Pennsylvania Department of Environmental Protection

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0096172**
Facility Type	**Industrial**	APS ID	**1135134**
Major / Minor	**Minor**	Authorization ID	**1523163**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**Municipal Authority of Westmoreland County**	Facility Name	**McKeesport Water Treatment Plant**
Applicant Address	PO Box 730	Facility Address	1430 Railroad Street
	Greensburg, PA 15601-0730		McKeesport, PA 15132-4136
Applicant Contact	Max Fontaine	Facility Contact	Kevin Halaszynski
Applicant Phone	(724) 755-5950	Facility Phone	(724) 691-1516
Client ID	64197	Site ID	242372
SIC Code	4952	Municipality	McKeesport City
SIC Description	Trans. & Utilities - Sewerage Systems	County	Allegheny
Date Application Received	April 9, 2025	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: Renewal of NPDES Permit Coverage

Summary of Review

The Department received an NPDES permit renewal application from Municipal Authority of Westmoreland County on April 9, 2025 for coverage of the discharge from its McKeesport Water Treatment Plant (WTP) in McKeesport City of Allegheny County. The facility is a municipal water treatment plant with an SIC Code 4941 (Water Supply). The current NPDES permit was renewed on October 26, 2020 and expires on October 31, 2025.

The McKeesport WTP is a potable water treatment plant that provides approximately 6.8 MGD of potable water for distribution. The production of potable water is continuous, and the process consists of raw water intake/screening, intake pumping, chemical addition, mixing, flocculation, clarification, mixed media filtration, clear well storage and high-bend pumping to the distribution system. Filter backwash, filter-to-waste, and miscellaneous wastewater flow by gravity to the wastewater sedimentation wet well, which is then pumped to one of two adjacent sedimentation basins before discharging to the Youghiogheny River via Outfall 001.

The site has six (6) outfalls that discharge to the Youghiogheny River, designated in 25 PA Code Chapter 93 as a Warm Water Fishery (WWF). Outfall 001 discharges treated filter backwash, filter-to-waste and a minor amount of drain, lab sink, and stormwater runoff. Outfall 002 discharges intake pump seal water and emergency dewatering flows. Potable water is used in this process as part of the cooling of the intake pumps. The water runs down into the basement of the raw water pump house and collects in a sump. The sump turns on and discharges the water via Outfall 002. Due to the water being potable water, the waste may contain residual chlorine, but it is either consumed by the pathway it takes or a drip feed de-chlorinator is used to comply with the permit limitations. Outfall 003 discharges overflow from settler plate/flocculator tanks. The overflow from the settler plate/flocculator tanks is only discharged if a process shutdown causes the settler plate or flocculator basin to overflow or if more flow enters these basins than can be handled. The quality of this discharge will be similar to that of the wastewater sedimentation basin discharge. Outfall 004 discharges intake traveling screen wash water. The water used to backwash the

Approve	Deny	Signatures	Date
X		Jamie Ley Jamie Ley / Environmental Engineering Specialist	May 21, 2025
X		Michael E. Fifth Michael E. Fifth, P.E. / Environmental Engineer Manager	June 13, 2025

Summary of Review

intake screen is finished potable water. Outfall 005 discharges stormwater runoff from the paved area north/northwest of the WTP via catch basins. Outfall 006 discharges stormwater runoff from a grassy area west of the water treatment building where the wastewater solids are periodically stored within covered, lined dumpsters. The wastewater solids are removed via contractor.

The unique sedimentation facility was completed in the 1990's after the existing treatment plant was constructed. Sections of the previous treatment plant that were underground were converted to use as a pump station wet well and two alternating settling basins. The earth-covered basins have access manholes and were designed to accumulate from five months to one year's volume of settled sludge before the wastewater flow is switched to the other basin and the accumulated sludge is manually pumped out. A portable dewatering unit is used to dewater the sludge. It has been operated near Outfall 001 and the dewatered solids are placed in covered, lined dumpsters within the drainage area of Outfall 006. Each settling basin has a perforated PVC supernatant draw-off pipe connecting to Outfall 001. Wastewater that is treated includes settled water plant sedimentation basin sludge, backwash from the WTP mixed-media filters, filter-to-waste from the mixed-media filters, lab sink water, minor amounts of clean up, color drain, and stormwater runoff from the unloading dock and south driveway area.

Proposed upgrades for the facility over the next five years includes the construction of a new raw water intake and pump station as well as a new chemical injection vault and chemical storage building for bulk caustic soda and bulk peracetic acid storage and feed. It is anticipated that this construction will begin by the end of 2025 and should be completed by the end of 2027.

Detections above the Department's TQL for PFOA was reported at Outfall 002. Detections above the Department's TQLs for PFOA and PFBS were reported at Outfall 004. Monitoring requirements for PFAS parameters are not required for water treatment plants at this time.

The following inspections occurred during the current permit cycle:

PERMIT	FACILITY NAME	INSP REGION	COUNTY	MUNICIPALITY	INSP ID	INSP CATEGORY	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
PA0096172	MCKEESPORT WTP	SWRO	Allegheny	McKeesport City	3341785	PF	04/01/2022	Compliance Evaluation	PA Dept of Environmental Protection	Violation(s) Noted
PA0096172	MCKEESPORT WTP	SWRO	Allegheny	McKeesport City	3341701	PF	03/31/2022	Administrative/File Review	PA Dept of Environmental Protection	No Violations Noted

The following violations were noted:

	FACILITY	INSP REGION	COUNTY	MUNICIPALITY	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE
2	MCKEESPORT WTP	SWRO	Allegheny	McKeesport City	04/01/2022	92A.44	NPDES - Violation of effluent limits in Part A of permit	07/19/2022

The facility currently has no open violations.

Draft Permit issuance is recommended.

Public Participation

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

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.342
Latitude	40º 20' 24"	Longitude	-79º 51' 43"
Quad Name	McKeesport	Quad Code	1607
Wastewater Description:	IW Process Effluent without ELG (filter backwash, filter-to-waste) & Stormwater		
Receiving Waters	Youghiogheny River	Stream Code	37456
NHD Com ID	69911803	RMI	1.2
Drainage Area	1760	Yield (cfs/mi^2)	0.29
Q_{7-10} Flow (cfs)	510	Q_{7-10} Basis	U.S. Army Corp of Engineers
Elevation (ft)	715	Slope (ft/ft)	0.001
Watershed No.	19-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Not Assessed		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	PA American Water - Pittsburgh		
PWS Waters	Monongahela River	Flow at Intake (cfs)	1,230
PWS RMI	4.60	Distance from Outfall (mi)	12.3

Changes Since Last Permit Issuance:

Other Comments:

Compliance History

Effluent Violations for Outfall 001, from: May 1, 2024 To: March 31, 2025

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Total Aluminum	01/31/25	Avg Mo	4.1	mg/L	4.0	mg/L
Total Manganese	09/30/24	Avg Mo	1.1	mg/L	1.0	mg/L
Total Manganese	09/30/24	Daily Max	3.2	mg/L	2.0	mg/L

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0.001
Latitude	40º 20' 19"	Longitude	-79º 51' 36"
Quad Name	McKeesport	Quad Code	1607
Wastewater Description:	IW Process Effluent without ELG (Intake pump seal water & emergency dewatering flows)		
Receiving Waters	Youghiogheny River	Stream Code	37456
NHD Com ID	69911803	RMI	1.3
Drainage Area	1760	Yield (cfs/mi^2)	0.29
Q_{7-10} Flow (cfs)	510	Q_{7-10} Basis	U.S. Army Corp of Engineers
Elevation (ft)	715	Slope (ft/ft)	0.001
Watershed No.	19-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Not Assessed		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	PA American Water - Pittsburgh		
PWS Waters	Monongahela River	Flow at Intake (cfs)	1,230
PWS RMI	4.60	Distance from Outfall (mi)	12.3

Changes Since Last Permit Issuance:

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	0.25
Latitude	40º 20' 23"	Longitude	-79º 51' 38"
Quad Name	McKeesport	Quad Code	1607
Wastewater Description:	IW Process Effluent without ELG (Overflow from settler plate/flocculator tanks)		
Receiving Waters	Youghiogheny River	Stream Code	37456
NHD Com ID	69911803	RMI	1.35
Drainage Area	1760	Yield (cfs/mi^2)	0.29
Q_{7-10} Flow (cfs)	510	Q_{7-10} Basis	U.S. Army Corp of Engineers
Elevation (ft)	715	Slope (ft/ft)	0.001
Watershed No.	19-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Not Assessed		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	PA American Water - Pittsburgh		
PWS Waters	Monongahela River	Flow at Intake (cfs)	1,230
PWS RMI	4.60	Distance from Outfall (mi)	12.3

Changes Since Last Permit Issuance:

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	0.05
Latitude	40º 20' 19"	Longitude	-79º 51' 36"
Quad Name	McKeesport	Quad Code	1607
Wastewater Description:	IW Process Effluent without ELG (Intake traveling screen wash water)		
Receiving Waters	Youghiogheny River	Stream Code	37456
NHD Com ID	69911803	RMI	1.4
Drainage Area	1760	Yield (cfs/mi^2)	0.29
Q_{7-10} Flow (cfs)	510	Q_{7-10} Basis	U.S. Army Corp of Engineers
Elevation (ft)	715	Slope (ft/ft)	0.001
Watershed No.	19-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Not Assessed		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	PA American Water - Pittsburgh		
PWS Waters	Monongahela River	Flow at Intake (cfs)	1,230
PWS RMI	4.60	Distance from Outfall (mi)	12.3

Changes Since Last Permit Issuance:

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	005	Design Flow (MGD)	0
Latitude	40º 20' 20"	Longitude	-79º 51' 38"
Quad Name	McKeesport	Quad Code	1607
Wastewater Description:	Stormwater		
Receiving Waters	Youghiogheny River	Stream Code	37456
NHD Com ID	69911803	RMI	1.4
Drainage Area	N/A	Yield (cfs/mi^2)	N/A
Q_{7-10} Flow (cfs)	N/A	Q_{7-10} Basis	N/A
Elevation (ft)	N/A	Slope (ft/ft)	N/A
Watershed No.	19-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Not Assessed		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	PA American Water - Pittsburgh		
PWS Waters	Monongahela River	Flow at Intake (cfs)	1,230
PWS RMI	4.60	Distance from Outfall (mi)	12.3

Changes Since Last Permit Issuance:

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	006	Design Flow (MGD)	0
Latitude	40º 20' 23"	Longitude	-79º 51' 42"
Quad Name	McKeesport	Quad Code	1607
Wastewater Description:	Stormwater		
Receiving Waters	Youghiogheny River	Stream Code	37456
NHD Com ID	69911803	RMI	1.3
Drainage Area	N/A	Yield (cfs/mi^2)	N/A
Q_{7-10} Flow (cfs)	N/A	Q_{7-10} Basis	N/A
Elevation (ft)	N/A	Slope (ft/ft)	N/A
Watershed No.	19-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Not Assessed		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	PA American Water - Pittsburgh		
PWS Waters	Monongahela River	Flow at Intake (cfs)	1,230
PWS RMI	4.60	Distance from Outfall (mi)	12.3

Changes Since Last Permit Issuance:

Other Comments:

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.342
Latitude 40º 20' 24.00" **Longitude** -79º 51' 43.00"
Wastewater Description: Filter backwash, filter-to-waste, and stormwater runoff

Technology-Based Limitations

The McKeesport WTP is not subject to Federal Effluent Limitation Guidelines (ELGs) as the SIC code is not listed under 40 CFR parts 405 through 471.

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1) which is displayed in Table 1 below.

Effluent standards for pH are imposed in accordance with 25 Pa. Code §§ 95.2(1) which is displayed in Table 1 below.

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation which is displayed in Table 1 below.

Table 1. Regulatory Effluent Standards

Parameter	Monthly Avg	Daily Max	IMAX
Flow (MGD)	Monitor	Monitor	----
Total Residual Chlorine (mg/L)	0.5	1.0	1.6
pH (S.U.)	6.0 – 9.0 at all times		

Best Practicable Control Technology Currently Achievable (BPT)

BPT for wastewater from treatment of WTP sludges and filter backwash is found in DEPs Technology-Based Control Requirements for Water Treatment Plant Wastes Document which is imposed under Best Professional Judgement under 40 CFR § 125.3. The effluent limitations from this document are displayed below in Table 2.

Table 2: BPT Limits for WTP Sludge and Filter Backwash Wastewater

Parameter	Monthly Avg (mg/l)	Daily Max (mg/l)
Suspended solids	30.0	60.0
Iron (total)	2.0	4.0
Aluminum (total)	4.0	8.0
Manganese (total)	1.0	2.0
Flow (MGD)	Monitor	----
pH (S.U.)	Not less than 6.0 nor greater than 9.0 at all times	
Total Residual Chlorine	0.5	1.0

Total Dissolved Solids (TDS)

Integral to the implementation of 25 Pa. Code § 95.10 is the principle that existing, authorized mass loadings of TDS are exempt from any treatment requirements under these provisions. Existing mass loadings of TDS up to and including the maximum daily discharge loading for any existing discharge, provided that the loading was authorized prior to August 21, 2010 are exempt. Discharge loadings of TDS authorized by the Department are typically exempt from the treatment requirements of Chapter 95.10 until the net TDS loading is increased, an existing discharge proposes a hydraulic expansion or a change in the waste stream. If there are existing mass or production-based TDS effluent limits, then these are used as the basis for the existing mass loading. The facility is not new or expanding waste loading of TDS, therefore, the facility is exempt from 25 Pa. Code § 95.10 treatment requirements.

Water Quality-Based Limitations

Toxics Management Spread Sheet

The Department of Environmental Protection (DEP) has developed the DEP Toxics Management Spreadsheet ("TMS") to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The Toxics Management Spreadsheet is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The Toxics Management Spread Sheet is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the Toxics Management Spread sheet recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 001

Discharges from Outfall 001 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the Toxics Management Spread Sheet. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the Toxics Management Spread Sheet. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion are considered to be pollutants of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion]. The Toxics Management Spread Sheet was run with the discharge and receiving stream characteristics shown in Table 3.

Table 3: TMS Inputs for Outfall 001

Parameter	**Value**
River Mile Index	1.2
Design Flow (MGD)	0.342
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	1,760
Q_{7-10} (cfs)	510
Low-flow yield (cfs/mi^2)	0.29
Elevation (ft)	715
Slope	0.001

For IW discharges, the design flow used in modeling is the average flow during production or operation taken from the permit application or DMRs. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-

based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL. The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the Toxics Management Spread Sheet in Attachment B of this Fact Sheet. No WQBELs were recommended for Outfall 001.

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/l from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit. The results of the modeling, included in Attachment C, indicate that no WQBELs are required for TRC.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 4.

Table 4: Current Effluent Limitation for Outfall 001

Parameters	Mass (lb/day)		Concentration				Monitoring Requirements	
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measure
Total Suspended Solids (mg/L)	XXX	XXX	XXX	30.0	60.0	XXX	2/Month	Grab
Total Residual Chlorine (mg/L)	XXX	XXX	XXX	0.5	1.0	XXX	2/Month	Grab
Total Aluminum (mg/L)	XXX	XXX	XXX	4.0	8.0	XXX	2/Month	Grab
Total Iron (mg/L)	XXX	XXX	XXX	2.0	4.0	XXX	2/Month	Grab
Total Manganese (mg/L)	XXX	XXX	XXX	1.0	2.0	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

Proposed Effluent Limitations for Outfall 001

The proposed effluent limitations and monitoring requirements for Outfall 001 are shown below in Table 5. The limits are the most stringent values from the above limitation analysis. Monitoring frequencies will remain the same as the current permit, twice per month.

Table 5: Proposed Effluent Limitation for Outfall 001

Parameters	Mass (lb/day)		Concentration				Monitoring Requirements	
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measure

Table 5: Proposed Effluent Limitation for Outfall 001

Parameters	Mass (lb/day)		Concentration				Monitoring Requirements	
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Total Suspended Solids (mg/L)	XXX	XXX	XXX	30.0	60.0	XXX	2/Month	Grab
Total Residual Chlorine (mg/L)	XXX	XXX	XXX	0.5	1.0	XXX	2/Month	Grab
Total Aluminum (mg/L)	XXX	XXX	XXX	4.0	8.0	XXX	2/Month	Grab
Total Iron (mg/L)	XXX	XXX	XXX	2.0	4.0	XXX	2/Month	Grab
Total Manganese (mg/L)	XXX	XXX	XXX	1.0	2.0	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 0.001
Latitude 40º 20' 19.00" **Longitude** -79º 51' 36.00"
Wastewater Description: Intake pump seal water & emergency dewatering flows

Technology-Based Limitations

The McKeesport WTP is not subject to Federal Effluent Limitation Guidelines (ELGs) as the SIC code is not listed under 40 CFR parts 405 through 471.

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1) which is displayed in Table 6 below.

Effluent standards for pH are imposed in accordance with 25 Pa. Code §§ 95.2(1) which is displayed in Table 6 below.

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation which is displayed in Table 6 below.

Table 6. Regulatory Effluent Standards

Parameter	Monthly Avg	Daily Max	IMAX
Flow (MGD)	Monitor	Monitor	----
Total Residual Chlorine (mg/L)	0.5	1.0	1.6
pH (S.U.)	6.0 – 9.0 at all times		

Best Practicable Control Technology Currently Achievable (BPT)

BPT for wastewater from treatment of WTP sludges and filter backwash is found in DEPs Technology-Based Control Requirements for Water Treatment Plant Wastes Document which is imposed under Best Professional Judgement under 40 CFR § 125.3. The effluent limitations from this document are displayed below in Table 7.

Table 7: BPT Limits for WTP Sludge and Filter Backwash Wastewater

Parameter	Monthly Avg (mg/l)	Daily Max (mg/l)
Suspended solids	30.0	60.0
Iron (total)	2.0	4.0
Aluminum (total)	4.0	8.0
Manganese (total)	1.0	2.0
Flow (MGD)	Monitor	----
pH (S.U.)	Not less than 6.0 nor greater than 9.0 at all times	
Total Residual Chlorine	0.5	1.0

Total Dissolved Solids (TDS)

Integral to the implementation of 25 Pa. Code § 95.10 is the principle that existing, authorized mass loadings of TDS are exempt from any treatment requirements under these provisions. Existing mass loadings of TDS up to and including the maximum daily discharge loading for any existing discharge, provided that the loading was authorized prior to August 21, 2010 are exempt. Discharge loadings of TDS authorized by the Department are typically exempt from the treatment requirements of Chapter 95.10 until the net TDS loading is increased, an existing discharge proposes a hydraulic expansion or a change in the waste stream. If there are existing mass or production-based TDS effluent limits, then these are used as the basis for the existing mass loading. The facility is not new or expanding waste loading of TDS, therefore, the facility is exempt from 25 Pa. Code § 95.10 treatment requirements.

Water Quality-Based Limitations

Toxics Management Spread Sheet

The Department of Environmental Protection (DEP) has developed the DEP Toxics Management Spreadsheet ("TMS") to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The Toxics Management Spreadsheet is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The Toxics Management Spread Sheet is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the Toxics Management Spread sheet recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 002

Discharges from Outfall 002 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the Toxics Management Spread Sheet. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the Toxics Management Spread Sheet. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion are considered to be pollutants of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion]. The Toxics Management Spread Sheet was run with the discharge and receiving stream characteristics shown in Table 8.

Table 8: TMS Inputs for Outfall 002

Parameter	**Value**
River Mile Index	1.3
Design Flow (MGD)	0.001
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	1,760
Q_{7-10} (cfs)	510
Low-flow yield (cfs/mi^2)	0.29
Elevation (ft)	715
Slope	0.001

For IW discharges, the design flow used in modeling is the average flow during production or operation taken from the permit application or DMRs. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported

discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL. The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the Toxics Management Spread Sheet in Attachment D of this Fact Sheet. No WQBELs were recommended for Outfall 002.

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/l from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit. The results of the modeling, included in Attachment E, indicate that no WQBELs are required for TRC.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 9.

Table 9: Current Effluent Limitation for Outfall 002

Parameters	Mass (lb/day)		Concentration				Monitoring Requirements	
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measure
Total Suspended Solids (mg/L)	XXX	XXX	XXX	30.0	60.0	XXX	2/Month	Grab
Total Residual Chlorine (mg/L)	XXX	XXX	XXX	0.5	1.0	XXX	2/Month	Grab
Total Aluminum (mg/L)	XXX	XXX	XXX	4.0	8.0	XXX	2/Month	Grab
Total Iron (mg/L)	XXX	XXX	XXX	2.0	4.0	XXX	2/Month	Grab
Total Manganese (mg/L)	XXX	XXX	XXX	1.0	2.0	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

Proposed Effluent Limitations for Outfall 002

The proposed effluent limitations and monitoring requirements for Outfall 002 are shown below in Table 10. The limits are the most stringent values from the above limitation analysis. Monitoring frequencies will remain the same as the current permit, twice per month.

Table 10: Proposed Effluent Limitation for Outfall 002

Parameters	Mass (lb/day)		Concentration				Monitoring Requirements	
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measure

Table 10: Proposed Effluent Limitation for Outfall 002

Parameters	Mass (lb/day)		Concentration				Monitoring Requirements	
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Total Suspended Solids (mg/L)	XXX	XXX	XXX	30.0	60.0	XXX	2/Month	Grab
Total Residual Chlorine (mg/L)	XXX	XXX	XXX	0.5	1.0	XXX	2/Month	Grab
Total Aluminum (mg/L)	XXX	XXX	XXX	4.0	8.0	XXX	2/Month	Grab
Total Iron (mg/L)	XXX	XXX	XXX	2.0	4.0	XXX	2/Month	Grab
Total Manganese (mg/L)	XXX	XXX	XXX	1.0	2.0	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

Development of Effluent Limitations

Outfall No. 003 **Design Flow (MGD)** 0.25
Latitude 40º 20' 23.00" **Longitude** -79º 51' 38.00"
Wastewater Description: IW Process Effluent without ELG (Overflow from settler plate/flocculator tanks)

Technology-Based Limitations

The McKeesport WTP is not subject to Federal Effluent Limitation Guidelines (ELGs) as the SIC code is not listed under 40 CFR parts 405 through 471.

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1) which is displayed in Table 11 below.

Effluent standards for pH are imposed in accordance with 25 Pa. Code §§ 95.2(1) which is displayed in Table 11 below.

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation which is displayed in Table 11 below.

Table 11. Regulatory Effluent Standards

Parameter	Monthly Avg	Daily Max	IMAX
Flow (MGD)	Monitor	Monitor	----
Total Residual Chlorine (mg/L)	0.5	1.0	1.6
pH (S.U.)	6.0 – 9.0 at all times		

Best Practicable Control Technology Currently Achievable (BPT)

BPT for wastewater from treatment of WTP sludges and filter backwash is found in DEPs Technology-Based Control Requirements for Water Treatment Plant Wastes Document which is imposed under Best Professional Judgement under 40 CFR § 125.3. The effluent limitations from this document are displayed below in Table 12.

Table 12: BPT Limits for WTP Sludge and Filter Backwash Wastewater

Parameter	Monthly Avg (mg/l)	Daily Max (mg/l)
Suspended solids	30.0	60.0
Iron (total)	2.0	4.0
Aluminum (total)	4.0	8.0
Manganese (total)	1.0	2.0
Flow (MGD)	Monitor	----
pH (S.U.)	Not less than 6.0 nor greater than 9.0 at all times	
Total Residual Chlorine	0.5	1.0

Total Dissolved Solids (TDS)

Integral to the implementation of 25 Pa. Code § 95.10 is the principle that existing, authorized mass loadings of TDS are exempt from any treatment requirements under these provisions. Existing mass loadings of TDS up to and including the maximum daily discharge loading for any existing discharge, provided that the loading was authorized prior to August 21, 2010 are exempt. Discharge loadings of TDS authorized by the Department are typically exempt from the treatment requirements of Chapter 95.10 until the net TDS loading is increased, an existing discharge proposes a hydraulic expansion or a change in the waste stream. If there are existing mass or production-based TDS effluent limits, then these are used as the basis for the existing mass loading. The facility is not new or expanding waste loading of TDS, therefore, the facility is exempt from 25 Pa. Code § 95.10 treatment requirements.

Water Quality-Based Limitations

Toxics Management Spread Sheet

The Department of Environmental Protection (DEP) has developed the DEP Toxics Management Spreadsheet ("TMS") to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The Toxics Management Spreadsheet is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The Toxics Management Spread Sheet is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the Toxics Management Spread sheet recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 003

Discharges from Outfall 003 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the Toxics Management Spread Sheet. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the Toxics Management Spread Sheet. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion are considered to be pollutants of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion]. The Toxics Management Spread Sheet was run with the discharge and receiving stream characteristics shown in Table 13.

Table 13: TMS Inputs for Outfall 003

Parameter	**Value**
River Mile Index	1.35
Design Flow (MGD)	0.25
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	1,760
Q_{7-10} (cfs)	510
Low-flow yield (cfs/mi^2)	0.29
Elevation (ft)	715
Slope	0.001

For IW discharges, the design flow used in modeling is the average flow during production or operation taken from the permit application or DMRs. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-

based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL. The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the Toxics Management Spread Sheet in Attachment F of this Fact Sheet. No WQBELs were recommended for Outfall 003.

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/l from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit. The results of the modeling, included in Attachment G, indicate that no WQBELs are required for TRC.

Anti-Backsliding

During the previous renewal review, it was determined that, based on the description of the wastewater that is discharged via Outfall 003, the effluent quality will be similar to Outfall 001; therefore, Outfall 003 received the same limitations as Outfall 001. Outfall 003 also received a once per discharge sample frequency because it is an emergency discharge and does not occur frequently.

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 14.

Table 14: Current Effluent Limitation for Outfall 003

Parameters	Mass (lb/day)		Concentration				Monitoring Requirements	
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measure
Total Suspended Solids (mg/L)	XXX	XXX	XXX	30.0	60.0	XXX	2/Month	Grab
Total Residual Chlorine (mg/L)	XXX	XXX	XXX	0.5	1.0	XXX	2/Month	Grab
Total Aluminum (mg/L)	XXX	XXX	XXX	4.0	8.0	XXX	2/Month	Grab
Total Iron (mg/L)	XXX	XXX	XXX	2.0	4.0	XXX	2/Month	Grab
Total Manganese (mg/L)	XXX	XXX	XXX	1.0	2.0	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

Proposed Effluent Limitations for Outfall 003

The proposed effluent limitations and monitoring requirements for Outfall 003 are shown below in Table 15. The limits are the most stringent values from the above limitation analysis. Monitoring frequencies will remain the same as the current permit, once per discharge.

Table 15: Proposed Effluent Limitation for Outfall 003

Parameters	Mass (lb/day)		Concentration				Monitoring Requirements	
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/discharge	Measure
Total Suspended Solids (mg/L)	XXX	XXX	XXX	30.0	60.0	XXX	1/discharge	Grab
Total Residual Chlorine (mg/L)	XXX	XXX	XXX	0.5	1.0	XXX	1/discharge	Grab
Total Aluminum (mg/L)	XXX	XXX	XXX	4.0	8.0	XXX	1/discharge	Grab
Total Iron (mg/L)	XXX	XXX	XXX	2.0	4.0	XXX	1/discharge	Grab
Total Manganese (mg/L)	XXX	XXX	XXX	1.0	2.0	XXX	1/discharge	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/discharge	Grab

Development of Effluent Limitations

Outfall No.	004	**Design Flow (MGD)**	0.05
Latitude	40º 20' 19.00"	**Longitude**	-79º 51' 36.00"

Wastewater Description: Intake traveling screen wash water

Technology-Based Limitations

The McKeesport WTP is not subject to Federal Effluent Limitation Guidelines (ELGs) as the SIC code is not listed under 40 CFR parts 405 through 471.

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1) which is displayed in Table 16 below.

Effluent standards for pH are imposed in accordance with 25 Pa. Code §§ 95.2(1) which is displayed in Table 16 below.

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation which is displayed in Table 16 below.

Table 16. Regulatory Effluent Standards

Parameter	Monthly Avg	Daily Max	IMAX
Flow (MGD)	Monitor	Monitor	----
Total Residual Chlorine (mg/L)	0.5	1.0	1.6
pH (S.U.)	6.0 – 9.0 at all times		

Water Quality-Based Limitations

Toxics Management Spread Sheet

The Department of Environmental Protection (DEP) has developed the DEP Toxics Management Spreadsheet (“TMS”) to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The Toxics Management Spreadsheet is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The Toxics Management Spread Sheet is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the Toxics Management Spread sheet recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 004

Discharges from Outfall 004 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the Toxics Management Spread Sheet. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the Toxics Management Spread Sheet. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion are considered to be pollutants of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant

is greater than the most stringent water quality criterion]. The Toxics Management Spread Sheet was run with the discharge and receiving stream characteristics shown in Table 17.

Table 17: TMS Inputs for Outfall 004

Parameter	**Value**
River Mile Index	1.4
Design Flow (MGD)	0.05
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	1,760
Q_{7-10} (cfs)	510
Low-flow yield (cfs/mi^2)	0.29
Elevation (ft)	715
Slope	0.001

For IW discharges, the design flow used in modeling is the average flow during production or operation taken from the permit application or DMRs. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL. The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the Toxics Management Spread Sheet in Attachment H of this Fact Sheet. No WQBELs were recommended for Outfall 004.

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/l from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit. The results of the modeling, included in Attachment I, indicate that no WQBELs are required for TRC.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 18.

Table 18: Current Effluent Limitation for Outfall 004

Parameters	Mass (lb/day)		Concentration				Monitoring Requirements	
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measure
Total Suspended Solids (mg/L)	XXX	XXX	XXX	30.0	60.0	XXX	2/Month	Grab
Total Residual Chlorine (mg/L)	XXX	XXX	XXX	0.5	1.0	XXX	2/Month	Grab
Total Iron (mg/L)	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

Proposed Effluent Limitations for Outfall 004

The proposed effluent limitations and monitoring requirements for Outfall 004 are shown below in Table 19. The limits are the most stringent values from the above limitation analysis. Monitoring frequencies will remain the same as the current permit, twice per month.

Table 19: Proposed Effluent Limitation for Outfall 004

Parameters	Mass (lb/day)		Concentration				Monitoring Requirements	
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measure
Total Suspended Solids (mg/L)	XXX	XXX	XXX	30.0	60.0	XXX	2/Month	Grab
Total Residual Chlorine (mg/L)	XXX	XXX	XXX	0.5	1.0	XXX	2/Month	Grab
Total Iron (mg/L)	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

Development of Effluent Limitations

Outfall No.	005	**Design Flow (MGD)**	0
Latitude	40º 20' 20.00"	**Longitude**	-79º 51' 38.00"

Wastewater Description: Stormwater

During the previous renewal review, it was determined based on the site location and location of the site's catch basins that stormwater from the 15th street bridge could comingle with the stormwater from the site prior to the discharge to the Youghiogheny River via Outfall 005. Therefore, no sampling requirements were imposed. In addition, semi-annual inspections of Outfall 005 were imposed to verify that all BMPs are maintained and catch basins are clean of debris. The permit conditions imposed for Outfall 005 for the previous renewal will be retained in the current renewal.

Development of Effluent Limitations

Outfall No.	006	**Design Flow (MGD)**	0
Latitude	40º 20' 23.00"	**Longitude**	-79º 51' 42.00"

Wastewater Description: Stormwater

During the previous renewal review, the Department imposed semi-annual inspection of Outfall 006 to verify that all BMPs are maintained. In addition, a Part C condition was included requiring the wastewater solids generated from the water treatment process must be stored in covered, lined dumpsters to prevent contamination of stormwater.

During the current renewal review, the following was relayed to the Department:

Wastewater solids removal/pressing is done via a bid process and occurs over a span of a few weeks (once per year during the summer). As a result of the last NPDES permit renewal, it was agreed that the sludge removal bid contains a roll off dumpster to hold the pressed solids, so it no longer sits in the lawn and is contained. During the time of sludge removal, the contractor that is awarded the bid arrives on site and performs sludge removal and pressing per the bid specs. The water is returned to the underground basin (which leads to Outfall 001), and the pressed sludge is directly put into roll-off dumpsters and no longer sits on the ground or is exposed to any sort of precipitation.

Therefore, the permit conditions imposed for Outfall 006 for the previous renewal will be retained in the current renewal.

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachments **B, D, F, & H**)
☒	TRC Model Spreadsheet (see Attachments **C, E, G, & I**)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☒	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: BCW-PMT-001, BCW-PMT-032, BCW-PMT-033, BCW-PMT-037
☐	Other:

Attachments:

Attachment A: StreamStats Report

Attachment B: TMS Inputs & Results – Outfall 001

Attachment C: TRC Evaluation – Outfall 001

Attachment D: TMS Inputs & Results – Outfall 002

Attachment E: TRC Evaluation – Outfall 002

Attachment F: TMS Inputs & Results – Outfall 003

Attachment G: TRC Evaluation – Outfall 003

Attachment H: TMS Inputs & Results – Outfall 004

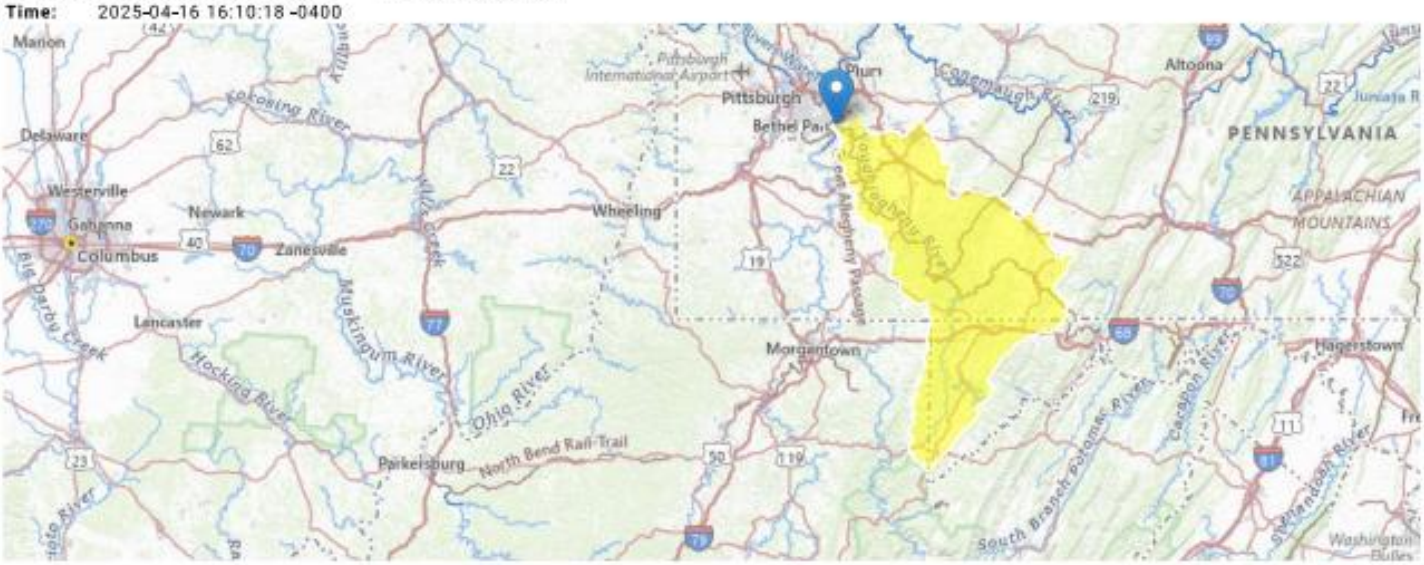
Attachment I: TRC Evaluation – Outfall 004

Attachment J: Line Drawing

Attachment K: Site Plan

Attachment A: StreamStats Report

Region ID: PA
Workspace ID: PA20250416200940448000
Clicked Point (Latitude, Longitude): 40.33944, -79.86264
Time: 2025-04-16 16:10:18 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1760	square miles
ELEV	Mean Basin Elevation	1994	feet

Attachment B: TMS Inputs & Results – Outfall 001

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Toxics Management Spreadsheet
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Discharge Information

Instructions | Discharge | Stream

Facility: **McKeesport WTP** NPDES Permit No.: **PA0096172** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Filter backwash, filter-to-waste, sw runoff**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.342	150	7						

					0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		285									
	Chloride (PWS)	mg/L		109									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		90.8									
	Fluoride (PWS)	mg/L		0.17									
Group 2	Total Aluminum	mg/L		5.4									
	Total Antimony	µg/L	<	0.5									
	Total Arsenic	µg/L	<	0.5									
	Total Barium	µg/L		48.2									
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L		49									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L	<	1									
	Hexavalent Chromium	mg/L		0.002									
	Total Cobalt	µg/L		0.2									
	Total Copper	µg/L		2.6									
	Free Cyanide	µg/L											
	Total Cyanide	mg/L		0.006									
	Dissolved Iron	µg/L	<	20									
	Total Iron	mg/L		0.9									
	Total Lead	µg/L		0.7									
	Total Manganese	mg/L		4.6									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		2.3									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	0.5									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L	<	0.1									
	Total Zinc	µg/L		6.7									
	Total Molybdenum	µg/L		1.8									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										
	Carbon Tetrachloride	µg/L	<										

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Toxics Management Spreadsheet
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Stream / Surface Water Information

McKeesport WTP, NPDES Permit No. PA0096172, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Youghiogheny River**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	037456	1.2	715	1760	0.001		Yes
End of Reach 1	037456	0	714	1760.5	0.001		Yes

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

Location	RMI	LFY (cfs/mi^2)*	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	1.2	0.29	510			379	15					100	7		
End of Reach 1	0	0.29	510.5			468	15								

Q_h

Location	RMI	LFY (cfs/mi^2)	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	1.2														
End of Reach 1	0														

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Toxics Management Spreadsheet
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Model Results

McKeesport WTP, NPDES Permit No. PA0096172, Outfall 001

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

☑ ***Hydrodynamics***

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

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
1.2	510		510	0.529	0.001	15.	379.	25.267	0.09	0.817	106.947
0	510.500		510.5								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
1.2	1727.45		1727.45	0.529	0.001	25.65	379.	14.776	0.178	0.413	47.898
0	1728.929		1728.93								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.375 Analysis Hardness (mg/l): 100.14 Analysis pH: 7.00

Pollutants	Stream Conc	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	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	271,505	
Total Antimony	0	0		0	1,100	1,100	398,207	
Total Arsenic	0	0		0	340	340	123,082	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	7,602,138	
Total Boron	0	0		0	8,100	8,100	2,932,253	
Total Cadmium	0	0		0	2.016	2.14	773	Chem Translator of 0.944 applied
Total Chromium (III)	0	0		0	570.408	1,805	653,454	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	5,898	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	34,391	
Total Copper	0	0		0	13.457	14.0	5,074	Chem Translator of 0.96 applied
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	64.679	81.8	29,608	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	596	Chem Translator of 0.85 applied
Total Nickel	0	0		0	468.783	470	170,043	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	3.224	3.79	1,373	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	23,530	
Total Zinc	0	0		0	117.318	120	43,425	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 100.05 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (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	212,289	
Total Arsenic	0	0		0	150	150	144,742	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	3,956,288	
Total Boron	0	0		0	1,600	1,600	1,543,917	
Total Cadmium	0	0		0	0.246	0.27	261	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.146	86.2	83,194	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	10,031	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	18,334	
Total Copper	0	0		0	8.960	9.33	9,006	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,447,422	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.518	3.18	3,072	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	874	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.029	52.2	50,357	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	4,814	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	12,544	
Total Zinc	0	0		0	118.191	120	115,667	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	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	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	5,404	
Total Arsenic	0	0		0	10	10.0	9,649	
Total Barium	0	0		0	2,400	2,400	2,315,876	
Total Boron	0	0		0	3,100	3,100	2,991,340	
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	
Dissolved Iron	0	0		0	300	300	289,484	
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	964,948	
Total Mercury	0	0		0	0.050	0.05	48.2	
Total Nickel	0	0		0	610	610	588,618	
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	232	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 47.898 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

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

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

No. Samples/Month: 4

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

☑ ***Other Pollutants without Limits or Monitoring***

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	174	mg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	2,315,876	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	1,543,917	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	261	µg/L	Discharge Conc < TQL
Total Chromium (III)	83,194	µg/L	Discharge Conc < TQL
Hexavalent Chromium	3.78	mg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	18,334	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	3,252	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	289,484	µg/L	Discharge Conc < TQL
Total Iron	1,447	mg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	3,072	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	965	mg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	48.2	µg/L	Discharge Conc < TQL

Total Nickel	50,357	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	4,814	µg/L	Discharge Conc < TQL
Total Silver	880	µg/L	Discharge Conc < TQL
Total Thallium	232	µg/L	Discharge Conc < TQL
Total Zinc	27,834	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

Attachment C: TRC Evaluation – Outfall 001

TRC_CALC_OUTFALL 001

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

510	= Q stream (cfs)	0.5	= CV Daily
0.342	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.375	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 115.331	1.3.2.iii	WLA cfc = 299.799
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 42.975	5.1d	LTA_cfc = 174.289

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.170	

WLA afc	(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))... ...+ Xd + (AFC_Yc*Qs*Xa/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*Xa/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)

Attachment D: TMS Inputs & Results – Outfall 002

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Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **McKeesport WTP** NPDES Permit No.: **PA0096172** Outfall No.: **002**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Intake pump water & emergency dewaterin**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.001	203	7						

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc	0 if left blank: Stream Conc	0.5 if left blank: Daily CV	0.5 if left blank: Hourly CV	0 if left blank: Strea m CV	0 if left blank: Fate Coeff	0 if left blank: FOS	1 if left blank: Criteri a Mod	1 if left blank: Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		359									
	Chloride (PWS)	mg/L		67									
	Bromide	mg/L		0.18									
	Sulfate (PWS)	mg/L		93.1									
	Fluoride (PWS)	mg/L		0.13									
Group 2	Total Aluminum	mg/L		0.3									
	Total Antimony	µg/L	<	0.5									
	Total Arsenic	µg/L	<	0.5									
	Total Barium	µg/L		51.5									
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L		65									
	Total Cadmium	µg/L		0.1									
	Total Chromium (III)	µg/L	<	1									
	Hexavalent Chromium	mg/L		0.001									
	Total Cobalt	µg/L	<	0.2									
	Total Copper	µg/L		2.7									
	Free Cyanide	µg/L											
	Total Cyanide	mg/L	<	0.002									
	Dissolved Iron	µg/L	<	20									
	Total Iron	mg/L		0.3									
	Total Lead	µg/L		0.8									
	Total Manganese	mg/L		0.5									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		1.3									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	0.5									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L	<	0.1									
	Total Zinc	µg/L		62.7									
	Total Molybdenum	µg/L		2									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										
	Carbon Tetrachloride	µg/L	<										

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

McKeesport WTP, NPDES Permit No. PA0096172, Outfall 002

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Youghiogheny River**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	037456	1.3	715	1760	0.001		Yes
End of Reach 1	037456	0	714	1760.5	0.001		Yes

Q_{7-10}

Location	RMI	LFY (cfs/mi^2)*	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	1.3	0.29	510			379	15					100	7		
End of Reach 1	0	0.29	510.5			468	15								

Q_h

Location	RMI	LFY (cfs/mi^2)	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	1.3														
End of Reach 1	0														

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Model Results

McKeesport WTP, NPDES Permit No. PA0096172, Outfall 002

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

☑ ***Hydrodynamics***

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

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
1.3	510		510	0.002	0.001	15.	379.	25.267	0.09	0.886	107.168
0	510.500		510.5								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
1.3	1727.45		1727.45	0.002	0.001	25.658	379.	14.771	0.178	0.447	47.905
0	1728.929		1728.93								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.374 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc	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	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	92,503,258	
Total Antimony	0	0		0	1,100	1,100	#########	
Total Arsenic	0	0		0	340	340	41,934,810	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	#########	
Total Boron	0	0		0	8,100	8,100	#########	
Total Cadmium	0	0		0	2.014	2.13	263,104	Chem Translator of 0.944 applied
Total Chromium (III)	0	0		0	569.767	1,803	#########	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	2,009,575	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	11,717,079	
Total Copper	0	0		0	13.439	14.0	1,726,627	Chem Translator of 0.96 applied
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	64.582	81.6	10,070,022	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	203,144	Chem Translator of 0.85 applied
Total Nickel	0	0		0	468.239	469	57,867,256	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	3.217	3.78	466,768	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	8,016,949	
Total Zinc	0	0		0	117.181	120	14,777,983	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc	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	
Fluoride (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	72,527,693	
Total Arsenic	0	0		0	150	150	49,450,699	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	#########	
Total Boron	0	0		0	1,600	1,600	#########	
Total Cadmium	0	0		0	0.246	0.27	89,217	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.115	86.2	28,411,041	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	3,426,937	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	6,263,755	
Total Copper	0	0		0	8.956	9.33	3,075,482	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	#########	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.517	3.18	1,048,884	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	298,643	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.007	52.2	17,196,700	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	1,644,781	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	4,285,727	
Total Zinc	0	0		0	118.139	120	39,500,142	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc	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	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	1,846,159	
Total Arsenic	0	0		0	10	10.0	3,296,713	
Total Barium	0	0		0	2,400	2,400	#########	
Total Boron	0	0		0	3,100	3,100	#########	
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	
Dissolved Iron	0	0		0	300	300	98,901,399	
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	#########	
Total Mercury	0	0		0	0.050	0.05	16,484	
Total Nickel	0	0		0	610	610	#########	
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	79,121	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 47.905 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

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

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

No. Samples/Month: 4

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

☑ ***Other Pollutants without Limits or Monitoring***

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	59,291	mg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	#########	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	#########	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	89,217	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	28,411,041	µg/L	Discharge Conc < TQL
Hexavalent Chromium	1,288	mg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	6,263,755	µg/L	Discharge Conc < TQL
Total Copper	1,106,698	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	98,901,399	µg/L	Discharge Conc < TQL
Total Iron	494,507	mg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	1,048,884	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	329,671	mg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	16,484	µg/L	Discharge Conc < TQL

Total Nickel	17,196,700	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	1,644,781	µg/L	Discharge Conc < TQL
Total Silver	299,180	µg/L	Discharge Conc < TQL
Total Thallium	79,121	µg/L	Discharge Conc < TQL
Total Zinc	9,472,090	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

Attachment E: TRC Evaluation – Outfall 002

TRC_CALC_OUTFALL 002

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

510	= Q stream (cfs)	0.5	= CV Daily
0.001	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.374	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 39331.667	1.3.2.iii	WLA cfc = #########
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 14655.918	5.1d	LTA_cfc = #########

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.170	

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)

Attachment F: TMS Inputs & Results – Outfall 003

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Discharge Information

Instructions | Discharge | Stream

Facility: **McKeesport WTP** NPDES Permit No.: **PA0096172** Outfall No.: **003**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Overflow from settler plate/flocculator tank**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.25	151	7						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Strea m CV	Fate Coeff	FOS	Criteri a Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		298									
	Chloride (PWS)	mg/L		120									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		130									
	Fluoride (PWS)	mg/L		0.12									
Group 2	Total Aluminum	mg/L		2.1									
	Total Antimony	µg/L	<	0.5									
	Total Arsenic	µg/L	<	0.5									
	Total Barium	µg/L		49.5									
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L		35									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L	<	1									
	Hexavalent Chromium	mg/L		0.0029									
	Total Cobalt	µg/L	<	0.2									
	Total Copper	µg/L		0.8									
	Free Cyanide	µg/L											
	Total Cyanide	mg/L	<	0.002									
	Dissolved Iron	µg/L	<	20									
	Total Iron	mg/L		0.2									
	Total Lead	µg/L	<	0.2									
	Total Manganese	mg/L		0.1									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		2									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	0.5									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L	<	0.1									
	Total Zinc	µg/L		3.1									
	Total Molybdenum	µg/L		1.9									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										
	Carbon Tetrachloride	µg/L	<										

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Stream / Surface Water Information

McKeesport WTP, NPDES Permit No. PA0096172, Outfall 003

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Youghiogheny River**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	037456	1.35	715	1760	0.001		Yes
End of Reach 1	037456	0	714	1760.5	0.001		Yes

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

Location	RMI	LFY (cfs/mi^2)*	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	1.35	0.29	510			379	15					100	7		
End of Reach 1	0	0.29	510.5			468	15								

Q_h

Location	RMI	LFY (cfs/mi^2)	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	1.35														
End of Reach 1	0														

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Model Results

McKeesport WTP, NPDES Permit No. PA0096172, Outfall 003

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

☑ ***Hydrodynamics***

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

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
1.35	510		510	0.387	0.001	15.	379.	25.267	0.09	0.919	107.007
0	510.500		510.5								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
1.35	1727.45		1727.45	0.387	0.001	25.652	379.	14.775	0.178	0.464	47.9
0	1728.929		1728.93								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.374 Analysis Hardness (mg/l): 100.1 Analysis pH: 7.00

Pollutants	Stream Conc	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	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	371,040	
Total Antimony	0	0		0	1,100	1,100	544,191	
Total Arsenic	0	0		0	340	340	168,205	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	10,389,106	
Total Boron	0	0		0	8,100	8,100	4,007,227	
Total Cadmium	0	0		0	2.016	2.14	1,056	Chem Translator of 0.944 applied
Total Chromium (III)	0	0		0	570.244	1,805	892,756	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	8,061	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	46,998	
Total Copper	0	0		0	13.452	14.0	6,932	Chem Translator of 0.96 applied
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	64.654	81.8	40,444	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	815	Chem Translator of 0.85 applied
Total Nickel	0	0		0	468.644	470	232,312	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	3.222	3.79	1,876	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	32,157	
Total Zinc	0	0		0	117.283	120	59,327	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 100.04 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (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	290,330	
Total Arsenic	0	0		0	150	150	197,952	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	5,410,693	
Total Boron	0	0		0	1,600	1,600	2,111,490	
Total Cadmium	0	0		0	0.246	0.27	357	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.138	86.2	113,766	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	13,718	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	25,074	
Total Copper	0	0		0	8.959	9.33	12,315	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,979,522	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.518	3.18	4,201	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	1,195	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.024	52.2	68,861	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	6,584	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	17,156	
Total Zinc	0	0		0	118.178	120	158,171	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	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	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	7,390	
Total Arsenic	0	0		0	10	10.0	13,197	
Total Barium	0	0		0	2,400	2,400	3,167,235	
Total Boron	0	0		0	3,100	3,100	4,091,012	
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	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	395,904	
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	1,319,681	
Total Mercury	0	0		0	0.050	0.05	66.0	
Total Nickel	0	0		0	610	610	805,006	
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	317	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 47.900 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

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

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

No. Samples/Month: 4

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

☑ ***Other Pollutants without Limits or Monitoring***

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	238	mg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	3,167,235	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	2,111,490	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	357	µg/L	Discharge Conc < TQL
Total Chromium (III)	113,766	µg/L	Discharge Conc < TQL
Hexavalent Chromium	5.17	mg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	25,074	µg/L	Discharge Conc < TQL
Total Copper	4,443	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	395,904	µg/L	Discharge Conc < TQL
Total Iron	1,980	mg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	4,201	µg/L	Discharge Conc < TQL
Total Manganese	1,320	mg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	66.0	µg/L	Discharge Conc < TQL

Total Nickel	68,861	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	6,584	µg/L	Discharge Conc < TQL
Total Silver	1,202	µg/L	Discharge Conc < TQL
Total Thallium	317	µg/L	Discharge Conc < TQL
Total Zinc	38,026	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

Attachment G: TRC Evaluation – Outfall 003

TRC_CALC_OUTFALL 003

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

510	= Q stream (cfs)	0.5	= CV Daily
0.25	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.374	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 157.346	1.3.2.iii	WLA cfc = 410.121
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 58.631	5.1d	LTA_cfc = 238.425

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.170	

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)

Attachment H: TMS Inputs & Results – Outfall 004

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Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **McKeesport WTP** NPDES Permit No.: **PA0096172** Outfall No.: **004**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Intake traveling screen wash water**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.05	145	7						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Strea m CV	Fate Coeff	FOS	Criteri a Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		336									
	Chloride (PWS)	mg/L		82.3									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		144									
	Fluoride (PWS)	mg/L		0.12									
Group 2	Total Aluminum	µg/L		62.1									
	Total Antimony	µg/L	<	0.5									
	Total Arsenic	µg/L	<	0.5									
	Total Barium	µg/L		48.1									
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L		32									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L	<	1									
	Hexavalent Chromium	mg/L		0.0006									
	Total Cobalt	µg/L	<	0.2									
	Total Copper	µg/L		4.7									
	Free Cyanide	µg/L											
	Total Cyanide	mg/L		0.022									
	Dissolved Iron	µg/L	<	20									
	Total Iron	mg/L		0.6									
	Total Lead	µg/L		0.8									
	Total Manganese	µg/L		77.6									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		2.7									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	0.5									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L	<	0.1									
	Total Zinc	µg/L		125									
	Total Molybdenum	µg/L		1.7									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										
	Carbon Tetrachloride	µg/L	<										

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

McKeesport WTP, NPDES Permit No. PA0096172, Outfall 004

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Youghiogheny River**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	037456	1.4	715	1760	0.001		Yes
End of Reach 1	037456	0	714	1760.5	0.001		Yes

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

Location	RMI	LFY (cfs/mi^2)*	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	1.4	0.29	510			379	15					100	7		
End of Reach 1	0	0.29	510.5			468	15								

Q_h

Location	RMI	LFY (cfs/mi^2)	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	1.4														
End of Reach 1	0														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

McKeesport WTP, NPDES Permit No. PA0096172, Outfall 004

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

☑ ***Hydrodynamics***

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

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
1.4	510		510	0.077	0.001	15.	379.	25.267	0.09	0.954	107.136
0	510.500		510.5								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
1.4	1727.45		1727.45	0.077	0.001	25.657	379.	14.772	0.178	0.482	47.904
0	1728.929		1728.93								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.374 Analysis Hardness (mg/l): 100.02 Analysis pH: 7.00

Pollutants	Stream Conc	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	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	1,851,075	
Total Antimony	0	0		0	1,100	1,100	2,714,910	
Total Arsenic	0	0		0	340	340	839,154	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	51,830,104	
Total Boron	0	0		0	8,100	8,100	19,991,612	
Total Cadmium	0	0		0	2.014	2.13	5,266	Chem Translator of 0.944 applied
Total Chromium (III)	0	0		0	569.849	1,803	4,450,770	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	40,213	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	234,470	
Total Copper	0	0		0	13.441	14.0	34,557	Chem Translator of 0.96 applied
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	64.594	81.7	201,555	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	4,065	Chem Translator of 0.85 applied
Total Nickel	0	0		0	468.308	469	1,158,147	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	3.218	3.79	9,343	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	160,427	
Total Zinc	0	0		0	117.199	120	295,765	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 100.01 Analysis pH: 7.00

Pollutants	Stream Conc	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	
Fluoride (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	1,450,769	
Total Arsenic	0	0		0	150	150	989,161	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	27,037,067	
Total Boron	0	0		0	1,600	1,600	10,551,051	
Total Cadmium	0	0		0	0.246	0.27	1,785	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.119	86.2	568,336	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	68,549	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	125,294	
Total Copper	0	0		0	8.956	9.33	61,522	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	9,891,610	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.517	3.18	20,983	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	5,974	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.010	52.2	344,004	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	32,901	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	85,727	
Total Zinc	0	0		0	118.146	120	790,164	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc	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	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	36,929	
Total Arsenic	0	0		0	10	10.0	65,944	
Total Barium	0	0		0	2,400	2,400	15,826,576	
Total Boron	0	0		0	3,100	3,100	20,442,660	
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	
Dissolved Iron	0	0		0	300	300	1,978,322	
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	6,594,407	
Total Mercury	0	0		0	0.050	0.05	330	
Total Nickel	0	0		0	610	610	4,022,588	
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	1,583	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 47.904 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

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

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

No. Samples/Month: 4

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

☑ ***Other Pollutants without Limits or Monitoring***

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	1,186,464	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	15,826,576	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	10,551,051	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	1,785	µg/L	Discharge Conc < TQL
Total Chromium (III)	568,336	µg/L	Discharge Conc < TQL
Hexavalent Chromium	25.8	mg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	125,294	µg/L	Discharge Conc < TQL
Total Copper	22,150	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	1,978,322	µg/L	Discharge Conc < TQL
Total Iron	9,892	mg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	20,983	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	6,594,407	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	330	µg/L	Discharge Conc < TQL

Total Nickel	344.004	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	32.901	µg/L	Discharge Conc < TQL
Total Silver	5.989	µg/L	Discharge Conc < TQL
Total Thallium	1.583	µg/L	Discharge Conc < TQL
Total Zinc	189.573	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

Attachment I: TRC Evaluation – Outfall 004

TRC_CALC_OUTFALL 004

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

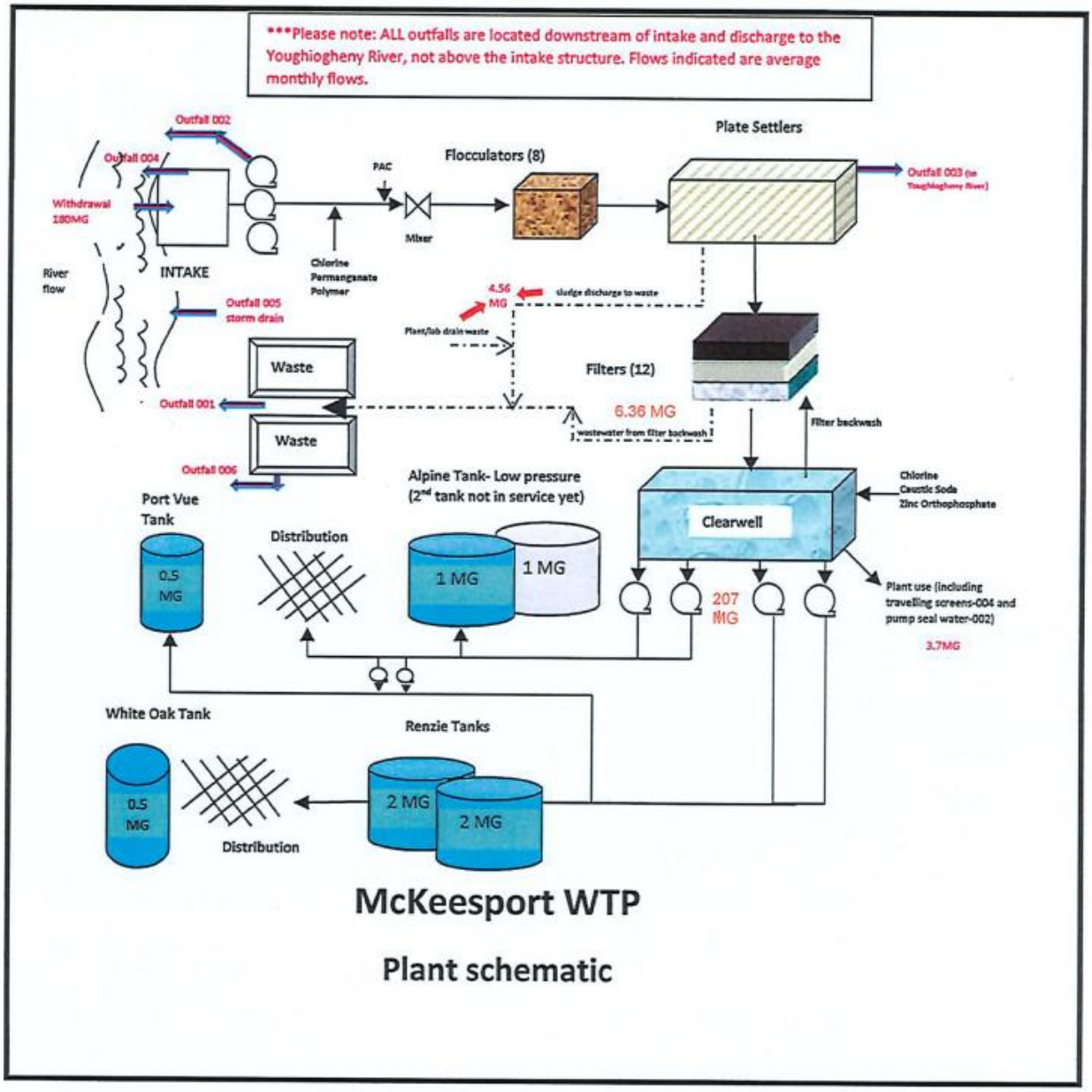
510	= Q stream (cfs)	0.5	= CV Daily
0.05	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.374	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 786.652	1.3.2.iii	WLA cfc = 2050.560
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 293.125	5.1d	LTA_cfc = 1192.100

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.170	

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)**

Attachment J: Line Drawing



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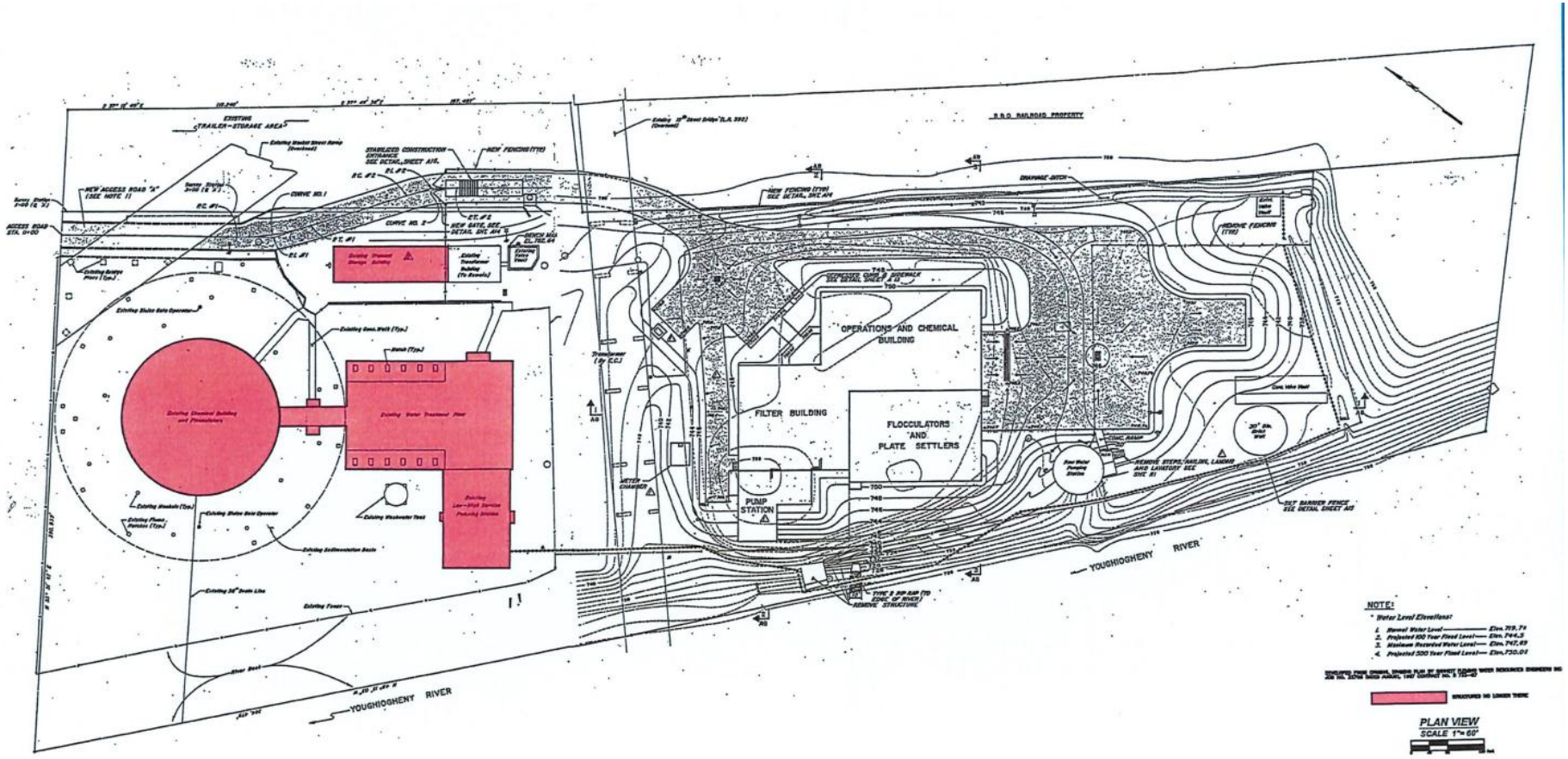
Attachment K: Site Plan



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