pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0028983**
Facility Type	**Municipal**	APS ID	**275014**
Major / Minor	**Minor**	Authorization ID	**1390240**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**McVeytown Borough Authority**	Facility Name	**McVeytown STP**
Applicant Address	PO Box 321	Facility Address	9 S Water Street
	McVeytown, PA 17051-0321		McVeytown, PA 17051
Applicant Contact	Peter Sunderland	Facility Contact	Matthew Stringer
Applicant Phone	717-899-7436	Facility Phone	717-899-7436
Client ID	66883	Site ID	252108
Ch 94 Load Status	Existing Organic Overload	Municipality	McVeytown Borough
Connection Status	No Exceptions Allowed	County	Mifflin
Date Application Received	March 30, 2022	EPA Waived?	Yes
Date Application Accepted	April 12, 2022	If No, Reason	

Purpose of Application: NPDES permit renewal

Summary of Review

1.0 General Discussion

This fact sheet supports the renewal of an existing NPDES permit for discharge of treated domestic wastewater from McVeytown Borough Authority (Authority) wastewater treatment plant. The Authority owns, operates, and maintains the wastewater treatment plant. The facility is located in McVeytown Borough, Mifflin County. The facility services McVeytown Borough (80% of the flow) and Oliver Township (20% of the flow). The sewer collection system is not combined in these areas and there are no bypasses or overflows approved in the collection system. During the last permit cycle, a storage tank has been installed at Wray pump station to store flow during high flow events to address frequent sanitary sewer overflow at the pump station. The treatment plant has a hydraulic design capacity and annual average capacity of 0.085 MGD and organic design capacity of 170 lbs/day-BOD5. The discharge goes to Juniata River which is classified for Warm Water Fishes (WWF) and Migratory Fishes (MF). The existing NPDES permit was issued on August 8, 2017 with an expiration date of August 31, 2022. The applicant submitted an administratively complete NPDES renewal application to the Department and currently operating under the terms and conditions in the existing permit pending Department action on the renewal application. A topographic map showing the discharge location is presented in attachment A.

1.1 Sludge use and disposal description and location(s):

Digested sludge is either hauled out in liquid form or dewatered by the sludge drying beds prior to land application at Harshberger Farm.

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	April 7, 2023
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	April 13, 2023
X		*Maria D. Bebenek* Maria D. Bebenek, P.E./ Program Manager	April 13, 2023

Summary of Review

1.2 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.

1.3 Changes to the existing Permit

Quarterly E. Coli monitoring has been added.

1.4 Existing Permit and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
(CBOD5)	17	28	XXX	25.0	40.0	50	2/month	24-Hr Composite
(BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Suspended Solids	21	31	XXX	30.0	45.0	60	2/month	24-Hr Composite
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Nitrate-Nitrite as N	Report Total Mo	XXX	XXX	Report	XXX	XXX	1/quarter	24-Hr Composite
Total Nitrogen	Report Total Mo	XXX	XXX	Report	XXX	XXX	1/quarter	Calculation
Total Kjeldahl Nitrogen	Report Total Mo	XXX	XXX	Report	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus	Report Total Mo	XXX	XXX	Report	XXX	XXX	1/quarter	24-Hr Composite
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.085
Latitude	40º 29' 44.55	Longitude	-77º 44' 17.92"
Quad Name	McVeytown	Quad Code	1524
Wastewater Description:	Sewage Effluent		
Receiving Waters	Juniata River (WWF)	Stream Code	11414
NHD Com ID	66208353	RMI	62.69
Drainage Area	2,460	Yield (cfs/mi^2)	0.204
Q_{7-10} Flow (cfs)	501.84	Q_{7-10} Basis	USGS Gage Station
Elevation (ft)	478	Slope (ft/ft)	
Watershed No.	12-A	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

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

Nearest Downstream Public Water Supply Intake	Mifflintown Water Systems Juniata County		
PWS Waters	Juniata River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	25

Changes Since Last Permit Issuance: None

1.5.1 Water Supply:

The nearest downstream water supply intake is approximately 25 miles downstream by Mifflintown Water Systems Juniata County on Juniata River Juniata County. The discharge will not impact the intake because of the distance and dilution.

2.0 Treatment Facility Summary				
Treatment Facility Name: McVeytown STP				
WQM Permit No.	**Issuance Date**			
4472401 11-1	09/30/2011			
4472401 09-1	02/09/2009			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Hypochlorite	0.085
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.085	170	Existing Organic Overload	Aerobic Digestion	

Changes Since Last Permit Issuance: A storage tank has been installed at Wray Pump Station to address SSO at the pump station. The facility is under “Existing Hydraulic Overload” condition and connection is not allowed due to organic overload condition reported in their Chapter 94 report. The Consent Order and Agreement (CO&A) between the Authority and DEP for addressing bypasses or overflows of raw or partially treated sewage into the waters of the Commonwealth has been terminated after the storage tank has been installed at Wray pump station.

2.1 Treatment Facility

The treatment system, a package plant, mainly consists of a Muffin Monster, Influent Receiving Well, Mix Chamber, Aeration/Mix Tank, 2 clarifiers, Chlorine Contact Tank, 1 aerobic digester, 1 Sludge Holding Tank and 2 Sludge Drying Beds. Effluent is disinfected with Liquid Sodium Hypochlorite before continuously discharged to Juniata River

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from February 1, 2022 to January 31, 2023)

Parameter	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22
Flow (MGD) Average Monthly	0.045	0.047	0.035	0.028	0.032	0.032	0.028	0.031	0.043	0.037	0.036	0.05
Flow (MGD) Daily Maximum	0.119	0.124	0.125	0.43	0.078	0.081	0.043	0.068	0.169	0.08	0.073	0.148
pH (S.U.) Minimum	7.27	7.21	7.24	7.62	7.37	7.19	6.99	7.28	7.36	7.35	7.3	7.21
pH (S.U.) Maximum	8.0	8.06	8.06	8.12	8.09	7.99	7.77	7.83	8.86	7.94	7.95	7.78
DO (mg/L) Minimum	8.59	7.95	7.92	8.68	6.09	7.29	5.55	6.06	7.15	7.55	8.07	7.92
TRC (mg/L) Average Monthly	0.28	0.4	0.37	0.32	0.38	0.34	0.23	0.27	0.35	0.41	0.36	0.42
TRC (mg/L) Instantaneous Maximum	0.49	0.49	0.49	0.46	0.63	0.54	0.42	0.44	0.5	0.58	0.5	0.65
CBOD5 (lbs/day) Average Monthly	6.0	< 2.0	< 0.8	< 0.9	< 1.0	< 0.8	1.0	< 0.7	< 0.9	1	3	< 3.0
CBOD5 (lbs/day) Weekly Average	7.0	< 3.0	< 0.9	1.0	2.0	1.0	2.0	< 0.7	< 0.9	1	3	3.0
CBOD5 (mg/L) Average Monthly	10.3	< 3.0	< 3.0	< 3.9	< 5.2	< 3.6	6.3	< 3.0	< 3.0	4.1	9.3	< 4.1
CBOD5 (mg/L) Weekly Average	12.0	< 3.0	< 3.0	5.0	7.0	4.0	7.0	< 3.0	< 3.0	5.0	11	5.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	153	177	61	60	60	62	70	69	73	76	67	204
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	200	290	82	62	64	71	84	76	82	90	83	244
BOD5 (mg/L) Raw Sewage Influent Average Monthly	281	258	236	267	268	284	292	314	254	277	234	240
TSS (lbs/day) Average Monthly	< 1.0	< 2.0	< 0.6	0.4	< 1.0	0.8	2.0	0.7	< 14	1	1	2.0

TSS (lbs/day) Raw Sewage Influent Average Monthly	45	28	10	16	9	17	18	17	24	21	15	55
TSS (lbs/day) Raw Sewage Influent Daily Maximum	51	43	11	17	12	18	19	17	29	27	20	66
TSS (lbs/day) Weekly Average	1.0	4.0	< 0.9	0.5	1.0	1.0	2.0	0.7	< 0.5	1	2	2.0
TSS (mg/L) Average Monthly	< 2.2	< 2.6	< 2.2	1.8	< 4.4	3.8	7.0	3.0	< 1.6	4.0	4.8	2.0
TSS (mg/L) Raw Sewage Influent Average Monthly	86	45	37	72	40	78	77	76	85	77	52	64
TSS (mg/L) Weekly Average	3.0	4.0	< 3.0	2.0	5.0	6.0	8.0	3.0	< 2.0	4.0	6.0	2.0
Fecal Coliform (No./100 ml) Geometric Mean	53	369	90	45	94	254	63	21	29	45	127	291
Fecal Coliform (No./100 ml) Instantaneous Maximum	1413.6	547.5	153.9	104.6	275.5	1163.6	249.5	44.6	95.6	204.6	246.8	2419.6
Nitrate-Nitrite (mg/L) Average Quarterly		< 6.533			< 21.06			2.614			3.324	
Nitrate-Nitrite (lbs) Total Quarterly		< 577			< 1731			279			1255	
Total Nitrogen (mg/L) Average Quarterly		< 8.768			< 21.56			3.874			5.424	
Total Nitrogen (lbs) Total Quarterly		< 774			< 4.9			413			2047	
Total Nitrogen (lbs) Total Annual					< 1505							
Ammonia (mg/L) Average Monthly	0.249	< 0.1	< 0.128	< 0.1	< 0.1	< 0.102	< 0.29	< 0.144	< 0.1	< 0.54	1.696	4.502
Ammonia (mg/L) Average Quarterly		< 0.109			< 0.164			< 0.26			2.297	
Ammonia (lbs) Total Quarterly		< 15			< 14			22			470	
Ammonia (lbs) Total Annual					< 129							
TKN (mg/L) Average Quarterly		2.235			< 0.4			1.26			2.1	

TKN (lbs) Total Quarterly		197			< 31			134			793	
Total Phosphorus (mg/L) Average Quarterly		5.02			5.66			1.05			2.61	
Total Phosphorus (lbs) Total Quarterly		443			465			112			985	
Total Phosphorus (lbs) Total Annual					504							

3.2 Effluent Violations for Outfall 001, from: March 1, 2022 To: January 31, 2023

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	08/31/22	Geo Mean	254	No./100 ml	200	No./100 ml
Fecal Coliform	08/31/22	IMAX	1163.6	No./100 ml	1000	No./100 ml

3.3 Summary of Discharge Monitoring Reports (DMRs)**:**

DMRs review for the facility for the last 12 months of operation, presented on the table above in section 3.1 indicate that except Fecal Coliform, permit limits have been met most of the time. Fecal Coliform effluent violations were noted on DMRs for the month of August 2022 during the period reviewed and presented in section 3.2 above. The violation appeared to be a onetime occurrence.

3.4 Summary of Inspections:

The facility has been inspected a couple times during last permit cycle. No effluent violations were found during plant inspections. The facility is operated and well maintained.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .085
Latitude 40º 29' 44.55" **Longitude** -77º 44' 17.92"
Wastewater Description: Sewage Effluent

4.1 Basis for Effluent Limitations

In general, the Clean Water Act(AWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

4.2 Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

4.3 Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34

4.3.1 WQM 7.0 Stream Model

WQM 7.0 is a water quality model DEP utilizes to establish appropriate effluent limits for $CBOD_5$, NH_3-N and DO in permits. The model simulates mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria and also simulates mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria and recommends effluent limits.

4.4 Water Quality-Based Limitations

4.4.1 Receiving Stream

The receiving stream is the Juniata River. According to 25 PA § 93.9n, this stream is protected for Warm Water Fishes (WWF) and Migratory Fishes (MF). It is located in Drainage List n and State Watershed 12-A. It has been assigned stream code 11414. According to eMapPA, this segment of Juniata River is attaining its designated uses.

4.4.2 Streamflow:

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No 01563500 on Juniata River at Mapleton Depot. The Q_{7-10}, Q_{1-10} and Q_{30-10} flows at the gage are 415 ft^3/s, 384 ft^3/s and 415 ft^3/s respectively. The drainage area at the gage is 2030 mi^2. The resulting yields are as follows:

- Q_{7-10} = (415ft^3/s)/2030 mi^2 = 0.204$ft^3/s/ mi^2$
- Q_{30-10} / Q_{7-10} = 1.06
- Q_{1-10} / Q_{7-10} = 0.925

The drainage area at discharge taken from the previous protection report = 2460 mi^2
The Q_{7-10} at discharge = 2460 mi^2 x 0.204 $ft^3/s/mi^2$ = 501.84 ft^3/s.

Historically a PMF of 10% was used to adjust the Q_{7-10} for WQM modelling purposes for this discharge and will be continued for the current permit renewal.

Q_{7-10} model = 501.84 ft^3/s. x 0.10 = 50.14 ft^3/s

4.3.4 NH_3N Calculations

NH_3N calculations are based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the instream NH_3N criteria used in the WQM model of the stream:

Discharge pH	= 7.4 (July -Sept DMR median)
Discharge Temperature	= 25 ^{o} C (Default)
Stream pH	= 7.6 (WQN#214, median July-Sep)
Stream Temp	= 22^0 C (WQN#214, median July-Sep)
Background Hardness	= 114 (WQN#214, median July-Sep
Background NH_3-N	= 0.0 (default)

4.4.4 $CBOD_5$

The attached results of the WQM 7.0 stream model (attachment B) indicates that, for the McVeytown Borough Authority's discharge of 0.085MGD, an average monthly limit (AML) of 25mg/l for $CBOD_5$ is required to protect the water quality of the stream. This limit is consistent with the existing permit and the STP has been consistently achieving below this limitation. Therefore, a limit of 25mg/l AML, 40mg/l average weekly limit (AWL) and 50 mg/l IMAX is recommended for this permit cycle. Mass limits are calculated as follows:

Mass based AML (lb/day) = 25 (mg/L) × 0.085(mgd) × 8.34 = 17

Mass based AWL (lb/day) = 40(mg/L) × 0.085(mgd) × 8.34 = 28

4.4.5 NH_3-N

The attached results of the WQM 7.0 stream model (attachment B) also indicates that no limitation on NH_3 as a monthly average is necessary to protect the aquatic life from toxicity effects. However, ammonia monitoring required in in the existing permit will continue to ensure treatment efficiency.

4.4.6 Dissolved Oxygen

The existing permit contains a limit of 5 mg/l for Dissolved Oxygen (DO). DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001, 10/97) suggests that either the adopted minimum stream D.O. criteria for the receiving stream or the effluent level determined through water quality modeling be used for the limit. Since the WQM 7.0 model was run using a minimum D.O. of 5.0 mg/l, this limit will be continued in the renewed permit with a daily monitoring requirement.

4.4.7 Total Suspended Solids (TSS):

There is no water quality criteria for TSS. The existing limit of 30 mg/l AML based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 PA § 92a.47(a)(1) and an AWL of 45mg/l per 40CFR 133.102(b)(2) and 25 PA § 92a.47(a)(2) will remain in the permit. Mass limit are calculated as follows:

Mass based AML (lb/day) = 30 (mg/L) × 0.085(mgd) × 8.34 = 21.0

Mass based AWL (lb/day) = 45(mg/L) × 0.085(mgd) × 8.34 = 31.0

4.4.8 Total Residual Chlorine

The attached TRC calculation results presented in attachment D utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The Guidance references Chapter 92a, Section 92a.48 (b) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The results presented in attachment D indicates that a technology limit of 0.5 mg/l monthly average and IMAX of 1.6 mg/l would be needed to prevent toxicity concerns. This is consistent with the existing permit will remain for the current permit renewal. DMR and inspection reports indicate the facility has been complying with the limitation consistently.

4.4.9 Toxics

A reasonable potential (RP) analysis was done for pollutants sampled in support of the permit renewal application. All pollutants that were presented in the application sampling data were entered into DEP's Toxics Management Spreadsheet (TMS) to calculate WQBELs. The results of the TMS are presented in attachment C. The results of the TMS indicate discharge levels for all pollutants are well below DEP's target quantitation limits and the calculated WQBELs, therefore, no monitoring or limitation was recommended.

The recommended limitations follow the logic presented in DEPs SOP, to establish limits in the permit where the maximum reported concentration exceeds 50% of the WQBEL, or for non-conservative pollutants to establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL, or to establish monitoring requirements for conservative pollutants where the maximum reported concentration is between 10% - 50% of the WQBEL.

4.4.10 Fecal Coliform and E. Coli

The existing Fecal Coliform limit is consistent with the technology limits recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. In March of 2021, EPA approved DEP's Triennial Review of Water Quality Standards, which included a new swimming season criterion for E.coli. As a result, DEP is including monitoring requirements for E. Coli in new and renewed sewage permits above 2000gpd. Monitoring frequency is based on annual average flow as follows: 1/month for design flows >= 1 MGD, 1/quarter for design flows >= 0.05 and < 1 MGD and 1/year for design flows of 0.002 – 0.05 MGD. Your discharge of 0.085MGD requires 1/quarter monitoring as included in the permit.

4.4.11 Chesapeake Bay Strategy:

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay requirements to reduce point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP) to the Bay. In the Strategy, sewage dischargers have been prioritized by DEP based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers received annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mdg) are required to monitor and report TN and TP during permit renewal and any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. EPA published Chesapeake Bay TMDL in December of 2010. In order to address the TMDL, Pennsylvania developed Chesapeake Watershed Implementation Plan (WIP) Phase 1, Phase 2 and currently Phase 3 WIP and a supplement to the WIPs to be implemented with the original Chesapeake Bay Strategy.

As outlined in the current Phase 3 WIP and the current supplement to the WIP, re-issuing permits for significant dischargers would follow the same phased approach formulated in the original Bay strategy whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewals

As outlined in the current Phase 3 WIP and the current supplement to the WIP, re-issuing permits for significant dischargers would follow the same phased approach formulated in the original Bay strategy whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewals. This facility is classified as a phase 5, and has been monitoring Total Phosphorus, Nitrate-Nitrite as N, Total Kjeldahl Nitrogen and Total Nitrogen, and will continue to monitor and report the daily maximum concentration during the next permit cycle 1/quarter.

4.4.12 Influent BOD and TSS Monitoring

The permit include influent BOD5 and TSS monitoring at the same frequency as is done for effluent in order to implement Chapter 94.12 and assess percent removal requirements.

4.4.13 Stormwater

There is no stormwater outfall associated with this facility.

4.4.14 Industrial Users

McVeytown Borough Authority's wastewater treatment plant does not receive wastewater from any significant industrial users.

4.4.15 Pretreatment Requirements

The design annual average flow of the treatment plant is 0.085 MGD and the facility receives no flow from significant Industrial users. EPA does not require development of pretreatment program for facilities with design flow less than 5MGD. However, the permit contains standard conditions requiring the permittee to monitor and control industrial users if applicable.

5.0 Other Requirements

5.1 Anti-backsliding

Not applicable to this permit

5.2 Anti-Degradation (93.4)

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

5.3 Class A Wild Trout Fisheries

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

5.4 303d Listed Streams

The discharge is not located on a 303d listed stream segment.

5.5 Special Permit Conditions

The permit contains the following special conditions:

- Stormwater Prohibition, Approval Contingencies, Solids Management and Restriction on receipt of hauled in waste under certain conditions and chlorine minimization requirement.

5.6 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional

effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

5.7 Effluent Monitoring Frequency

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

6.0 Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Avg Mo	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	17	28	XXX	25.0	40.0	50	2/month	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TSS	21	31	XXX	30.0	45.0	60	2/month	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	Calculation
Ammonia	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite

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

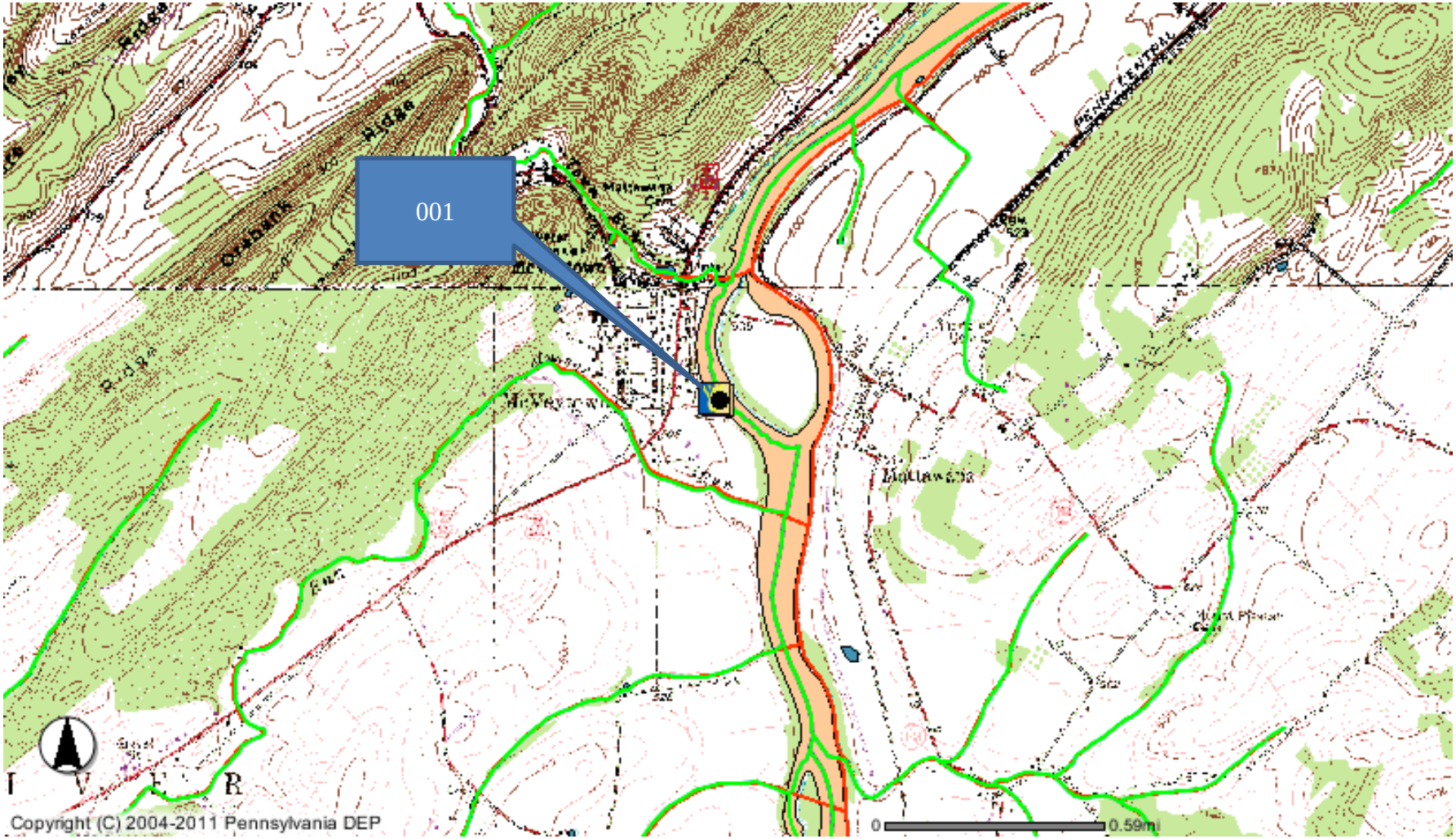
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
TKN	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	24-Hr Composite

Compliance Sampling Location: At Outfall 001

7.0 Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☒	Toxics Management Spreadsheet (see Attachment **C**)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 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: Establishing effluent limitation for individual sewage permit.
☒	Other: WIP 3 and Supplement

Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
62.690	McVeytown STP	PA0028983	0.085	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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Permit No. PA0028983

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
12B	11414	JUNIATA RIVER	**62.690**	478.00	2460.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.204	0.00	50.17	0.000	0.000	0.0	0.00	0.00	22.00	7.60	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
McVeytown STP	PA0028983	0.0850	0.0850	0.0850	0.000	25.00	7.40

Parameter Data

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

Permit No. PA0028983

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
12B	11414	JUNIATA RIVER	**59.690**	471.00	2466.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.204	0.00	0.00	0.000	0.000	0.0	0.00	0.00	22.00	7.60	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

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

Permit No. PA0028983

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
62.690	McVeytown STP	6.7	50	6.7	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
62.690	McVeytown STP	1.12	25	1.12	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
62.69	McVeytown STP	25	25	25	25	5	5	0	0

Permit No. PA0028983

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.925	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.06	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

Permit No. PA0028983

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
62.690	0.085	22.008	7.599
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
148.928	1.157	128.771	0.292
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.06	0.030	0.07	0.817
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.235	0.631	Tsivoglou	5
Reach Travel Time (days)			
0.628			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.063	2.06	0.06	7.94
0.126	2.05	0.06	7.94
0.188	2.05	0.06	7.94
0.251	2.04	0.05	7.94
0.314	2.04	0.05	7.94
0.377	2.03	0.05	7.94
0.439	2.03	0.05	7.94
0.502	2.03	0.04	7.94
0.565	2.02	0.04	7.94
0.628	2.02	0.04	7.94

Permit No. PA0028983

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
62.690	50.17	0.00	50.17	.1315	0.00044	1.157	148.93	128.77	0.29	0.628	22.01	7.60
Q1-10 Flow												
62.690	46.41	0.00	46.41	.1315	0.00044	NA	NA	NA	0.28	0.656	22.01	7.60
Q30-10 Flow												
62.690	53.18	0.00	53.18	.1315	0.00044	NA	NA	NA	0.30	0.608	22.01	7.60

Permit No. PA0028983

C. Toxic Management Spreadsheet

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **McVeytown STP** NPDES Permit No.: **PA0028983** Outfall No.: **001**

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

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
0.085	100	7.4						

					0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L											
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L		13.3									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L	<	8									
	Total Manganese	µg/L											
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L											
	Total Silver	µg/L											
	Total Thallium	µg/L											
	Total Zinc	µg/L		65									
	Total Molybdenum	µg/L											

Permit No. PA0028983

Stream / Surface Water Information

McVeytown STP, NPDES Permit No. PA0028983, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: **Juniata 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	011414	62.69	478	2460			Yes
End of Reach 1		52.69	471	2466			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	62.69	0.204	50.18									114	7.6		
End of Reach 1	52.69	0.204													

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	62.69														
End of Reach 1	52.69														

Permit No. PA0028983

Model Results

McVeytown STP, NPDES Permit No. PA0028983, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.083 Analysis Hardness (mg/l): 113.57 Analysis pH: 7.59

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 Copper	0	0		0	15.151	15.8	516	Chem Translator of 0.96 applied
Total Lead	0	0		0	74.159	96.0	3,137	Chem Translator of 0.772 applied
Total Zinc	0	0		0	130.522	133	4,361	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 720 PMF: 0.575 Analysis Hardness (mg/l): 113.94 Analysis pH: 7.60

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 Copper	0	0		0	10.012	10.4	2,299	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.900	3.76	828	Chem Translator of 0.772 applied
Total Zinc	0	0		0	131.948	134	29,505	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 720 PMF: 0.575 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 Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 720 PMF: 0.945 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 Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 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***

Permit No. PA0028983

D. TRC Calculations

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

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

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 121.753	1.3.2.iii	WLA cfc = 118.692
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 45.368	5.1d	LTA_cfc = 69.002

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))…** **…+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))…** **…+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**