
	Chloroethane	µg/L	<	0.5										
	2-Chloroethyl Vinyl Ether	µg/L	<	5										
	Chloroform	µg/L		15.5										
	Dichlorobromomethane	µg/L		3.3										
	1,1-Dichloroethane	µg/L	<	0.5										
	1,2-Dichloroethane	µg/L	<	0.5										
	1,1-Dichloroethylene	µg/L	<	0.5										
	1,2-Dichloropropane	µg/L	<	0.5										
	1,3-Dichloropropylene	µg/L	<	0.5										
	1,4-Dioxane	µg/L	<	5										
	Ethylbenzene	µg/L	<	0.5										
	Methyl Bromide	µg/L	<	0.5										
	Methyl Chloride	µg/L	<	0.5										
	Methylene Chloride	µg/L	<	0.5										
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5										
	Tetrachloroethylene	µg/L	<	0.5										
	Toluene	µg/L	<	0.5										
	1,2-trans-Dichloroethylene	µg/L	<	0.5										
	1,1,1-Trichloroethane	µg/L	<	0.5										
	1,1,2-Trichloroethane	µg/L	<	0.5										
	Trichloroethylene	µg/L	<	0.5										
	Vinyl Chloride	µg/L	<	0.5										
Group 4	2-Chlorophenol	µg/L	<	10										
	2,4-Dichlorophenol	µg/L	<	10										
	2,4-Dimethylphenol	µg/L	<	10										
	4,6-Dinitro-o-Cresol	µg/L	<	10										
	2,4-Dinitrophenol	µg/L	<	10										
	2-Nitrophenol	µg/L	<	10										
	4-Nitrophenol	µg/L	<	10										
	p-Chloro-m-Cresol	µg/L	<	10										
	Pentachlorophenol	µg/L	<	10										
	Phenol	µg/L	<	10										
	2,4,6-Trichlorophenol	µg/L	<	10										
Group 5	Acenaphthene	µg/L	<	2.5										
	Acenaphthylene	µg/L	<	2.5										
	Anthracene	µg/L	<	2.5										
	Benzidine	µg/L	<	50										
	Benzo(a)Anthracene	µg/L	<	2.5										
	Benzo(a)Pyrene	µg/L	<	2.5										
	3,4-Benzofluoranthene	µg/L	<	2.5										
	Benzo(ghi)Perylene	µg/L	<	2.5										
	Benzo(k)Fluoranthene	µg/L	<	2.5										
	Bis(2-Chloroethoxy)Methane	µg/L	<	5										
	Bis(2-Chloroethyl)Ether	µg/L	<	5										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5										
	4-Bromophenyl Phenyl Ether	µg/L	<	5										
	Butyl Benzyl Phthalate	µg/L	<	5										
	2-Chloronaphthalene	µg/L	<	5										
	4-Chlorophenyl Phenyl Ether	µg/L	<	5										
	Chrysene	µg/L	<	2.5										
	Dibenzo(a,h)Anthrancene	µg/L	<	2.5										
	1,2-Dichlorobenzene	µg/L	<	0.5										
	1,3-Dichlorobenzene	µg/L	<	0.5										
	1,4-Dichlorobenzene	µg/L	<	5										
	3,3-Dichlorobenzidine	µg/L	<	5										
	Diethyl Phthalate	µg/L	<	5										
	Dimethyl Phthalate	µg/L	<	5										
	Di-n-Butyl Phthalate	µg/L	<	5										
	2,4-Dinitrotoluene	µg/L	<	5										

	2,6-Dinitrotoluene	µg/L	<	5									
	Di-n-Octyl Phthalate	µg/L	<	5									
	1,2-Diphenylhydrazine	µg/L	<	5									
	Fluoranthene	µg/L	<	2.5									
	Fluorene	µg/L	<	2.5									
	Hexachlorobenzene	µg/L	<	5									
	Hexachlorobutadiene	µg/L	<	0.5									
	Hexachlorocyclopentadiene	µg/L	<	5									
	Hexachloroethane	µg/L	<	5									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2.5									
	Isophorone	µg/L	<	5									
	Naphthalene	µg/L	<	0.5									
	Nitrobenzene	µg/L	<	5									
	n-Nitrosodimethylamine	µg/L	<	5									
	n-Nitrosodi-n-Propylamine	µg/L	<	5									
	n-Nitrosodiphenylamine	µg/L	<	5									
	Phenanthrene	µg/L	<	2.5									
	Pyrene	µg/L	<	2.5									
	1,2,4-Trichlorobenzene	µg/L	<	0.5									
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	<										
	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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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Midland STP, NPDES Permit No. PA0023701, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: Ohio River WWF

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	032317	2.18	665	23000			Yes
End of Reach 1	032317	0.6	659	23500			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	2.18	0.256	5880									140	7		
End of Reach 1	0.6	0.25	5880									140	7		

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	2.18														
End of Reach 1	0.6														

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Midland STP, NPDES Permit No. PA0023701, Outfall 001

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

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ *AFC* CCT (min): 15 PMF: 0.000 Analysis Hardness (mg/l): 157.42 Analysis pH: 7.24

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 Aluminum	0	0		0	750	750	1,550	
Total Antimony	0	0		0	1,100	1,100	2,273	
Total Arsenic	0	0		0	340	340	703	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	43,403	
Total Boron	0	0		0	8,100	8,100	16,741	
Total Cadmium	0	0		0	3.130	3.38	6.99	Chem Translator of 0.925 applied
Total Chromium (III)	0	0		0	826.195	2,615	5,404	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	33.7	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	196	
Total Copper	0	0		0	20.608	21.5	44.4	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	45.5	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	105.451	145	301	Chem Translator of 0.725 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	3.4	Chem Translator of 0.85 applied
Total Nickel	0	0		0	687.343	689	1,423	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	7.020	8.26	17.1	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	134	
Total Zinc	0	0		0	172.116	176	364	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	6.2	

Acrylonitrile	0	0		0	650	650	1,343	
Benzene	0	0		0	640	640	1,323	
Bromoform	0	0		0	1,800	1,800	3,720	
Carbon Tetrachloride	0	0		0	2,800	2,800	5,787	
Chlorobenzene	0	0		0	1,200	1,200	2,480	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	37,202	
Chloroform	0	0		0	1,900	1,900	3,927	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	31,002	
1,1-Dichloroethylene	0	0		0	7,500	7,500	15,501	
1,2-Dichloropropane	0	0		0	11,000	11,000	22,735	
1,3-Dichloropropylene	0	0		0	310	310	641	
Ethylbenzene	0	0		0	2,900	2,900	5,994	
Methyl Bromide	0	0		0	550	550	1,137	
Methyl Chloride	0	0		0	28,000	28,000	57,870	
Methylene Chloride	0	0		0	12,000	12,000	24,802	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	2,067	
Tetrachloroethylene	0	0		0	700	700	1,447	
Toluene	0	0		0	1,700	1,700	3,514	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	14,054	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	6,200	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	7,027	
Trichloroethylene	0	0		0	2,300	2,300	4,754	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,157	
2,4-Dichlorophenol	0	0		0	1,700	1,700	3,514	
2,4-Dimethylphenol	0	0		0	660	660	1,364	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	165	
2,4-Dinitrophenol	0	0		0	660	660	1,364	
2-Nitrophenol	0	0		0	8,000	8,000	16,534	
4-Nitrophenol	0	0		0	2,300	2,300	4,754	
p-Chloro-m-Cresol	0	0		0	160	160	331	
Pentachlorophenol	0	0		0	11.089	11.1	22.9	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	951	
Acenaphthene	0	0		0	83	83.0	172	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	620	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.03	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	62,004	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	9,301	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	558	
Butyl Benzyl Phthalate	0	0		0	140	140	289	

2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	1,695	
1,3-Dichlorobenzene	0	0		0	350	350	723	
1,4-Dichlorobenzene	0	0		0	730	730	1,509	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	8,267	
Dimethyl Phthalate	0	0		0	2,500	2,500	5,167	
Di-n-Butyl Phthalate	0	0		0	110	110	227	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	3,307	
2,6-Dinitrotoluene	0	0		0	990	990	2,046	
1,2-Diphenylhydrazine	0	0		0	15	15.0	31.0	
Fluoranthene	0	0		0	200	200	413	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	10	10.0	20.7	
Hexachlorocyclopentadiene	0	0		0	5	5.0	10.3	
Hexachloroethane	0	0		0	60	60.0	124	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	20,668	
Naphthalene	0	0		0	140	140	289	
Nitrobenzene	0	0		0	4,000	4,000	8,267	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	35,135	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	620	
Phenanthrene	0	0		0	5	5.0	10.3	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	269	

☑ *CFC* CCT (min): 720 PMF: 0.002 Analysis Hardness (mg/l): 144.29 Analysis pH: 7.05

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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	1,846	
Total Arsenic	0	0		0	150	150	1,259	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	34,403	
Total Boron	0	0		0	1,600	1,600	13,426	
Total Cadmium	0	0		0	0.317	0.36	2.98	Chem Translator of 0.894 applied
Total Chromium (III)	0	0		0	100.073	116	976	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	87.2	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	159	
Total Copper	0	0		0	12.251	12.8	107	Chem Translator of 0.96 applied

Free Cyanide	0	0		0	5.2	5.2	43.6	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	4,562,586	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.742	5.07	42.6	Chem Translator of 0.738 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	7.6	Chem Translator of 0.85 applied
Total Nickel	0	0		0	70.921	71.1	597	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	41.9	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	109	
Total Zinc	0	0		0	161.181	163	1,372	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	25.2	
Acrylonitrile	0	0		0	130	130	1,091	
Benzene	0	0		0	130	130	1,091	
Bromoform	0	0		0	370	370	3,105	
Carbon Tetrachloride	0	0		0	560	560	4,699	
Chlorobenzene	0	0		0	240	240	2,014	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	29,368	
Chloroform	0	0		0	390	390	3,272	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	26,012	
1,1-Dichloroethylene	0	0		0	1,500	1,500	12,586	
1,2-Dichloropropane	0	0		0	2,200	2,200	18,460	
1,3-Dichloropropylene	0	0		0	61	61.0	512	
Ethylbenzene	0	0		0	580	580	4,867	
Methyl Bromide	0	0		0	110	110	923	
Methyl Chloride	0	0		0	5,500	5,500	46,150	
Methylene Chloride	0	0		0	2,400	2,400	20,138	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	1,762	
Tetrachloroethylene	0	0		0	140	140	1,175	
Toluene	0	0		0	330	330	2,769	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	11,747	
1,1,1-Trichloroethane	0	0		0	610	610	5,118	
1,1,2-Trichloroethane	0	0		0	680	680	5,706	
Trichloroethylene	0	0		0	450	450	3,776	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	923	
2,4-Dichlorophenol	0	0		0	340	340	2,853	
2,4-Dimethylphenol	0	0		0	130	130	1,091	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	134	
2,4-Dinitrophenol	0	0		0	130	130	1,091	
2-Nitrophenol	0	0		0	1,600	1,600	13,426	
4-Nitrophenol	0	0		0	470	470	3,944	

p-Chloro-m-Cresol	0	0		0	500	500	4,195	
Pentachlorophenol	0	0		0	8.508	8.51	71.4	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	764	
Acenaphthene	0	0		0	17	17.0	143	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	495	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.84	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	50,346	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	7,636	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	453	
Butyl Benzyl Phthalate	0	0		0	35	35.0	294	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	1,343	
1,3-Dichlorobenzene	0	0		0	69	69.0	579	
1,4-Dichlorobenzene	0	0		0	150	150	1,259	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	6,713	
Dimethyl Phthalate	0	0		0	500	500	4,195	
Di-n-Butyl Phthalate	0	0		0	21	21.0	176	
2,4-Dinitrotoluene	0	0		0	320	320	2,685	
2,6-Dinitrotoluene	0	0		0	200	200	1,678	
1,2-Diphenylhydrazine	0	0		0	3	3.0	25.2	
Fluoranthene	0	0		0	40	40.0	336	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	2	2.0	16.8	
Hexachlorocyclopentadiene	0	0		0	1	1.0	8.39	
Hexachloroethane	0	0		0	12	12.0	101	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	17,621	
Naphthalene	0	0		0	43	43.0	361	
Nitrobenzene	0	0		0	810	810	6,797	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	28,529	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	495	
Phenanthrene	0	0		0	1	1.0	8.39	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	218	

☑ ***THH*** CCT (min): 720 PMF: 0.002 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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	47.0	
Total Arsenic	0	0		0	10	10.0	83.9	
Total Barium	0	0		0	1,000	1,000	8,391	
Total Boron	0	0		0	3,100	3,100	26,012	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	1,300	1,300	10,908	
Free Cyanide	0	0		0	4	4.0	33.6	
Dissolved Iron	0	0		0	300	300	2,517	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	8,391	
Total Mercury	0	0		0	0.012	0.012	0.1	
Total Nickel	0	0		0	610	610	5,118	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	2.01	
Total Zinc	0	0		0	7,400	7,400	62,093	
Acrolein	0	0		0	3	3.0	25.2	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	839	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	277	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	68	68.0	571	

Methyl Bromide	0	0		0	47	47.0	394	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	478	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	839	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	83,910	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	30	30.0	252	
2,4-Dichlorophenol	0	0		0	10	10.0	83.9	
2,4-Dimethylphenol	0	0		0	100	100.0	839	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	16.8	
2,4-Dinitrophenol	0	0		0	10	10.0	83.9	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	33,564	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	587	
Anthracene	0	0		0	300	300	2,517	
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	1,678	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	0.84	
2-Chloronaphthalene	0	0		0	800	800	6,713	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	420	420	3,524	
1,3-Dichlorobenzene	0	0		0	7	7.0	58.7	
1,4-Dichlorobenzene	0	0		0	63	63.0	529	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	5,035	
Dimethyl Phthalate	0	0		0	2,000	2,000	16,782	
Di-n-Butyl Phthalate	0	0		0	20	20.0	168	
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	

2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	20	20.0	168	
Fluorene	0	0		0	50	50.0	420	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	4	4.0	33.6	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	34	34.0	285	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	83.9	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	168	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.59	

☑ *CRL* CCT (min): 720 PMF: 0.003 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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	

Total Silver	0	0		0	50	50.0	1,293	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.051	0.051	1.32	
Benzene	0	0		0	0.58	0.58	15.0	
Bromoform	0	0		0	4.3	4.3	111	
Carbon Tetrachloride	0	0		0	0.4	0.4	10.3	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.4	0.4	10.3	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	147	
Dichlorobromomethane	0	0		0	0.55	0.55	14.2	
1,2-Dichloroethane	0	0		0	0.38	0.38	9.82	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.5	0.5	12.9	
1,3-Dichloropropylene	0	0		0	0.27	0.27	6.98	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	4.6	4.6	119	
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	4.39	
Tetrachloroethylene	0	0		0	0.69	0.69	17.8	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.55	0.55	14.2	
Trichloroethylene	0	0		0	0.6	0.6	15.5	
Vinyl Chloride	0	0		0	0.02	0.02	0.52	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	0.78	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	36.2	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.000086	0.00009	0.002	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.026	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.003	

3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.026	
Benzo(k)Fluoranthene	0	0		0	0.0038	0.004	0.098	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.78	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	8.27	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.0038	0.004	0.098	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.003	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.021	0.021	0.54	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	1.29	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	1.29	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.78	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.002	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.26	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	2.59	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.026	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.00069	0.0007	0.018	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.13	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	85.3	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	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
Total Aluminum	Report	Report	Report	Report	Report	µg/L	994	AFC	Discharge Conc > 10% WQBEL (no RP)

Total Copper	Report	Report	Report	Report	Report	µg/L	28.4	AFC	Discharge Conc > 10% WQBEL (no RP)
Dissolved Iron	Report	Report	Report	Report	Report	µg/L	2,517	THH	Discharge Conc > 10% WQBEL (no RP)
Total Mercury	Report	Report	Report	Report	Report	µg/L	0.012	THH	Discharge Conc > 10% WQBEL (no RP)

☑ ***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 Antimony	47.0	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	8,391	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	10,730	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	2.98	µg/L	Discharge Conc < TQL
Total Chromium (III)	976	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	21.6	µg/L	Discharge Conc < TQL
Total Cobalt	126	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	29.1	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Total Iron	4,562,586	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	42.6	µg/L	Discharge Conc < TQL
Total Manganese	8,391	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	597	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	41.9	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	10.9	µg/L	Discharge Conc < TQL
Total Thallium	2.01	µg/L	Discharge Conc < TQL
Total Zinc	233	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	3.97	µg/L	Discharge Conc < TQL
Acrylonitrile	1.32	µg/L	Discharge Conc < TQL
Benzene	15.0	µg/L	Discharge Conc < TQL
Bromoform	111	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	10.3	µg/L	Discharge Conc < TQL
Chlorobenzene	839	µg/L	Discharge Conc < TQL
Chlorodibromomethane	10.3	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	23,845	µg/L	Discharge Conc < TQL

Chloroform	147	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	14.2	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	9.82	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	277	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	12.9	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	6.98	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	571	µg/L	Discharge Conc < TQL
Methyl Bromide	394	µg/L	Discharge Conc < TQL
Methyl Chloride	37,092	µg/L	Discharge Conc < TQL
Methylene Chloride	119	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	4.39	µg/L	Discharge Conc < TQL
Tetrachloroethylene	17.8	µg/L	Discharge Conc < TQL
Toluene	478	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	839	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	3,974	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	14.2	µg/L	Discharge Conc < TQL
Trichloroethylene	15.5	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.52	µg/L	Discharge Conc < TQL
2-Chlorophenol	252	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	83.9	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	839	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	16.8	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	83.9	µg/L	Discharge Conc < TQL
2-Nitrophenol	10,598	µg/L	Discharge Conc < TQL
4-Nitrophenol	3,047	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	212	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.78	µg/L	Discharge Conc < TQL
Phenol	33,564	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	36.2	µg/L	Discharge Conc < TQL
Acenaphthene	110	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	2,517	µg/L	Discharge Conc < TQL
Benzidine	0.002	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.026	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.003	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.026	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.098	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.78	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	1,678	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	8.27	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	358	µg/L	Discharge Conc < TQL

Butyl Benzyl Phthalate	0.84	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	6,713	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	0.098	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.003	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	1,086	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	58.7	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	529	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	0.54	µg/L	Discharge Conc < TQL
Diethyl Phthalate	5,035	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	3,312	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	146	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	1.29	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	1.29	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.78	µg/L	Discharge Conc < TQL
Fluoranthene	168	µg/L	Discharge Conc < TQL
Fluorene	420	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.00008	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.01	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	6.62	µg/L	Discharge Conc < TQL
Hexachloroethane	2.59	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.026	µg/L	Discharge Conc < TQL
Isophorone	285	µg/L	Discharge Conc < TQL
Naphthalene	185	µg/L	Discharge Conc < TQL
Nitrobenzene	83.9	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.018	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.13	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	85.3	µg/L	Discharge Conc < TQL
Phenanthrene	6.62	µg/L	Discharge Conc < TQL
Pyrene	168	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.59	µg/L	Discharge Conc < TQL

Appendix F – DEP WET Analysis Spreadsheet

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.02
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Midland Borough STP

Permit No.: PA0023701

Test Completion Date: 6/23/2015

Replicate No.	Control	TIWC
1	33	16
2	31	26
3	34	24
4	18	23
5	31	20
6	30	24
7	29	31
8	29	22
9	29	30
10	33	23
11		
12		
13		
14		
15		
Mean	29.700	23.900
Std Dev.	4.498	4.408
# Replicates	10	10

T-Test Result	0.9257
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	**PASS**

Test Completion Date: 10/4/2016

Replicate No.	Control	TIWC
1	31	35
2	35	35
3	35	35
4	31	35
5	35	36
6	30	36
7	33	32
8	30	34
9	37	36
10	34	37
11		
12		
13		
14		
15		
Mean	33.100	35.100
Std Dev.	2.470	1.370
# Replicates	10	10

T-Test Result	14.1018
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	**PASS**

Test Completion Date: 7/3/2017

Replicate No.	Control	TIWC
1	28	31
2	25	27
3	29	31
4	28	30
5	28	28
6	29	28
7	10	30
8	31	28
9	30	28
10	28	32
11		
12		
13		
14		
15		
Mean	26.600	29.300
Std Dev.	6.041	1.703
# Replicates	10	10

T-Test Result	6.1090
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	**PASS**

Test Completion Date: 7/24/2018

Replicate No.	Control	TIWC
1	16	30
2	21	31
3	29	32
4	30	31
5	24	28
6	25	27
7	22	7
8	17	25
9	24	28
10	23	24
11		
12		
13		
14		
15		
Mean	23.100	26.300
Std Dev.	4.483	7.273
# Replicates	10	10

T-Test Result	3.5420
Deg. of Freedom	14
Critical T Value	0.8681
Pass or Fail	**PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.02
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Midland Borough STP

Permit No.: PA0023701

Test Completion Date: 6/23/2015

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

Test Completion Date: 10/4/2016

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

Test Completion Date: 7/3/2017

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	0	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	0.900	1.000
Std Dev.	0.316	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

Test Completion Date: 7/24/2018

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.02
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Midland Borough STP

Permit No.: PA0023701

Replicate No.	Test Completion Date: 6/23/2015 Control	TIWC
1	1	1
2	1	1
3	0.9	0.8
4	1	0.7
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.975	0.875
Std Dev.	0.050	0.150
# Replicates	4	4

T-Test Result	4.4513
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	**PASS**

Replicate No.	Test Completion Date: 10/4/2016 Control	TIWC
1	1	1
2	1	1
3	1	1
4	0.9	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.975	1.000
Std Dev.	0.050	0.000
# Replicates	4	4

T-Test Result	26.1497
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	**PASS**

Replicate No.	Test Completion Date: 7/4/2017 Control	TIWC
1	0.9	1
2	1	1
3	1	0.9
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.975	0.975
Std Dev.	0.050	0.050
# Replicates	4	4

T-Test Result	14.8898
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Replicate No.	Test Completion Date: 7/24/2018 Control	TIWC
1	1	0.9
2	1	0.6
3	1	1
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	1.000	0.875
Std Dev.	0.000	0.189
# Replicates	4	4

T-Test Result	3.2702
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	**PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.02
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Midland Borough STP

Permit No.: PA0023701

Test Completion Date: 6/23/2015

Replicate No.	Control	TIWC
1	0.353	0.394
2	0.33222	0.393
3	0.377	0.411
4	0.38222	0.37
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.361	0.392
Std Dev.	0.023	0.017
# Replicates	4	4

T-Test Result	10.0360
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Test Completion Date: 10/4/2016

Replicate No.	Control	TIWC
1	0.371	0.375
2	0.362	0.385
3	0.368	0.331
4	0.336	0.355
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.359	0.362
Std Dev.	0.016	0.024
# Replicates	4	4

T-Test Result	6.9003
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	**PASS**

Test Completion Date: 7/4/2017

Replicate No.	Control	TIWC
1	0.292	0.312
2	0.291	0.291
3	0.346	0.32
4	0.312	0.347
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.310	0.318
Std Dev.	0.026	0.023
# Replicates	4	4

T-Test Result	5.6277
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Test Completion Date: 7/24/2018

Replicate No.	Control	TIWC
1	0.283	0.347
2	0.27	0.266
3	0.245	0.308
4	0.272	0.367
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.268	0.322
Std Dev.	0.016	0.045
# Replicates	4	4

T-Test Result	5.2488
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	**PASS**

WET Summary and Evaluation

Facility Name	Midland Borough STP
Permit No.	PA0023701
Design Flow (MGD)	1.25
Q_{7-10} Flow (cfs)	5880
PMF_a	0.001
PMF_c	0.0024

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	6/23/15	10/4/16	7/3/17	7/24/18
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	6/23/15	10/4/16	7/3/17	7/24/18
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	6/23/15	10/4/16	7/4/17	7/24/18
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	6/23/15	10/4/16	7/4/17	7/24/18
Pimephales	Growth	PASS	PASS	PASS	PASS

Reasonable Potential? NO

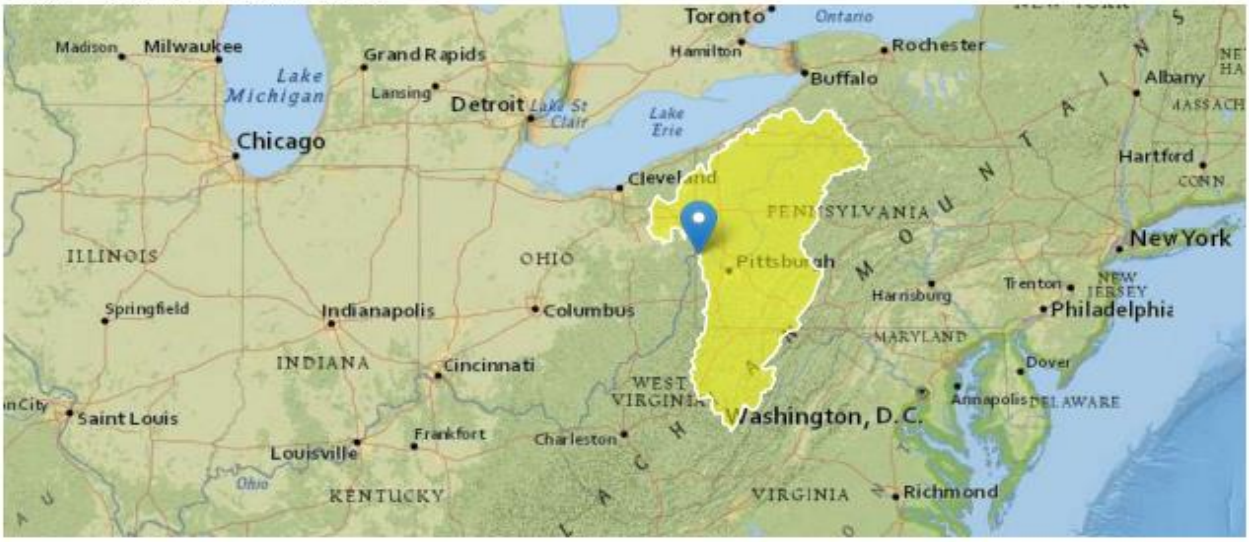
Permit Recommendations

Test Type	**Chronic**
TIWC	**12** % Effluent
Dilution Series	**3, 6, 12, 56, 100** % Effluent
Permit Limit	**None**
Permit Limit Species	

Appendix G – StreamStats Report

StreamStats Report

Region ID: PA
Workspace ID: PA20220211163631809000
Clicked Point (Latitude, Longitude): 40.64364, -80.47930
Time: 2022-02-11 11:37:02 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	23000	square miles
ELEV	Mean Basin Elevation	1589	feet
PRECIP	Mean Annual Precipitation	44	inches

Low-Flow Statistics Parameters [48.7 Percent (11200 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	23000	square miles	2.33	1720
ELEV	Mean Basin Elevation	1589	feet	898	2700
PRECIP	Mean Annual Precipitation	44	inches	38.7	47.9

Low-Flow Statistics Parameters [51.0 Percent (11700 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	23000	square miles	2.26	1400
ELEV	Mean Basin Elevation	1589	feet	1050	2580

Low-Flow Statistics Disclaimers [48.7 Percent (11200 square miles) Low Flow Region 3]

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

Low-Flow Statistics Flow Report [48.7 Percent (11200 square miles) Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	3040	ft^3/s
30 Day 2 Year Low Flow	3810	ft^3/s
7 Day 10 Year Low Flow	2110	ft^3/s
30 Day 10 Year Low Flow	2480	ft^3/s
90 Day 10 Year Low Flow	3310	ft^3/s

Low-Flow Statistics Disclaimers [51.0 Percent (11700 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 [51.0 Percent (11700 square miles) Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	3310	ft^3/s
30 Day 2 Year Low Flow	4060	ft^3/s
7 Day 10 Year Low Flow	2310	ft^3/s
30 Day 10 Year Low Flow	2380	ft^3/s
90 Day 10 Year Low Flow	3180	ft^3/s

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	3170	ft^3/s
30 Day 2 Year Low Flow	3930	ft^3/s
7 Day 10 Year Low Flow	2210	ft^3/s
30 Day 10 Year Low Flow	2420	ft^3/s
90 Day 10 Year Low Flow	3230	ft^3/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/)

Appendix H – DEP Total Residual Chlorine Sheet–

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

5880	= Q stream (cfs)	0.5	= CV Daily
1.25	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharg	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 = 970.010	1.3.2.iii	WLA cfc = 945.676
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 361.449	5.1d	LTA_cfc = 549.772

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)**