pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0254321**
Facility Type	**Municipal**	APS ID	**1065195**
Major / Minor	**Minor**	Authorization ID	**1399323**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**German Township Sewer Authority**	Facility Name	**German Township Sewer Authority STP**
Applicant Address	247 Edenborn Road PO Box 308	Facility Address	760 Fells Run Road
	McClellandtown, PA 15458		McClellandtown, PA 15458
Applicant Contact	Floyd Gladman III	Facility Contact	Joshua Sphar
Applicant Phone	(724) 737-0213	Facility Phone	(412) 582-9642
Applicant Email	brenda.devecka@germantownshipsewage.org	Facility Email	josh@atlanticbb.net
Client ID	110668	Site ID	733224
Ch 94 Load Status	Not Overloaded	Municipality	German Township
Connection Status	No Limitations	County	Fayette
Date Application Received	June 10, 2022	EPA Waived?	Yes
Date Application Accepted	June 13, 2022	If No, Reason	

Purpose of Application: NPDES permit renewal for discharges of treated sewage from a publicly owned treatment works.

Summary of Review

On June 10, 2022, on behalf of the German Township Sewage Authority (GTSA), Widmer Engineering Inc. submitted an application to renew NPDES Permit PA0254321 for discharges from GTSA's Sewage Treatment Plant (STP). The STP is categorized as a Minor Sewage Facility >= 0.05 and < 1 MGD.

The current NPDES permit was issued on August 10, 2017 with an effective date of September 1, 2017 and an expiration date of August 31, 2022. The renewal application was not submitted at least 180 days before the permit expired (i.e., was not submitted on or before March 4, 2022). GTSA was not approved to submit a late application, so the terms and conditions of the 2017 permit will not be automatically extended past August 31, 2022. GTSA will be discharging under an expired permit if the permit is not renewed before August 31, 2022.

Changes for this NPDES permit renewal include the following:

- marginal reductions in the mass loading limits for CBOD5 and TSS at Outfall 001 consistent with DEP's rounding guidelines and the addition of average monthly mass reporting for ammonia-nitrogen
- a quarterly reporting requirement for *E. coli* is added to Outfall 001 based on new water quality criteria for *E. coli* in 25 Pa. Code Chapter 93 (approved by the U.S. Environmental Protection Agency in March 2021) and related permitting policy updates
- a condition is added to the permit requiring no point source discharges of PCBs or chlordane to the Monongahela River to ensure the permit is consistent with the Monongahela River Total Maximum Daily Load for those pollutants

Approve	Deny	Signatures	Date
X		Ryan C. Decker Ryan C. Decker, P.E. / Environmental Engineer	June 24, 2022
x		Mahbuba Iasmin Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	June 29, 2022

Summary of Review

Whole Effluent Toxicity (WET) testing is not required for minor sewage facilities and is not required by the current permit. Therefore, no WET testing requirements are imposed.

GTSA does not have a pretreatment program and does not meet the specific regulatory criteria in 40 CFR § 403.8(a) that require POTWs to establish pretreatment programs because the design flow of the STP, 0.18 MGD, is less than the 5.0 MGD threshold in § 403.8(a). In addition, GTSA reported on the NPDES permit application that it does not have any industrial or commercial users.

Sludge use and disposal description and location: Sludge is disposed at the Chestnut Valley Landfill.

German Township Sewer Authority has no open, unresolved violations.

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)	0.18
Latitude	39° 52' 17"	Longitude	-79° 55' 37"
Quad Name	Masontown	Quad Code	2006
Wastewater Description:	Treated sewage effluent		

Receiving Waters	Monongahela River (WWF)	Stream Code	37185
NHD Com ID	99416112	RMI	77.6
Drainage Area	4,530	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	530	Q_{7-10} Basis	US Army Corps. of Engrs.
Elevation (ft)	763 (normal pool elevation)	Slope (ft/ft)	0.0001
Watershed No.	19-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Recreation and Potable Water Supply Uses – Attaining; Fish Consumption – Not Attaining; Aquatic Life – Not Assessed		
Cause(s) of Impairment	Polychlorinated Biphenyls (PCBs) and Chlordane		
Source(s) of Impairment	Source Unknown		
TMDL Status	Final	Name	Monongahela River TMDL

Background/Ambient Data		Data Source
pH (SU)	7.5	WQN Station 702 – Monongahela River at Charleroi
Temperature (°F)	25.0	WQN Station 702 – Monongahela River at Charleroi
Hardness (mg/L)		
Other:		

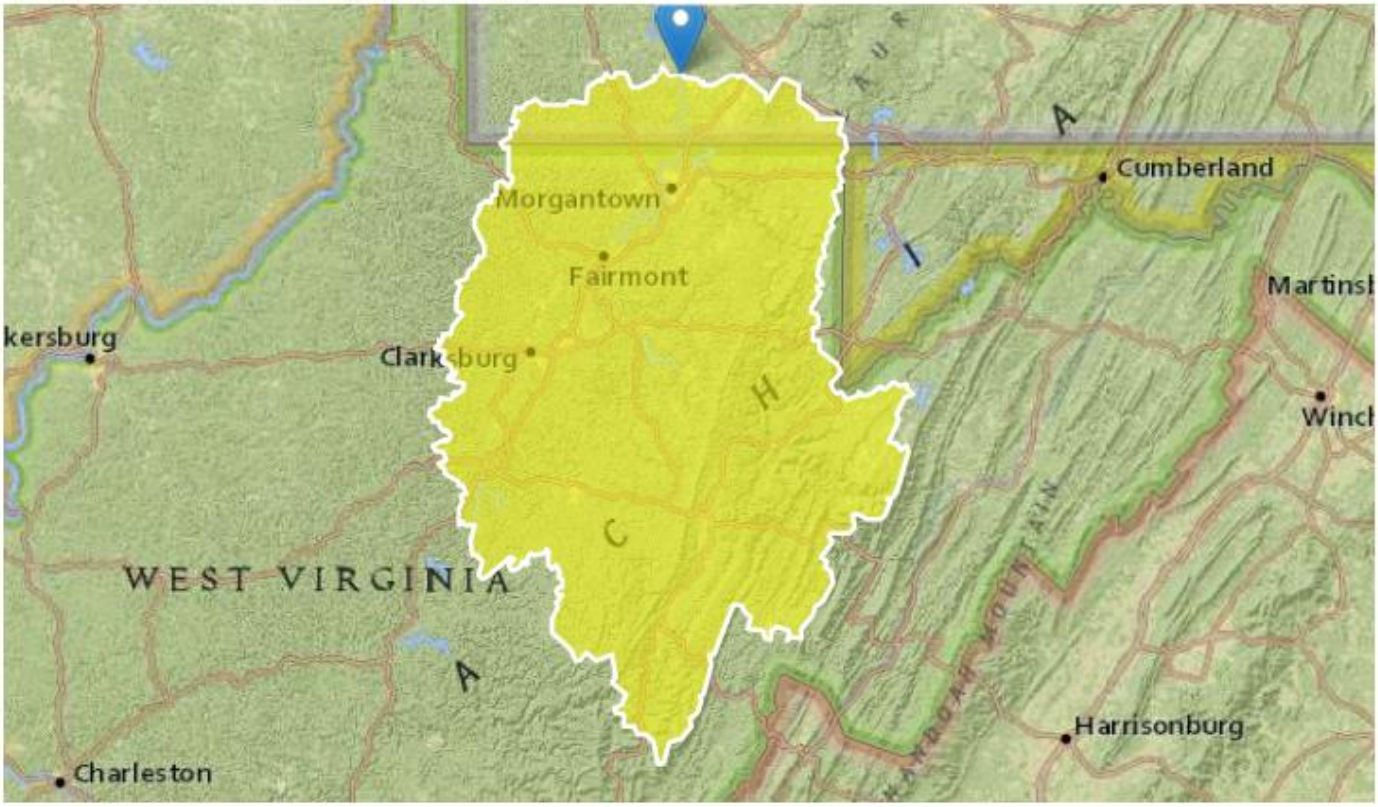
Nearest Downstream Public Water Supply Intake		Municipal Authority of the Borough of Carmichaels	
PWS ID	5300005	PWS Withdrawal (MGD)	1.0
PWS Waters	Monongahela River	Flow at Intake (cfs)	530
PWS RMI	75.03	Distance from Outfall (mi)	2.5

Changes Since Last Permit Issuance:

Other Comments:

Basin Delineation for German Township Sewer Authority STP Outfall 001

Region ID: PA
Workspace ID: PA20220623104353112000
Clicked Point (Latitude, Longitude): 39.87138, -79.92841
Time: 2022-06-23 06:44:16 -0400



Collapse All

Basin Characteristics

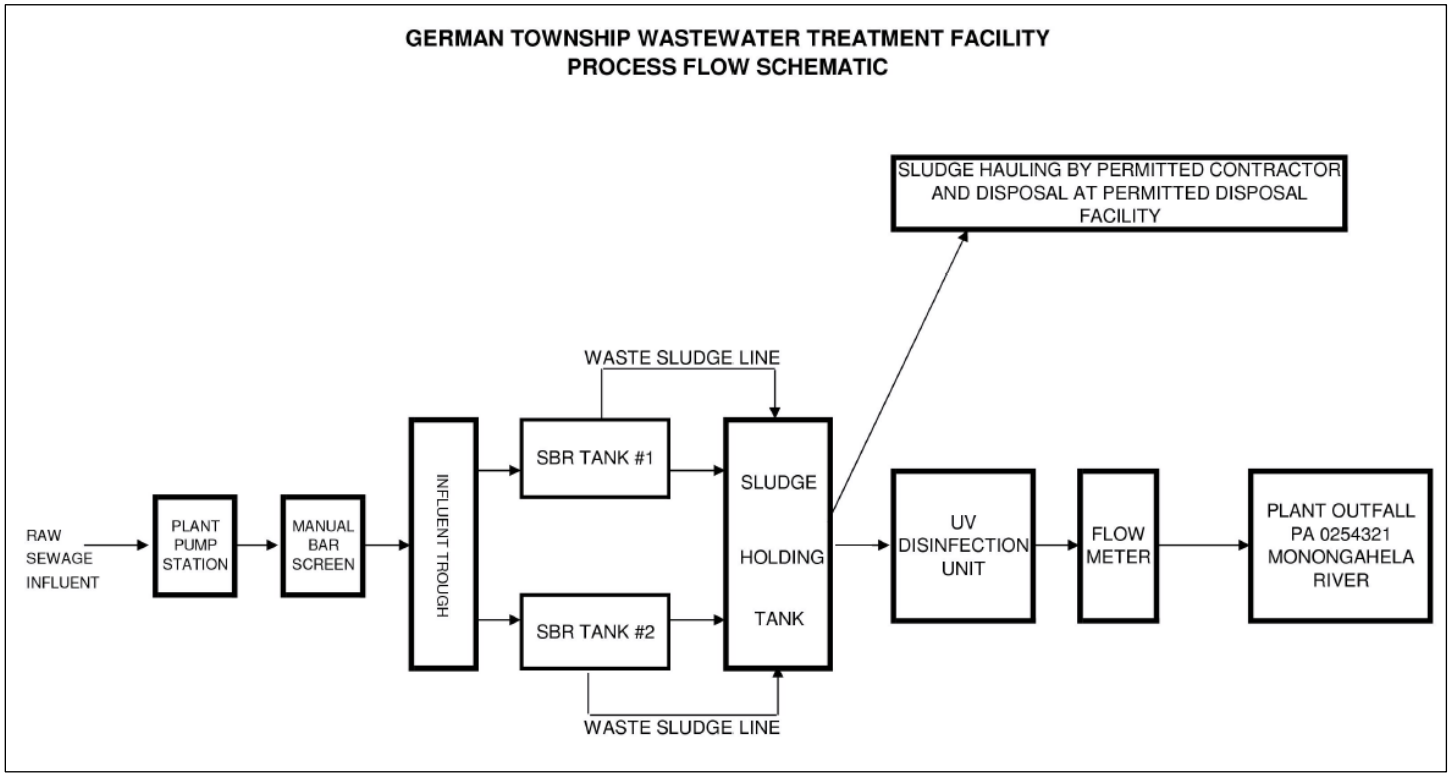
Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	4530	square miles
ELEV	Mean Basin Elevation	1946	feet

Treatment Facility Summary		
Treatment Facility: German Township Sewer Authority STP – 0.18 MGD average design; 0.72 MGD peak instantaneous		
WQM Permit No.	**Issuance Date**	**Purpose**
2611401	June 10, 2011	Permit issued to the German Township Sewer Authority by the Department of Environmental Protection for a 0.18 MGD sewage treatment plant consisting of a mechanically cleaned screen and manual backup bar screen; two SBR tanks (42'×20'×17.5') in parallel; one 84,978-gallon aerated sludge digestion tank to store wasted sludge; a 1.5 meter sludge belt filter press for sludge dewatering; an ultraviolet light disinfection system designed for 2.8 MGD (four times the peak instantaneous flow); a sand/denitrifying filter and post-aeration tank for polishing and total nitrogen reduction. The permit also authorized the construction of a collection system including low pressure sewers with grinder pumps and two submersible pump stations: the Edenborn Road pump station with two 141-gpm pumps with a 9-foot diameter wet well and 9,224.8 linear feet of 10-inch diameter force main and the Route 21 pump station with two 540-gpm pumps with a 6-foot diameter wet well and 2,712 feet of a 4-inch diameter force main.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Screening; suspended growth activated sludge; aerobic sludge digestion; disinfection.	Ultraviolet light	0.061

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.18	330	Not Overloaded	Aerobic sludge digestion	Landfill

Changes Since Last Permit Issuance: The sand/denitrifying filter and post-aeration referenced in the WQM permit documents is not identified as part of the constructed system.



Compliance History

DMR Data for Outfall 001 (from May 1, 2021 to April 30, 2022)

Parameter	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21
Flow (MGD) Average Monthly	0.0868	0.066	0.1203	0.0846	0.0736	0.0557	0.0546	0.0587	0.0469	0.0594	0.0473	0.0646
Flow (MGD) Daily Maximum	0.2727	0.0904	0.6064	0.3287	0.2152	0.0641	0.0774	0.1914	0.0778	0.2131	0.2389	0.2381
pH (S.U.) Minimum	6.6	6.4	6.5	6.5	6.6	6.5	6.5	6.3	6.3	6.4	6.4	6.4
pH (S.U.) Maximum	7.1	6.9	7.1	7.0	7.1	7.0	7.0	6.9	6.9	6.9	6.9	7.1
DO (mg/L) Instantaneous Minimum	6.8	6.8	6.7	6.6	6.7	6.7	6.6	6.7	6.7	6.6	6.5	6.5
CBOD5 (lbs/day) Average Monthly	< 7.3	< 1.4	1.6	< 1.1	< 1.7	< 0.9	< 0.9	< 1.1	< 0.9	< 0.7	< 0.7	< 1.7
CBOD5 (lbs/day) Weekly Average	18.3	2.6	2.1	< 1.5	< 3.6	< 1.0	1.3	1.9	< 1.1	< 0.8	< 1.0	< 2.5
CBOD5 (mg/L) Average Monthly	< 10.3	< 2.6	2.6	< 2.0	< 2.0	< 2.0	< 2.3	< 2.1	< 2.1	< 2.0	< 2.1	< 2.8
CBOD5 (mg/L) Weekly Average	24.0	5.0	4.0	2.0	< 2.0	< 2.0	3.0	3.0	2.0	< 2.0	2.0	5.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	94	15	24	22	87	36.0	24	23	15	13	8.0	26
BOD5 (lbs/day) Raw Sewage Influent Weekly Average	94	15.4	24	22	87.25	36.0	24.0	23.25	15	13	8.0	36
BOD5 (mg/L) Raw Sewage Influent Average Monthly	141	27	39	43	96	77.0	60	52	39.0	38	22.0	49
BOD5 (mg/L) Raw Sewage Influent Weekly Average	141	27.26	39	43	96	77.0	60.1	51.825	39.0	38	22.0	49
TSS (lbs/day) Average Monthly	< 9.3	< 2.8	< 3.2	< 2.7	< 4.1	< 2.3	< 2.0	< 2.5	< 2.0	< 1.9	< 1.7	< 3.3
TSS (lbs/day) Raw Sewage Influent Average Monthly	69	37	24	19	46	43.0	35	103	53.0	26	64	86
TSS (lbs/day) Raw Sewage Influent Weekly Average	69	37.2	24	19	46.5	43.0	35	103.25	53.0	26	64	86
TSS (lbs/day) Weekly Average	26.4	< 3.8	< 3.7	< 3.8	< 9.0	< 2.5	< 2.5	< 4.2	< 2.8	< 2.1	< 2.4	< 6.2

Parameter	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21
TSS (mg/L) Average Monthly	< 13	< 5.0	< 5.0	< 5	< 5	< 5.0	< 5	< 5	< 5.0	< 5.0	< 5.0	< 5.0
TSS (mg/L) Raw Sewage Influent Average Monthly	102	58	39	40	57	94.0	95	230	142.0	71	186	148
TSS (mg/L) Raw Sewage Influent Weekly Average	102	58	39	40	57	94.0	95	229.75	142.0	71	186	148
TSS (mg/L) Weekly Average	35	< 5.0	< 5.0	< 5	< 5	< 5.0	< 5	< 5	< 5.0	< 5.0	< 5.0	< 5.0
Fecal Coliform (No./100 ml) Geometric Mean	45	17	9	< 10	< 3	< 4	8.0	7.0	18.0	< 2	7.0	< 21
Fecal Coliform (No./100 ml) Instantaneous Maximum	352	35	92	124	8	16	20	12.0	134.0	178	22.0	296
UV Transmittance (%) Minimum	100	100	100	100	100	100	100	100	100	100	100	100
UV Transmittance (%) Average Monthly	100	100	100	100	100	100	100	100	100	100	100	100
Total Nitrogen (mg/L) Daily Maximum					4.88							
Ammonia (mg/L) Average Monthly	< 11.4	< 0.2	< 0.1	0.7	< 0.2	< 0.1	0.3	0.7	0.3	< 0.5	1.0	0.7
Ammonia (mg/L) Daily Maximum	26.9	0.2	0.2	1.3	0.3	0.2	0.7	2.0	0.3	1.6	1.3	1.0
Total Phosphorus (mg/L) Daily Maximum					2.74							

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	0.18
Latitude	39° 52' 17"	**Longitude**	-79° 55' 37"

Wastewater Description: Treated sewage effluent

The STP consists of a mechanical bar screen with a manual bypass bar screen, two sequencing batch reactors in parallel, an aerated sludge digestion tank for sludge wasted from the SBRs, a UV disinfection unit. A belt filter press is used to dewater sludge for offsite disposal at a landfill.

001.A. Technology-Based Effluent Limitations (TBELs)

25 Pa. Code § 92a.47 – Sewage Permits

Regulations at 25 Pa. Code § 92a.47 specify TBELs and effluent standards that apply to sewage discharges. Section 92a.47(a) requires that sewage be given a minimum of secondary treatment with significant biological treatment that achieves the following:

Table 1. Regulatory TBELs for Sanitary Wastewaters

Parameter	Average Monthly (mg/L)	Weekly Average (mg/L)	Instant. Max (mg/L)	Basis
CBOD5	25	40 †	50 ††	25 Pa. Code § 92a.47(a)(1), (a)(2) & 40 CFR §§ 133.102(a)(4)(i) & (ii)
Total Suspended Solids	30	45	60 ††	25 Pa. Code § 92a.47(a)(1), (a)(2) & 40 CFR §§ 133.102(b)(1) & (b)(2)
Fecal Coliform (No./100 mL) May 1 – September 30	200 (Geometric Mean)	N/A	1,000	25 Pa. Code § 92a.47(a)(4)
Fecal Coliform (No./100 mL) October 1 – April 30	2,000 (Geometric Mean)	N/A	10,000	25 Pa. Code § 92a.47(a)(5)
Total Residual Chlorine	0.5 (or facility-specific)	N/A	1.6 (or facility-specific)	25 Pa. Code § 92a.47(a)(8) & § 92a.48(b)(2)
pH (s.u.)	not less than 6.0 and not greater than 9.0			25 Pa. Code § 92a.47(a)(7) & § 95.2(1), & 40 CFR § 133.102(c)

† Outfall 001 is currently subject to a more stringent CBOD5 weekly average limit of 37.5 mg/L.

†† Value is calculated as two times the monthly average in accordance with Chapter 2 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations. and Other Permit Conditions in NPDES Permits" [Doc. No. 362-0400-001].

The CBOD5, TSS, and pH limits in § 92a.47(a) are the same as those in EPA's secondary treatment regulation (40 CFR § 133.102). Outfall 001 is currently subject to a more stringent average weekly CBOD5 limit of 37.5 mg/L. That limit will be maintained in the renewed permit pursuant to EPA's anti-backsliding regulation (40 CFR § 122.44(l)).

Average monthly and maximum daily flows must be reported pursuant to 25 Pa. Code § 92a.61(d)(1). The existing minimum dissolved oxygen limit of 4.0 mg/L will be maintained at Outfall 001 pursuant to 40 CFR § 122.44(l) (regarding anti-backsliding) and 25 Pa. Code § 92a.61(b) (regarding reasonable monitoring requirements).

In accordance with Section I of DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits" [SOP No. BCW-PMT-033, Version 1.9, March 24, 2021] and under the authority of 25 Pa. Code § 92a.61(b), yearly reporting for Total Nitrogen and Total Phosphorus is required for sewage discharges with design flows greater than 2,000 gpd to help evaluate treatment effectiveness and to monitor nutrient loading to the receiving watershed. The SOP states that the monitoring frequencies for Total Nitrogen and Total Phosphorus should be equivalent to the monitoring frequencies for other conventional pollutants if the facility discharges to a nutrient-impaired water or potentially a lesser frequency if the receiving water is not nutrient-impaired. The Monongahela River is not impaired by nutrients, so DEP previously used its discretion to require yearly monitoring for Total Nitrogen and Total Phosphorus, which will be maintained in the renewed permit.

Pursuant to that same SOP and under the authority of § 92a.61(b), a quarterly reporting requirement for *E. coli* will be added to Outfall 001 because the design flow of the STP is between 0.05 MGD and 1 MGD. *E. coli* was recently added to the bacteria water quality criteria in 25 Pa. Code § 93.7(a). The monitoring will be used to determine if *E. coli* require additional controls.

GTSA uses ultraviolet light for disinfection rather than chlorine, so the TBELs for TRC from 92a.47(a)(8) are replaced with minimum and average monthly reporting requirements for ultraviolet light transmittance pursuant to the SOP referenced above and under the authority of § 92a.61(b).

Mass Limits

In accordance with Table 5-3 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" and Section IV of DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits", mass limits are calculated for CBOD5 and TSS. Average monthly and average weekly mass limits (in units of pounds per day) are calculated using the concentration limits in Table 1 (apart from the more stringent 37.5 mg/L average weekly CBOD5 limit) and the STP's 0.18 MGD design flow with the following formula:

Design flow (average annual) (MGD) × concentration limit (mg/L) at design flow × conversion factor (8.34) = mass limit (lb/day)

Table 2. Mass TBELs for Sanitary Wastewaters

Parameter	Average Monthly (mg/L)	Average Weekly (mg/L)
CBOD5	37.0	56.0
Total Suspended Solids	45.0	65.0

Pursuant to Chapter 5, Section C.2 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" mass limits for conventional pollutants with magnitudes between 10.0 and 60.0 are rounded down to the nearest 1.0 and mass limits for conventional pollutants with magnitudes greater than 60.0 are rounded down to the nearest 5.0 mg/L. The mass limits in Table 2 account for this rounding convention.

001.B. Water Quality-Based Effluent Limitations (WQBELs)

Pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* on July 11, 2020, new water quality criteria for ammonia-nitrogen apply to waters of the Commonwealth. Therefore, WQBELs for CBOD-5 and ammonia-nitrogen are re-evaluated even though there have been no changes to discharges from the STP's primary outfall.

WQM 7.0 Water Quality Modeling Program

WQM 7.0 is a water quality modeling program for Windows that determines Waste Load Allocations ("WLAs") and effluent limitations for carbonaceous biochemical oxygen demand ("CBOD5"), ammonia-nitrogen, and dissolved oxygen ("D.O.") for single and multiple point-source discharge scenarios. To accomplish this, the model simulates two basic processes. In the ammonia-nitrogen module, the model simulates the mixing and degradation of ammonia-nitrogen in the stream and compares calculated instream ammonia-nitrogen concentrations to ammonia-nitrogen water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of CBOD5 and ammonia-nitrogen and compares calculated instream D.O. concentrations to D.O. water quality criteria. WQM 7.0 then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

Water Quality Modeling with WQM 7.0

The WQM 7.0 model is run for Outfall 001 to determine whether WQBELs are necessary for $CBOD_5$, ammonia-nitrogen, and D.O. Input values for the WQM 7.0 model are shown in Table 3.

DEP's modeling for sewage discharges is a two-step process. First, a discharge is modeled for the summer period (May through October) using warm temperatures for the discharge and the receiving stream. Modeling for the summer period is done first because allowable ammonia concentrations in a discharge are lower at higher temperatures (i.e., warm temperatures are more likely to result in critical loading conditions). Reduced D.O. levels also appear to increase ammonia toxicity and the maximum concentration of D.O. in water is lower at higher temperatures.

The second step is to evaluate WQBELs for the winter period, but only if modeling shows that WQBELs are needed for the summer period. For the summer period, pursuant to DEP's "Implementation Guidance of Section 93.7 Ammonia Criteria" [Doc. No. 391-2000-013] (Ammonia Guidance) and in the absence of site-specific data, the discharge temperature is

assumed to be 20°C. Per that same guidance, the site-specific stream temperature is 25°C based on the median temperature from July through September at Water Quality Network Station 702 – Monongahela River at Charleroi for the period of record lasting from September 1999 through August 2020. The site-specific stream pH is 7.5 s.u., which is the median pH at WQN Station 702 from that same period of record.

Table 3. 001 WQM 7.0 Inputs

Discharge Characteristics	
Parameter	**Value**
River Mile Index	77.6
Discharge Flow (MGD)	0.18
Discharge Temp. (°C) (Summer)	20.0
Discharge Temp. (°C) (Winter)	15.0
Basin/Stream Characteristics	
Parameter	**Value**
Drainage Area (sq. mi.)	4,530
Q_{7-10} (cfs)	530
Low-flow yield (cfs/mi^2)	0.117
Elevation (ft)	763
Slope (ft/ft)	0.0001
Stream Width (ft)	600
Stream Depth (ft)	12.0
Stream Temp. (°C) (Summer)	25.0
Stream Temp. (°C) (Winter)	5.0
Stream pH (s.u.)	7.5

The Q_{7-10} flow of the Monongahela River in the vicinity of Outfall 001 is regulated at minimum of about 530 cfs, which is entered into WQM 7.0 as the stream flow at river mile index 77.6. To ensure that mixing conditions are properly represented in WQM 7.0, the reach width and reach depth are approximated as 600 feet and 15 feet, respectively. The flow used for modeling is the average design flow (0.18 MGD). The input discharge concentrations are the model defaults: 25 mg/L for both CBOD5 and ammonia-nitrogen.

A downstream node is entered into WQM 7.0 at river mile index 75.03 where the Municipal Authority of the Borough of Carmichaels has a 1.0 MGD potable water supply withdrawal (PWS ID 5300005).

WQM 7.0 modeling returns the input discharge concentrations as the recommended limits (see **Attachment A**), which means that WQBELs are not needed for CBOD5 or ammonia-nitrogen. Pursuant to DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits", for existing dischargers where modeling results for summer indicate that an average monthly limit of 25 mg/L for ammonia-nitrogen is acceptable, a year-round monitoring requirement for ammonia-nitrogen is established. Reporting of average monthly and daily maximum ammonia-nitrogen concentrations was required at Outfall 001 in the previous permit. Those reporting requirements will be maintained in the renewed permit. In addition, pursuant to the SOP referenced above, reporting of average monthly ammonia-nitrogen mass loading is added to the permit.

<u>WQBELs for Toxic and Nonconventional Pollutants</u>

WQBELs are developed pursuant to Section 301(b)(1)(C) of the Clean Water Act and, per 40 CFR § 122.44(d)(1)(i), are imposed to "control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality."

Based on the ratio of the regulated Q_{7-10} flow of the Monongahela River in the vicinity of GTSA's STP (530 cfs) to the STP's design flow (0.18 MGD or 0.279 cfs), the STP's discharges do not have a reasonable potential to cause, or contribute to an excursion above any state water quality standard or criteria.

$$Dilution\ Ratio = \frac{Monongahela\ River\ Q_{7-10}}{STP\ Design\ Flow} = \frac{530\ cfs}{0.279\ cfs} \approx 1900{:}1$$

The STP has no known industrial or commercial users that would be likely to introduce toxic pollutants and pollutants like copper, lead, and zinc that are commonly present in sewage effluent due to the corrosion of water lines were not detected in effluent samples collected for the application. For those reasons, no water quality modeling is conducted beyond the WQM 7.0 analysis discussed above, which also demonstrated there is no reasonable potential.[1]

<u>Monongahela River Impairment and Total Maximum Daily Load (TMDL)</u>

The Monongahela River's fish consumption use is impaired by PCBs and chlordane. There is a final TMDL for PCBs and chlordane that was approved by EPA on April 9, 2001. The TMDL sets waste load allocations to zero for point source discharges of PCBs and chlordane to the Monongahela River because no point source discharges of PCBs and chlordane were identified during development of the TMDL. The TMDL only provides load allocations for non-point sources.

[1] DEP implicitly acknowledges the limited potential for toxic effects from minor sewage facilities' discharges by limiting the required effluent analyses in the NPDES permit application for minor sewage facilities with flows greater than 0.1 MGD (facilities like GTSA's STP) to pH, TRC, BOD5 or CBOD5, TSS, Fecal Coliform, NH3-N, Total N, Total P, Dissolved Oxygen (Minimum), Temperature, TKN, NO2-N + NO3-N, TDS, Chloride, Bromide, Sulfate, Oil and Grease, Total Copper, Total Lead, and Total Zinc.

The STP has no known industrial or commercial users, which would be the most likely sources of PCBs and chlordane. Consequently, the STP is not expected to discharge PCBs or chlordane. However, to ensure that the permit reflects the requirements of the Monongahela River TMDL, the following narrative limitation will be included as a condition in Part C of the permit.

There shall be no point source discharges of Polychlorinated Biphenyls (PCBs) or Chlordane to the Monongahela River.

The condition does not impose any monitoring obligations on GTSA. However, it does allow DEP to collect samples of the STP's effluent, or require GTSA to collect samples of the STP's effluent, and analyze those samples for PCBs and chlordane to determine whether GTSA complies with the TMDL in the unlikely event that such determination is deemed necessary.

001.C. Influent Monitoring

Pursuant to Section IV.E.8 of DEP's "Standard Operating Procedure (SOP) for Clean Water Program New and Reissuance Sewage Individual NPDES Permit Applications" [SOP No. BCW-PMT-002, Version 2.0, February 3, 2022], for POTWs with design flows greater than 2,000 GPD, influent BOD_5 and TSS monitoring is established in the permit with the same sample frequency and sample type used for the effluent. As explained in Section 001.D below, effluent from GTSA's STP must be analyzed for CBOD5 and TSS 1/week using 8-hour composite sampling with reporting required for average monthly and average weekly masses and concentrations. Therefore, influent samples must be analyzed for BOD_5 and TSS 1/week using 8-hour composite sampling with reporting of average monthly and average weekly masses and concentrations.

Influent analyses are required for BOD_5 rather than $CBOD_5$ because BOD_5 is the parameter used to determine whether a sewage treatment plant is organically overloaded pursuant to the requirements of 25 Pa. Code, Chapter 94.

001.D. Effluent Limits and Monitoring Requirements for Outfall 001

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under 40 CFR § 122.44(l)[2] (incorporated by reference in Pennsylvania regulations at 25 Pa. Code § 92a.44), effluent limits at Outfall 001 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal; and effluent limits and monitoring requirements from the previous permit, subject to any exceptions to anti-backsliding discussed previously in this Fact Sheet. Applicable effluent limits and monitoring requirements are summarized in the table below.

Table 4. Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Average Monthly	Weekly Average	Average Monthly	Weekly Average	Instant. Maximum	
Flow (MGD)	Report	Report (Daily Max)	—	—	—	25 Pa. Code § 92a.61(h)
$CBOD_5$	37.0	56.0	25.0	37.5	50.0	25 Pa. Code § 92a.47(a)(1)
Total Suspended Solids	45.0	65.0	30.0	45.0	60.0	25 Pa. Code § 92a.47(a)(1)
BOD5 (Influent)	Report	Report	Report	Report	—	25 Pa. Code § 92a.61(b)
TSS (Influent)	Report	Report	Report	Report	—	25 Pa. Code § 92a.61(b)
Fecal Coliform (No. /100mL) May 1 – October 31	—	—	200	—	1000	25 Pa. Code § 92a.47(a)(4) & 40 CFR § 122.44(l)
Fecal Coliform (No. /100mL) November 1 – April 30	—	—	2000	—	10000	25 Pa. Code § 92a.47(a)(5) & 40 CFR § 122.44(l)
E. coli (No./100mL)	—	—	—	—	Report	25 Pa. Code § 92a.61(b)
Dissolved Oxygen	—	—	4.0 (Min.)	—	—	CWA § 402(a)(1); BPJ TBEL
Ultraviolet Light Transmittance (%)	—	—	Report (Min.)	Report (Avg. Mo.)	—	25 Pa. Code § 92a.61(b)

[2] *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.)

Table 4 (continued). Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Average Monthly	Weekly Average	Average Monthly	Weekly Average	Instant. Maximum	
Ammonia-Nitrogen	Report	—	Report	Report (Daily Max)	—	25 Pa. Code § 92a.61(b)
Total Nitrogen	—	—	—	Report (Daily Max)	—	25 Pa. Code § 92a.61(b)
Total Phosphorus	—	—	—	Report (Daily Max)	—	25 Pa. Code § 92a.61(b)
pH (standard units)	not less than 6.0 nor greater than 9.0 standard units					25 Pa. Code § 92a.47(a)(7) & § 95.2(1)

Monitoring frequencies and sample types are established pursuant to DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits", DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits", and the previous permit. Dissolved oxygen must be measured 1/day and pH must be sampled 1/day using grab sampling. UV transmittance must be measured 1/day. CBOD5, TSS, and ammonia-nitrogen must be sampled 1/week using 8-hour composite sampling. Fecal coliform must be sampled 1/week using grab sampling. *E. coli* must be sampled 1/quarter using grab sampling. Total nitrogen and total phosphorus must be sampled 1/year using 8-hour sampling. Flow must be recorded continuously using a flow meter.

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	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Measured
CBOD5	37.0	56.0	XXX	25.0	37.5	50.0	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	1/week	8-Hr Composite
TSS	45.0	65.0	XXX	30.0	45.0	60.0	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
UV light transmittance (%)	XXX	XXX	Report	Report	XXX	XXX	1/day	Measured
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Ammonia-Nitrogen	Report	XXX	XXX	Report	Report Daily Max	XXX	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite

Compliance Sampling Location: Outfall 001

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment A)
☐	Toxics Management Spreadsheet (see Attachment)
☐	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.
☒	Standard Operating Procedure (SOP) for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits, SOP No. BCW-PMT-033, Version 1.9, March 24, 2021
☒	Standard Operating Procedure (SOP) for Clean Water Program New and Reissuance Sewage Individual NPDES Permit Applications, SOP No. BCW-PMT-002, Version 2.0, February 3, 2022
☐	Other:

ATTACHMENT A

WQM 7.0 Modeling Results

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
19A	37185	MONONGAHELA RIVER	77.600	763.00	4530.00	0.00010	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	0.117	0.00	530.00	0.000	0.000	0.0	600.00	12.00	25.00	7.00	25.00	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
Outfall 001	PA0254321	0.1800	0.0000	0.0000	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.38	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
19A	37185	MONONGAHELA RIVER	75.030	762.98	4556.00	0.00010	1.00	☑

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	0.117	0.00	530.00	0.000	0.000	0.0	600.00	12.00	25.00	7.00	25.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Modeling Specifications

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA 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												
77.600	530.00	0.00	530.00	.2785	0.00010	12	600	50	0.07	2.132	25.00	7.00
Q1-10 Flow												
77.600	339.20	0.00	339.20	.2785	0.00010	NA	NA	NA	0.05	3.331	25.00	7.00
Q30-10 Flow												
77.600	720.80	0.00	720.80	.2785	0.00010	NA	NA	NA	0.10	1.568	25.00	7.00

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
77.600	Outfall 001	11.08	50	11.08	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
77.600	Outfall 001	1.37	25	1.37	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
77.60	Outfall 001	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
77.600	0.180	24.997	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
600.000	12.000	50.000	0.074
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.01	0.002	0.01	1.028
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.378	0.084	O'Connor	5
Reach Travel Time (days)			
2.132			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.213	2.01	0.01	7.54
0.426	2.01	0.01	7.54
0.640	2.01	0.01	7.54
0.853	2.01	0.01	7.54
1.066	2.01	0.00	7.54
1.279	2.00	0.00	7.54
1.493	2.00	0.00	7.54
1.706	2.00	0.00	7.54
1.919	2.00	0.00	7.54
2.132	2.00	0.00	7.54

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
77.600	Outfall 001	PA0254321	0.180	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4