pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0217158**
Facility Type	**Industrial**	APS ID	**840058**
Major / Minor	**Minor**	Authorization ID	**1372484**

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

Applicant and Facility Information

Applicant Name	**The Authority of the Borough of Charleroi**	Facility Name	**Charleroi Water Filtration Plant**
Applicant Address	PO Box 211	Facility Address	First & McKean Ave
	Charleroi, PA 15022-0211		Charleroi, PA 15022
Applicant Contact	Charles Cardinale	Facility Contact	Chris Sekora
Applicant Phone	(724) 483-3585	Facility Phone	(724) 483-5411
Client ID	64399	Site ID	257871
SIC Code	4941,4952	Municipality	Charleroi Borough
SIC Description	Trans. & Utilities - Sewerage Systems, Trans. & Utilities - Water Supply	County	Washington
Date Application Received	October 4, 2021	EPA Waived?	Yes
Date Application Accepted	October 27, 2021	If No, Reason	

Purpose of Application: Renewal of NPDES Industrial Waste Permit without an ELG.

Summary of Review

The Department received a late NPDES permit renewal application from the Authority of the Borough of Charleroi for the Charleroi Water Treatment Plant (WTP) located in Charleroi Township of Washington County on October 27, 2021. Filter backwash water and flocculator wastewater are clarified and discharged to the Monongahela River through Outfall 001 (Avg. discharge rate is 0.293 MGD.) The standard industrial classification (SIC) Code for this facility is 4911 - municipal water supply.

Raw water from the Monongahela River is collected, treated, and distributed for community potable water use. Pre-sedimentation waste or flocculator wastewater and membrane plant reject or WTP filter backwash water is conveyed to a wet well which is then pumped to the wastewater treatment sedimentation basins. Sludge from the sedimentation basins is pumped to the public sewer system and conveyed to the sewage treatment plant. Supernatant from the basins is discharged via Outfall 001 to the Monongahela River.

Part C language in the draft permit provides controls on floating solids, chemical additives, residual solids, Total Residual Chlorine and Sedimentation Basin Cleaning.

The Authority of the Borough of Charleroi has no open violations pertaining to NPDES.

It is recommended that a draft permit be published for public comment in response to this application.

Approve	Deny	Signatures	Date
X		Curtis Holes, P.E. / Environmental Engineering	October 26, 2021
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	November 9, 2021

Summary of Review
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)	0.293
Latitude	40º 07' 59.9"	Longitude	-79º 53' 26.8"
Quad Name	1706	Quad Code	Monongahela
Wastewater Description:	Treated WTP Backwash Water and Flocculator Wastewater		

Receiving Waters	Monongahela River (WWF)	Stream Code	37185
NHD Com ID	99409968	RMI	42.2
Drainage Area	5,210	Yield (cfs/mi^2)	0.1151
Q_{7-10} Flow (cfs)	550	Q_{7-10} Basis	US Army Corp of Engineers
Elevation (ft)	740	Slope (ft/ft)	
Watershed No.	19-C	Chapter 93 Class.	WWF
Existing Use	**Potable Water Supply**	Existing Use Qualifier	None
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	FLOW REGIME MODIFICATION, FLOW REGIME MODIFICATION, METALS, METALS, ORGANIC ENRICHMENT, ORGANIC ENRICHMENT, SILTATION, SILTATION		
Source(s) of Impairment	ACID MINE DRAINAGE, ACID MINE DRAINAGE, HIGHWAY/ROAD/BRIDGE RUNOFF (NON-CONSTRUCTION RELATED), HIGHWAY/ROAD/BRIDGE RUNOFF (NON-CONSTRUCTION RELATED), NATURAL SOURCES, NATURAL SOURCES, RURAL (RESIDENTIAL AREAS), RURAL (RESIDENTIAL AREAS)		
TMDL Status	**Final 3/1/99**	Name	**Monongahela River TMDL**

Nearest Downstream Public Water Supply Intake	PA America Water Co – Pittsburgh (70 MGD)		
PWS Waters	Monongahela River	Flow at Intake (cfs)	550
PWS RMI	25.5	Distance from Outfall (mi)	16.7

Changes Since Last Permit Issuance: None

Other Comments: None

Drainage Area of Outfall 001

Compliance History	
Summary of DMRs:	No exceedances with permit effluent limits.
Summary of Inspections:	The last inspection conducted by the Department was on July 2, 2015 by Pamela Russell and no violations were noted.

Other Comments: **None**

Compliance History

DMR Data for Outfall 001 (from September 1, 2020 to August 31, 2021)

Parameter	Limit	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20
Flow (MGD) Average Monthly	**Report**	0.523	0.557	0.458	0.252	0.200	0.209	0.194	0.201	0.233	0.207	0.227	0.354
Flow (MGD) Daily Maximum	**Report**	0.925	1.219	1.204	0.389	0.299	0.495	0.289	0.318	0.331	0.254	0.479	0.569
pH (S.U.) Minimum	**6.0**	7.45	7.26	7.30	7.22	6.96	7.16	7.25	7.12	7.30	7.38	7.50	7.75
pH (S.U.) Maximum	**9.0**	7.59	7.35	7.33	7.33	7.01	7.19	7.45	7.16	7.42	7.50	7.87	7.76
TRC (mg/L) Average Monthly	**0.5**	0.07	0.095	0.11	0.08	0.10	0.065	0.09	0.120	0.10	0.105	0.104	0.085
TRC (mg/L) IMAX	**1.0**	0.12	0.110	0.13	0.12	0.11	0.070	0.10	0.150	0.13	0.170	0.170	0.120
TSS (mg/L) Average Monthly	**30.0**	18	13.5	16	7.0	9.5	9.5	9.0	8.0	13.5	11.0	7.5	9.5
TSS (mg/L) IMAX	**60.0**	20	18.0	21	8.0	11.0	13.0	10.0	10.0	15.0	15.0	8.0	14.0
Total Aluminum (mg/L) Average Monthly	**4.0**	0.519	0.655	0.243	0.297	0.782	0.188	0.431	0.133	0.544	0.631	0.346	0.496
Total Aluminum (mg/L) IMAX	**8.0**	0.702	0.878	0.292	0.445	0.897	0.231	0.762	0.164	0.671	0.918	0.371	0.612
Total Iron (mg/L) Average Monthly	**2.0**	< 0.001	0.341	0.121	0.172	0.281	0.147	< 0.001	< 0.001	0.256	0.133	< 0.001	0.110
Total Iron (mg/L) IMAX	**4.0**	< 0.001	0.683	0.242	0.345	0.302	0.294	< 0.001	< 0.001	0.265	0.266	< 0.001	0.220
Total Manganese (mg/L) Average Monthly	**1.0**	0.0724	0.183	0.168	0.110	0.366	0.090	0.0470	0.0213	0.122	0.206	0.0365	0.142
Total Manganese (mg/L) IMAX	**2.0**	0.0963	0.261	0.220	0.189	0.414	0.151	0.0737	0.0219	0.166	0.371	0.0382	0.209
Total Zinc (mg/L) Average Monthly	**0.035**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Total Zinc (mg/L) IMAX	**0.050**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	0.293
Latitude	40º 07' 59.9"	**Longitude**	-79º 53' 26.8"

Wastewater Description: Treated WTP Backwash Water and Flocculator Wastewater

Technology-Based Limitations

The Charleroi WTP facility 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

The pH effluent range for all Industrial waste process and non-process discharges pursuant to 25 Pa. Code § 92a.48(a)(2) and 25 Pa. Code § 95.2 is indicated in Table 1 below.

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

Pursuant to 25 Pa. Code § 95.2(4) effluent standards for industrial wastes may not contain more than 7 mg/L of dissolved iron as indicated in Table 1 below.

Pursuant to 25 Pa. Code § 92a.48(b) the imposition of technology-based Total Residual Chlorine (TRC) limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELG's or a facility specific BPJ evaluation as indicated in Table 1 below.

Table 1. Regulatory Effluent Standards

Parameter	Monthly Avg.	Daily Max	IMAX
Flow (MGD)	Monitor	Monitor	----
Iron, Dissolved	----	----	7.0 mg/L
pH (S.U.)	6.0-9.0 at all times		
TRC	0.5 mg/L	----	1.6 mg/L

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 a new or expanding waste loading of TDS, therefore, the facility is exempt from 25 Pa. Code § 95.10 treatment requirements.

Best Practicable Control Technology Currently Achievable (BPT)

The Department's Technical Support Document, *Technology-Based Control Requirements for Water Treatment Plant Wastes* (DEP-ID 362-2183-003) establishes BAT for discharges of WTPs wastewater, which are illustrated in Table 2 below.

Table 2. BAT Limits for WTP Filter Backwash Wastewater

Parameter	Monthly Avg. (mg/L)	Daily Max (mg/L)
Total Suspended solids (TSS)	30.0	60.0
Iron (total)	2.0	4.0
Aluminum (total)	4.0	8.0
Manganese (total)	1.0	2.0
Flow	Monitor	----
pH (S.U.)	6.0-9.0 at all times	
TRC	0.5	1.0

Water Quality-Based Limitations

Total Maximum Daily Load (TMDL)

Wastewater discharges from Charleroi Water Filtration Plant are located within the Monongahela River Watershed for which the Department has developed a TMDL. The TMDL was finalized on April 9, 2001 to address PCB, Organics and Chlordane within the Monongahela River Watershed. The Industrial Waste discharge for the Charleroi Water Filtration Plant consist of Treated WTP Backwash Water and Flocculator Wastewater. The facility does not discharge PCBs or Chlordane, therefore, the Ohio River TMDL does not pertain to the Charleroi Water Filtration Plant.

Toxics Management Analysis

The Department's Toxics Management Spreadsheet (TMS) was utilized to facilitate calculations necessary for completing a reasonable potential analysis and determine Water Quality-Based Effluent Limitations (WQBELs) for discharges containing toxic pollutant concentrations. TMS combines the functionality of two (2) of the Department's analysis tools, Toxics Screening Analysis Spreadsheet and PENTOXSD water quality model.

DEP's procedures for evaluating reasonable potential are as follows:

1. For IW discharges, the design flow to use in modeling is the average flow during production or operation and may be taken form the permit application.

2. Perform a Toxics Screening Analysis to identify toxic pollutants of concern. All toxic pollutants, as reported in the permit application or on DMRs, are modeled by the TMS to determine the parameters 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].

    - Establish limits in the draft permit where the maximum reported concentration equals or exceeds 50% of the WQBEL. Use the average monthly and maximum daily limits for the permit as recommended by TMS. Establish an IMAX limit at 2.5 times the average monthly limit.

    - For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.

    - For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10% - 50% of the WQBEL.

Discharges from Outfall 001 are evaluated based on concentrations reported on the application and contained in the DMRs; data from those sources are used as inputs into the TMS. A summary of TMS Inputs is contained in Table 3 below.

Table 3. TMS Inputs

Parameter	Value
Discharge Inputs	
Facility	Charleroi WTP
Evaluation Type	Industrial
NPDES Permit No.	PA0217158
Wastewater Description	Industrial Wastewater and Stormwater
Outfall ID	001
Design Flow (MGD)	0.293
Hardness ($^{mg}/_{L}$)	119
pH (S.U.)	7
Partial Mix Factors	Unknown – Calculated by TMS
Complete Mix Times	
Q_{7-10} (min)	
Q_h (min)	
Stream Inputs	
Receiving Surface Water	Monongahela River
Number of Reaches to Model	1
Stream Code	37185
RMI	42.2
Elevation (ft)	740/730*
Drainage Area (mi^2)	5,210
Slope (ft/ft)	
PWS Withdrawal (MGD)	70
Apply Fish Criteria	Yes
Low Flow Yield (cfs/mi^2)	
Flows	
Stream (cfs)	530/530*****
Tributary (cfs)	N/A
Width (ft)	965/940*****
Stream Hardness ($^{mg}/_{L}$)	118
Stream pH (S.U.)	7.3

***** Denotes discharge location/downstream location values.

Based on the recommendations of the TMS, no WQBEL are recommended at Outfall 001. Analysis Report from the TMS run is included in Attachment A.

Analysis of the permit renewal application and eDMR data has removed Total Zinc from pollutants of concern contained in Outfall 001's discharge.

WQM 7.0 Model

In general, WQM 7.0 Model is run if the maximum BOD_5/$CBOD_5$ concentrations exceeds 30/25 mg/L respectively in the permit application or the DMRs. The permit application reports BOD_5 concentration of 10.7 mg/L, therefore, WQM 7.0 Model is not required to be run.

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 discharge chlorine demands for the receiving stream, 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 then proposed. The results of the modeling, included in Attachment B, identify that BAT is the most stringent criteria for TRC at an average monthly limit of 0.5 mg/L. The maximum daily limit is 2 times the average monthly limit resulting in a 1.0 mg/L limit for maximum daily.

Anti-Backsliding

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

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

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

Effluent Limitations and Monitoring Requirements for Outfall 001

Effluent limits applicable at Outfall 001 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements as summarized in Table 4. The applicable limits and monitoring requirements provided below are based on in the most stringent limits listed in Tables 1 and 2 of this Fact Sheet.

Table 4. Effluent limits and monitoring requirements for Outfall 001

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Flow (MGD)	Report	Report	—	—	—	25 Pa. Code § 92a.61(d)(1)
Total Residual Chlorine	—	—	0.5	1.0	—	25 Pa. Code § 92a.48(b)
Total Suspended Solids	—	—	30.0	60.0	—	40 CFR § 125.3
Iron (total)	—	—	2.0	4.0	—	40 CFR § 125.3
Aluminum (total)	—	—	4.0	8.0	—	40 CFR § 125.3
Manganese (total)	—	—	1.0	2.0	—	40 CFR § 125.3
pH (S.U.)	Within the range of 6.0 to 9.0					25 Pa. Code § 92a.48(a)(2) & 25 Pa. Code § 95.2

Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001) and/or as previous permits monitoring requirements for Charleroi WTP are displayed in Table 5 below.

Table 5. Monitoring Requirements for Outfall 001

Parameter	Sample Type	Minimum Sample Frequency
Flow (MGD)	Meter	2/Month
TRC	Grab	2/Month
Total Suspended Solids	Grab	2/Month
Iron (total)	Grab	2/Month
Aluminum (total)	Grab	2/Month
Manganese (total)	Grab	2/Month
pH (S.U.)	Grab	2/Month

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

Attachment A – Toxics Management Spreadsheet Model Output

Attachment B – TRC Model

Attachment C – USGS StreamStats

Attachment A – Toxics Management Spreadsheet Model Output

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Charleroi WTP** NPDES Permit No.: **PA0217158** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Treated Backwash and Floculator Wastwat**

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
0.293	119	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		119									
	Chloride (PWS)	mg/L		35.3									
	Bromide	mg/L		2.6									
	Sulfate (PWS)	mg/L		91									
	Fluoride (PWS)	mg/L		0.152									
Group 2	Total Aluminum	µg/L		918									
	Total Antimony	µg/L		0.1									
	Total Arsenic	µg/L		0.4									
	Total Barium	µg/L		44									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L	<	92									
	Total Cadmium	µg/L	<	0.4									
	Total Chromium (III)	µg/L	<	2									
	Hexavalent Chromium	µg/L	<	5									
	Total Cobalt	µg/L	<	2									
	Total Copper	µg/L		2									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	2									
	Dissolved Iron	µg/L		39									
	Total Iron	µg/L		683									
	Total Lead	µg/L		0.2									
	Total Manganese	µg/L		414									
	Total Mercury	µg/L	<	0.04									
	Total Nickel	µg/L		2									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L		2									
	Total Silver	µg/L	<	1									
	Total Thallium	µg/L	<	0.4									
	Total Zinc	µg/L		12									
	Total Molybdenum	µg/L	<	2									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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

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

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Charleroi WTP, NPDES Permit No. PA0217158, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Monogahela 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	037185	42.2	740	5,210			Yes
End of Reach 1	037185	25.5	730	5,330		70	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	42.2	0.1	530			965	10					118	7.3		
End of Reach 1	25.5	0.1	530			940	10								

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	42.2														
End of Reach 1	25.5														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Charleroi WTP, NPDES Permit No. PA0217158, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ *AFC* CCT (min): 15 PMF: 0.063 Analysis Hardness (mg/l): 118.01 Analysis pH: 7.29

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	750	750	55,966	
Total Antimony	0	0		0	1,100	1,100	82,084	
Total Arsenic	0	0		0	340	340	25,371	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	1,567,057	
Total Boron	0	0		0	8,100	8,100	604,436	
Total Cadmium	0	0		0	2.366	2.52	188	Chem Translator of 0.937 applied
Total Chromium (III)	0	0		0	652.539	2,065	154,094	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	1,216	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	7,089	
Total Copper	0	0		0	15.709	16.4	1,221	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	77.307	101	7,523	Chem Translator of 0.767 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	123	Chem Translator of 0.85 applied
Total Nickel	0	0		0	538.665	540	40,277	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	4.277	5.03	375	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	4,850	
Total Zinc	0	0		0	134.835	138	10,288	Chem Translator of 0.978 applied

☑ *CFC* CCT (min): 720 PMF: 0.436 Analysis Hardness (mg/l): 118 Analysis pH: 7.30

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	112,435	
Total Arsenic	0	0		0	150	150	76,660	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	2,095,372	
Total Boron	0	0		0	1,600	1,600	817,706	
Total Cadmium	0	0		0	0.276	0.31	156	Chem Translator of 0.902 applied
Total Chromium (III)	0	0		0	84.875	98.7	50,438	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	5,313	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	9,710	
Total Copper	0	0		0	10.316	10.7	5,492	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	1,755,418	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.012	3.93	2,007	Chem Translator of 0.767 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	463	Chem Translator of 0.85 applied
Total Nickel	0	0		0	59.824	60.0	30,666	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	2,550	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	6,644	
Total Zinc	0	0		0	135.927	138	70,454	Chem Translator of 0.986 applied

☑ *THH* CCT (min): 720 THH PMF: 0.436 Analysis Hardness (mg/l): N/A Analysis pH: N/A PWS PMF: 1

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	#########	WQC applied at RMI 25.5 with a design stream flow of 530 cfs
Chloride (PWS)	0	0		0	250,000	250,000	#########	WQC applied at RMI 25.5 with a design stream flow of 530 cfs
Sulfate (PWS)	0	0		0	250,000	250,000	#########	WQC applied at RMI 25.5 with a design stream flow of 530 cfs
Fluoride (PWS)	0	0		0	2,000	2,000	2,340,557	WQC applied at RMI 25.5 with a design stream flow of 530 cfs
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	2,862	
Total Arsenic	0	0		0	10	10.0	5,111	
Total Barium	0	0		0	2,400	2,400	1,226,559	
Total Boron	0	0		0	3,100	3,100	1,584,306	
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	153,320	
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	511,066	
Total Mercury	0	0		0	0.050	0.05	25.6	
Total Nickel	0	0		0	610	610	311,751	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	5,851	WQC applied at RMI 25.5 with a design stream flow of 530 cfs
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	123	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ *CRL* CCT (min): 720 PMF: 0.651 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

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

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	585,139	mg/L	Discharge Conc ≤ 10% WQBEL
Chloride (PWS)	292,570	mg/L	Discharge Conc ≤ 10% WQBEL
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	292,570	mg/L	Discharge Conc ≤ 10% WQBEL
Fluoride (PWS)	2,341	mg/L	Discharge Conc ≤ 10% WQBEL
Total Aluminum	35,872	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	2,862	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	5,111	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	1,004,420	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	387,419	µg/L	Discharge Conc < TQL
Total Cadmium	121	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	50,438	µg/L	Discharge Conc < TQL
Hexavalent Chromium	779	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	4,544	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	783	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	153,320	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	1,755,418	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	2,007	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	511,066	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	25.6	µg/L	Discharge Conc < TQL
Total Nickel	25,816	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)	5,851	µg/L	Discharge Conc < TQL
Total Selenium	2,550	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	241	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	123	µg/L	Discharge Conc < TQL
Total Zinc	6,594	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

Attachment B – TRC Model

TRC EVALUATION Charleroi WTP Outfall 001

530	= Q stream (cfs)	0.5	= CV Daily
0.293	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.705	= 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)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 262.984	1.3.2.iii	WLA cfc = 363.657
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 97.994	5.1d	LTA_cfc = 211.413

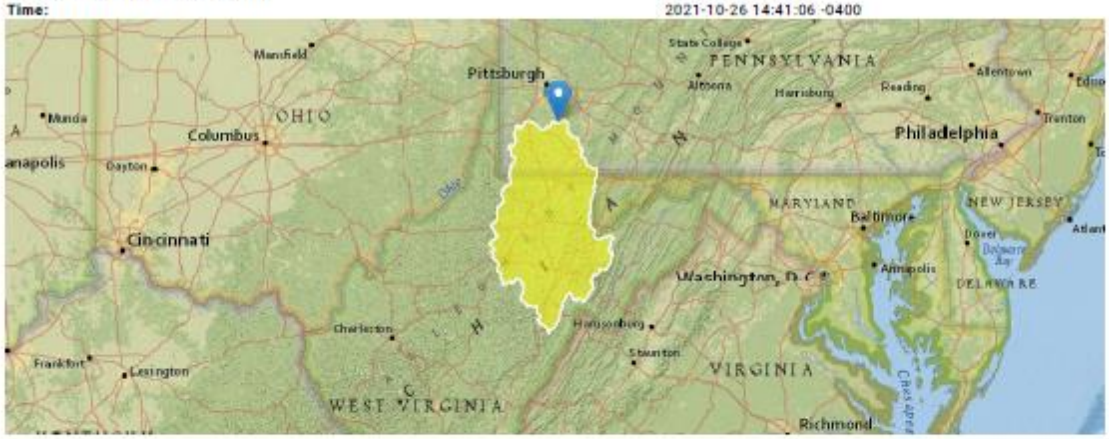
Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.170	

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 C – USGS StreamStats

StreamStats Report - Charleroi WTP Outfall 001

Region ID:	PA
Workspace ID:	PA20211026184043753000
Clicked Point (Latitude, Longitude):	40.13450, -79.89008
Time:	2021-10-26 14:41:06 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5210	square miles
ELEV	Mean Basin Elevation	1842	feet

Low-Flow Statistics Parameters [99.9 Percent (5210 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5210	square miles	2.26	1400
ELEV	Mean Basin Elevation	1842	feet	1050	2580

Low-Flow Statistics Disclaimers [99.9 Percent (5210 square miles) Low Flow Region 4]

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

Low-Flow Statistics Flow Report [99.9 Percent (5210 square miles) Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	689	ft^3/s
30 Day 2 Year Low Flow	914	ft^3/s
7 Day 10 Year Low Flow	401	ft^3/s
30 Day 10 Year Low Flow	470	ft^3/s
90 Day 10 Year Low Flow	698	ft^3/s

Low-Flow Statistics Citations

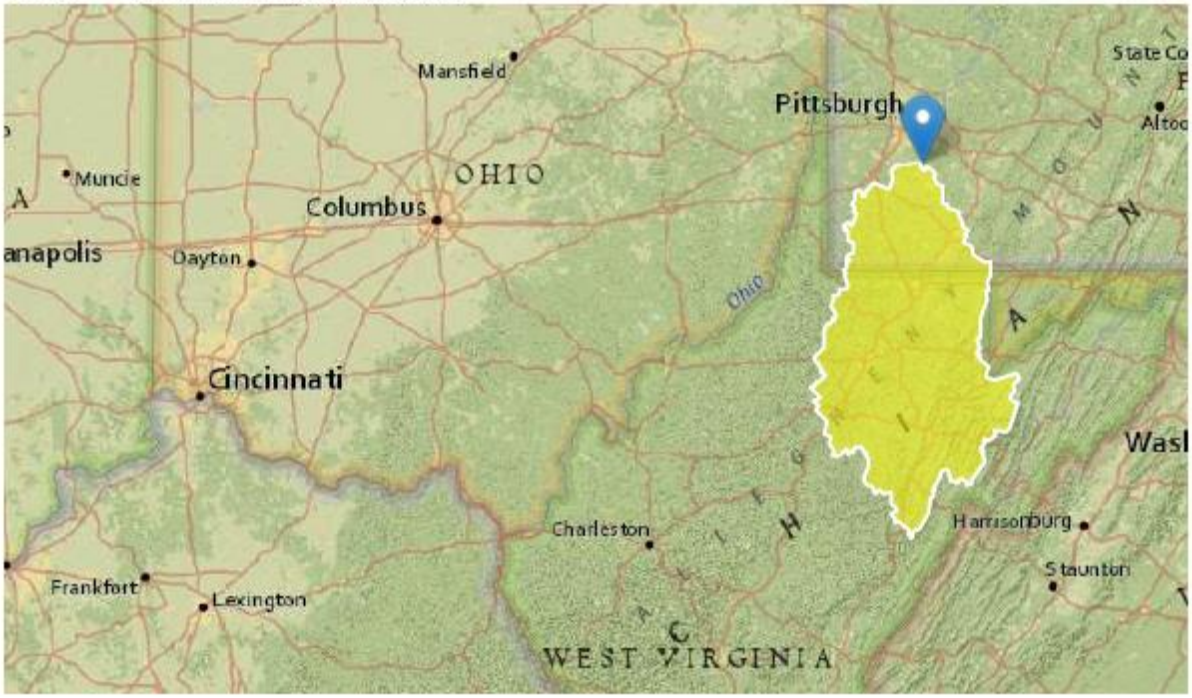
Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

https://streamstats.usgs.gov/ss/ 10/26/2021

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

StreamStats Report - Charleroi WTP Downstream Location

Region ID: PA
Workspace ID: PA20211027160027563000
Clicked Point (Latitude, Longitude): 40.24899, -79.91837
Time: 2021-10-27 12:00:53 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5330	square miles
ELEV	Mean Basin Elevation	1825	feet

Low-Flow Statistics Parameters [99.9 Percent (5330 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5330	square miles	2.26	1400
ELEV	Mean Basin Elevation	1825	feet	1050	2580

Low-Flow Statistics Disclaimers [99.9 Percent (5330 square miles) Low Flow Region 4]

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

Low-Flow Statistics Flow Report [99.9 Percent (5330 square miles) Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	701	ft^3/s
30 Day 2 Year Low Flow	929	ft^3/s
7 Day 10 Year Low Flow	410	ft^3/s
30 Day 10 Year Low Flow	479	ft^3/s
90 Day 10 Year Low Flow	710	ft^3/s

Low-Flow Statistics Citations

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

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StreamStats Services Version: 1.2.22
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