Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0210471**
Facility Type	**Municipal**	APS ID	**1077124**
Major / Minor	**Minor**	Authorization ID	**1420081**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Bessemer Municipal Authority**	Facility Name	**Bessemer Municipal Authority STP**
Applicant Address	PO Box 642	Facility Address	330 Smalls Ferry Road
	Bessemer, PA 16112-0642		Bessemer, PA 16122
Applicant Contact	Scott Lindey	Facility Contact	Roberta Penwell
Applicant Phone	(724) 667-0990	Facility Phone	(724) 667-0990
Client ID	112845	Site ID	457569
Ch 94 Load Status	Not Overloaded	Municipality	North Beaver Township
Connection Status	No Limitations	County	Lawrence
Date Application Received	December 2, 2022	EPA Waived?	Yes
Date Application Accepted	December 16, 2022	If No, Reason	

Purpose of Application: Renewal of Existing NPDES Permit

Summary of Review

The Bessemer Municipal Authority has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of a NPDES permit for the Bessemer Municipal Authority STP. The permit was last reissued on May 15, 2018 with an effective date of June 1, 2018. The permit expired on May 31, 2023, but the terms and conditions of the permit have been administratively extended since that time.

Based on the review outlined in this fact sheet, it is recommended that the permit be drafted, and a notice of the draft permit be published in the *Pennsylvania Bulletin* for public comments for 30 days.

Sludge use and disposal description and location(s): Republic Services' Carbon Limestone Landfill

Public Participation

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

Approve	Deny	Signatures	Date
x		*Aaron Baar* Aaron Baar / Project Manager	April 13, 2025
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	April 14, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.35
Latitude	40º 58' 42.42"	Longitude	-80º 28' 10.11"
Quad Name	Bessemer	Quad Code	1102
Wastewater Description:	Sewage Effluent		
Receiving Waters	Hickory Run (TSF)	Stream Code	35394
NHD Com ID	125561011	RMI	6.82
Drainage Area	15 sq. mi.	Yield (cfs/mi^2)	0.0529
Q_{7-10} Flow (cfs)	0.228	Q_{7-10} Basis	USGS #03102500 & StreamStats
Elevation (ft)	1035.26	Slope (ft/ft)	
Watershed No.	20-B	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	METALS, SILTATION		
Source(s) of Impairment	ACID MINE DRAINAGE, URBAN RUNOFF/STORM SEWERS		
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)	7.0	Assumed, default value
Temperature (°F)	25.0	TSF, default value (summer)
Hardness (mg/L)	100	Assumed, default value
Other:	0.1	Assumed, default value

Nearest Downstream Public Water Supply Intake		Beaver Falls Municipal Authority @ Eastvale	
PWS Waters	Allegheny River	Flow at Intake (cfs)	561
PWS RMI	3.5	Distance from Outfall (mi)	23

Drainage Area

The discharge is to Hickory Creek at RMI 6.82. A drainage area upstream of the discharge is determined to be 15 sq.mi. according to USGS PA StreamStats available at https://streamstats.usgs.gov/ss/.

Stream Flow

In accordance with the last renewal for this facility, the Low Flow Yield (LFY) was calculated from flow data collected at USGS Gage Station #03102500. The NWIS Discharge Period of Record for the Gage Station at the time records were pulled is 1/1/1914-3/15/2025. Gage Station data showed the following:

Gage Q_{7-10} = 5.5 cfs
Gage Drainage Area = 104 mi^2
Gage LFY = 5.5 cfs/104 mi^2 = 0.0529 cfs/mi^2

According to StreamStats, the watershed tributary to Outfall 001 has a drainage area of 15 mi^2. The Q_{7-10} was calculated by utilizing the LFY tributary to the Gage Station and multiplying by the drainage area behind Outfall 001, yielding a Q_{7-10} of 0.7932 cfs.

Outfall Q_{7-10} = Gage LFY x Outfall Drainage Area = 0.0529 cfs/mi^2 x 15 mi^2 = 0.7932 cfs

This information was used to obtain a chronic 30-day (Q_{30-10}) and acute (Q_{1-10}) exposure stream flows for the discharge point as follows (Guidance No. 391-2000-023).

Q_{7-10} = 0.7932 cfs
Q_{30-10} = 1.36 * 0.7932 cfs = 1.0788 cfs
Q_{1-10} = 0.64 * 0.7932 cfs = 0.5076 cfs

Hickory Creek

25 Pa Code §93.9 classifies the receiving water, Hickory Creek, with a Trout Stocking Fishery (TSF) Existing Use designation. Effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. The discharge is in a stream segment listed as attaining uses.

Local Watershed Total Maximum Daily Loads (TMDLs)

According to PA's 2024 Integrated Water Quality Monitoring and Assessment Report, Hickory Creek in the vicinity of the point of discharge is impaired for aquatic life due to metals from acid mine drainage and siltation from urban runoff. The waterway's impairments are both listed as Category 5 in the 2024 Integrated Report, indicating that the receiving water is impaired for one or more uses by a pollutant that require the development of a TMDL. No TMDL has been developed for Hickory Creek to date, so no local watershed TMDL has been taken into consideration during this review.

Public Water Supply Intake

The nearest downstream public water supply intake is the Beaver Falls Municipal Authority Eastvale intake, locate on the Allegheny River approximately 23 miles from the point of discharge. Considering the nature of the discharge and distance, the discharge is not expected to impact the water supply.

Class A Wild Trout Streams

The receiving stream is not a Class A Wild Trout stream; therefore, no Class A Wild Trout Fishery is impacted by this discharge.

Treatment Facility Summary

Treatment Facility Name: Bessemer Municipal Authority STP

WQM Permit No.	Issuance Date
3793401 A-1	06/12/2007

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia Reduction	Extended Aeration	Hypochlorite	0.35

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

The Bessemer Municipal Authority operates and owns the wastewater treatment facility located at 330 Smalls Ferry Road (North Beaver Township, Lawrence County). The facility currently serves Bessemer Borough and portions of North Beaver Township. With an annual average design flow and hydraulic design capacity of 0.35 MGD, the treatment process is as follows:

Influent PS → Comminutor → Extended Aeration Reactors (2) → Final Clarifiers (2) → Chlorine Disinfection (2) → Outfall 001

The application states that there is an alkalinity feed system and a polymer feed system that support wastewater treatment at the facility, but the chemicals and their usage rates are not identified. Aerobic digesters (2), Sludge Holding Tanks (2), and Sludge Drying Beds (4) are utilized for solids handling.

Compliance History	
Summary of DMRs:	DMR results for the past year are presented below.
Summary of Inspections:	Since the last renewal of the facility's NPDES permit, the following inspections have been logged in WMS: October 11, 2023: A routine CEI was conducted by Dan Pudlick. No violations were noted. Only observations are recorded. The following non-compliance was documented: 1. 25 Pa. Code 92a.41(a)(10): Failure to use an NIST thermometer. Composite sampler temperatures are not being recorded on sample days. 2. 25 Pa. Code 92a.61(c): Failure to monitor pollutants as required by the NPDES permit. The influent and effluent composite samplers are not setup for flow-proportioned composite sampling; see 'Composite Sample' definition in the NPDES Permit. This was noted in the previous inspection report. The samplers are reported to have the capability but proximity to the flow meter is the issue.

Other Comments: As of April 13, 2025, there are no open violations associated with this facility.

Existing Effluent Limitations 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 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.33	XXX	1.08	1/day	Grab
CBOD5	56.9	85.3	XXX	19.5	29.0	39	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	87.5	131.3	XXX	30.0	45.0	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-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
Total Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Ammonia Nov 1 - Apr 30	21.8	XXX	XXX	7.5	XXX	15	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	7.3	XXX	XXX	2.5	XXX	5	1/week	24-Hr Composite
Total Phosphorus	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite

Compliance Sampling Location: Outfall 001

Compliance History

DMR Data for Outfall 001 (from February 1, 2024 to January 31, 2025)

Parameter	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24
Flow (MGD) Average Monthly	0.216	0.220	0.158	0.131	0.166	0.203	0.186	0.185	0.253	0.487	0.322	0.242
Flow (MGD) Daily Maximum	0.398	0.366	0.224	0.147	0.190	0.327	0.301	0.256	0.331	1.218	0.578	0.332
pH (S.U.) Daily Minimum	7.5	7.5	7.5	7.5	7.5	7.0	7.3	7.5	7.4	7.4	7.4	7.4
pH (S.U.) Daily Maximum	7.9	8.0	7.9	7.9	7.9	7.8	7.8	7.8	7.8	7.9	8.0	7.9
DO (mg/L) Daily Minimum	6.9	6.1	5.0	5.4	5.4	6.0	5.2	5.8	6.4	5.6	7.5	5.3
TRC (mg/L) Average Monthly	0.30	0.27	0.28	0.22	0.09	0.10	0.13	0.26	0.27	0.26	0.23	0.27
TRC (mg/L) Instantaneous Maximum	0.43	0.39	0.37	0.39	0.36	0.40	0.40	0.41	0.47	0.71	0.35	0.40
CBOD5 (lbs/day) Average Monthly	< 4.7	< 3.9	< 2.8	< 2.4	< 2.8	< 3.8	5.0	< 4.9	7.7	11.3	< 5.9	< 8.8
CBOD5 (lbs/day) Weekly Average	8.2	< 5.8	3.6	2.9	< 3.2	5.7	7.8	6.4	8.9	16.2	< 9.6	13.8
CBOD5 (mg/L) Average Monthly	< 3.0	< 2.0	< 2.2	< 2.1	< 2.0	< 2.2	3.5	< 3.3	4.1	3.6	< 2.0	< 4.9
CBOD5 (mg/L) Weekly Average	5.1	< 2.0	2.9	2.5	2.1	2.7	5.0	4.4	4.6	5.2	2.0	7.8
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	238	262	210	150	191	171	190	253	242	408	258	337
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	318	525	419	234	235	241	288	385	381	656	363	513
BOD5 (mg/L) Raw Sewage Influent Average Monthly	154	121	157	135	137	99	132	165	130	122	89	183
TSS (lbs/day) Average Monthly	9.8	< 13.3	< 7.8	< 5.8	< 7.7	< 8.5	9.7	9.6	< 14.5	37.4	< 15.9	< 16.1

TSS (lbs/day) Raw Sewage Influent Average Monthly	252	277	240	225	239	200	211	288	206	395	290	269
TSS (lbs/day) Raw Sewage Influent Daily Maximum	449	488	414	282	340	296	378	462	316	483	443	397
TSS (lbs/day) Weekly Average	13.3	23.2	9.8	7.1	9.7	< 10.5	13.3	14.3	23.5	75.5	< 24.1	37.2
TSS (mg/L) Average Monthly	6.3	< 6.5	< 6.3	< 5.3	< 5.5	< 5.0	6.8	6.3	< 7.5	10.3	< 5.5	< 8.8
TSS (mg/L) Raw Sewage Influent Average Monthly	167	133	184	206	171	123	148	185	111	129	99	144
TSS (mg/L) Weekly Average	8.0	8.0	8.0	6.0	7.0	5.0	9.0	8.0	11.0	14.0	7.0	20.0
Fecal Coliform (No./100 ml) Geometric Mean	134	367	82	229	21	44	130	< 49	80	533	321	192
Fecal Coliform (No./100 ml) Instantaneous Maximum	2420	921	141	2420	45	63	986	579	172	2420	2420	2420
Total Nitrogen (lbs/day) Average Quarterly		15			30			25			20	
Total Nitrogen (mg/L) Average Quarterly		12.9			23.3			7.32			9.0	
Ammonia (lbs/day) Average Monthly	< 0.2	< 0.3	< 0.1	< 0.1	< 0.2	< 0.2	< 0.6	< 0.2	< 0.7	< 1.1	< 1.2	< 0.7
Ammonia (mg/L) Average Monthly	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.3	< 0.4	< 0.1	< 0.4	< 0.3	< 0.4	< 0.4
Total Phosphorus (lbs/day) Average Quarterly		3			< 0.1			3			3	
Total Phosphorus (mg/L) Average Quarterly		2.38			< 0.1			0.92			1.2	

Compliance History

There are no non-compliance actions on file for this facility as of April 13, 2025.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .35
Latitude 40º 58' 42.00" **Longitude** -80º 28' 11.50"
Wastewater Description: Sewage Effluent

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)

Comments: These standards apply, subject to water quality analysis and BPJ where applicable.

Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen (DO)

1. WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's guidance no. 391-2000-007 provides the technical methods contained in WQM 7.0 for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. The model was utilized using data derived by USGS StreamStats and the model output indicated that existing WQBELs for CBOD5 is still protective of water quality. However, the model also determined that existing WQBEL of 2.5 mg/L for ammonia (warm weather) is no longer protective of water quality. A new WQBEL of 2.3 mg/L for ammonia (warm weather) is proposed in this permit. Instantaneous limits for ammonia were updated with the Department's standard 2.0x multiplier. Updated winter limits were calculated with the Department's standard 3.0x multiplier for ammonia. Based on DMR data, the facility can already meet the proposed limits.

   The model also determined that the facility's existing DO limits of 4 mg/L are still protective of water quality.

   See attached for model inputs and outputs.

Toxics

A reasonable potential (RP) analysis was done for Copper, Lead and Zinc using the sampling results provided with the application. The Department's Toxics Management Spreadsheet (Version 1.4) was used to perform the RP analysis for these parameters at a pH of 7.0 and a discharge hardness of 100 mg/L. The sample sizes for all three parameters were less than 10, so the maximum reported effluent concentration was utilized in the analysis. The analysis indicates that limits for Total Copper are needed to be protective of water quality and that a monitoring requirement for Total Zinc would be appropriate.

☑ ***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			
Total Copper	0.065	0.1	0.022	0.035	0.055	mg/L	0.022	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	mg/L	0.19	AFC	Discharge Conc > 10% WQBEL (no RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Lead	7.84	µg/L	Discharge Conc ≤ 10% WQBEL

In conformity with the Department's SOP for Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers (SOP No. BCW-PMT-037), the Department proposes to establish Monitor and Report requirements for Total Copper initially and then 36-months later limits (more below) due to effluent concentration determined for Total Copper equaling or exceeding 50% of the WQBEL (i.e., RP is demonstrated). Monitor and Report requirements for also proposed for Total Zinc for exceeding 10% of the WQBEL .

Based on limited sampling results provided with the application, the existing facility appears to already be able to meet the recommended Total Copper limits. However, due to the limited sample size of the data (1 sample result), the Department proposes a monitor-and-report requirement for Total Copper for 35-months after permit issuance. During the 35-month monitor-and-report period, the permittee shall be required to conduct a Toxics Reduction Evaluation (TRE) in accordance with DEP's *Water Quality Toxics Management Strategy, Appendix C, Permittee Guidance for Conducting a Toxics Reduction Evaluation (*TRE) (PA Doc. No. 361-0100-003). The permittee shall investigate and address the following as part of the TRE:

1. The source(s) of the toxic pollutants in the effluent through a comprehensive review of influent and effluent quality and contributors to the facility, if applicable.
2. An evaluation of approaches and strategies that exist to reduce or eliminate sources in order to achieve the final WQBELs.
3. An evaluation of approaches and strategies that exist to provide treatment to achieve the final WQBELs.
4. An analysis of the feasibility of the approaches and strategies identified in paragraphs 2 and 3, above.

The permittee shall develop a TRE work plan and submit the work plan to DEP for review and comment in accordance with the schedule laid out in Part C, Section IV of the permit. At the conclusion of the proposed 35-month TRE, the average monthly, maximum daily and instantaneous maximum (IMAX) limits for Total Copper in the permit, as recommended by the TMS v1.4 (above), are proposed to take effect at the beginning of the 36th month after final permit issuance.

In conformity with the Department's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (PA Doc No. 362-0400-001), Table 6-3 (plant design flow = 0.45 mgd,), weekly testing of Total Copper and Total Zinc is proposed.

The full TMS report is presented at the end of this report.

E. Coli Monitoring

In conformity with the Department's *Establishing Effluent Limitations for Individual Sewage Permits* (SOP No. BCW-PMT-033) and as authorized by § 92a.61 of the PA Code, quarterly E. Coli monitoring has been proposed in this permit. The collection method will be via grab sample.

Best Professional Judgment (BPJ) Limitations

Total Residual Chlorine

Since chlorine is used for disinfection, Total Residual Chlorine (TRC) effluent levels must be regulated in accordance with 25 Pa Code §92a.48(b). DEP's TRC_CALC worksheet is utilized to determine if the existing BAT TBEL is still appropriate. The worksheet indicates that the existing limits of 0.33 mg/L (average monthly) and 1.08 mg/L (IMAX) are no longer protective of water quality. New limits of 0.22 mg/L (average monthly) and 0.73 mg/L (IMAX) are proposed in this draft. A review of the facility's DMR data indicates that it will not be able to meet the proposed TRC limits more than 75% of the time; therefore, a compliance schedule is appropriate. The Department proposes giving the facility 36-months to meet to the proposed TRC limits – see Part C, Section II of the permit for details.

The Department's TRC_CALC worksheet is presented at the end of this report.

Total Phosphorus & Total Nitrogen

DEP's SOP no. BPNPSM-PMT-033 (Establishing Effluent Limitations for Individual Sewage Permits) recommends monitoring requirements for Total Phosphorus and Total Nitrogen for all sewage facilities. Therefore, routine monitoring for Total Phosphorus and Total Nitrogen are recommended to be continued in this permit. Sampling frequency for is currently required 1/quarter, which is consistent with Table 6.3 in Guidance Doc. 362-0400-001. No change is proposed.

Additional Considerations

Flow Monitoring

The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii).

Monitoring Frequency and Sample Type

Unless discussed otherwise above, the permit's monitoring frequency and sample type for all parameters will remain unchanged from the last permit renewal.

Antidegradation Requirements

All effluent limitations and monitoring requirements 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.

Anti-backsliding Requirement

All effluent limits proposed in this fact sheet are as stringent as effluent limits specified in the existing permit renewal unless noted otherwise above. This approach is in accordance with 40 CFR §122.44(l(1).

Annual Fees

An annual fee clause is continued in the permit in accordance with 25 Pa. Code § 92a.62. The facility covered by the permit is classified in the Minor Sewage Facility >=0.05 and <1 MGD fee category, which has an annual fee of $1,000.

Mass Loading Limitations

Unless stated otherwise in this fact sheet, mass loading effluent limits are calculated based on the formula: design flow (average annual) (MGD) x concentration limit (mg/L) at design flow x conversion factor (8.34).

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" (386-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through (35-Months after Issuance).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
TRC	XXX	XXX	XXX	0.33	XXX	1.08	1/day	Grab
Total Copper	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 001

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" (386-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: (36-Months after Issuance) 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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
TRC	XXX	XXX	XXX	0.22	XXX	0.73	1/day	Grab
Total Copper	0.065	0.1 Daily Max	XXX	0.022	0.035 Daily Max	0.055	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 001

Proposed Effluent Limitations and Monitoring Requirements

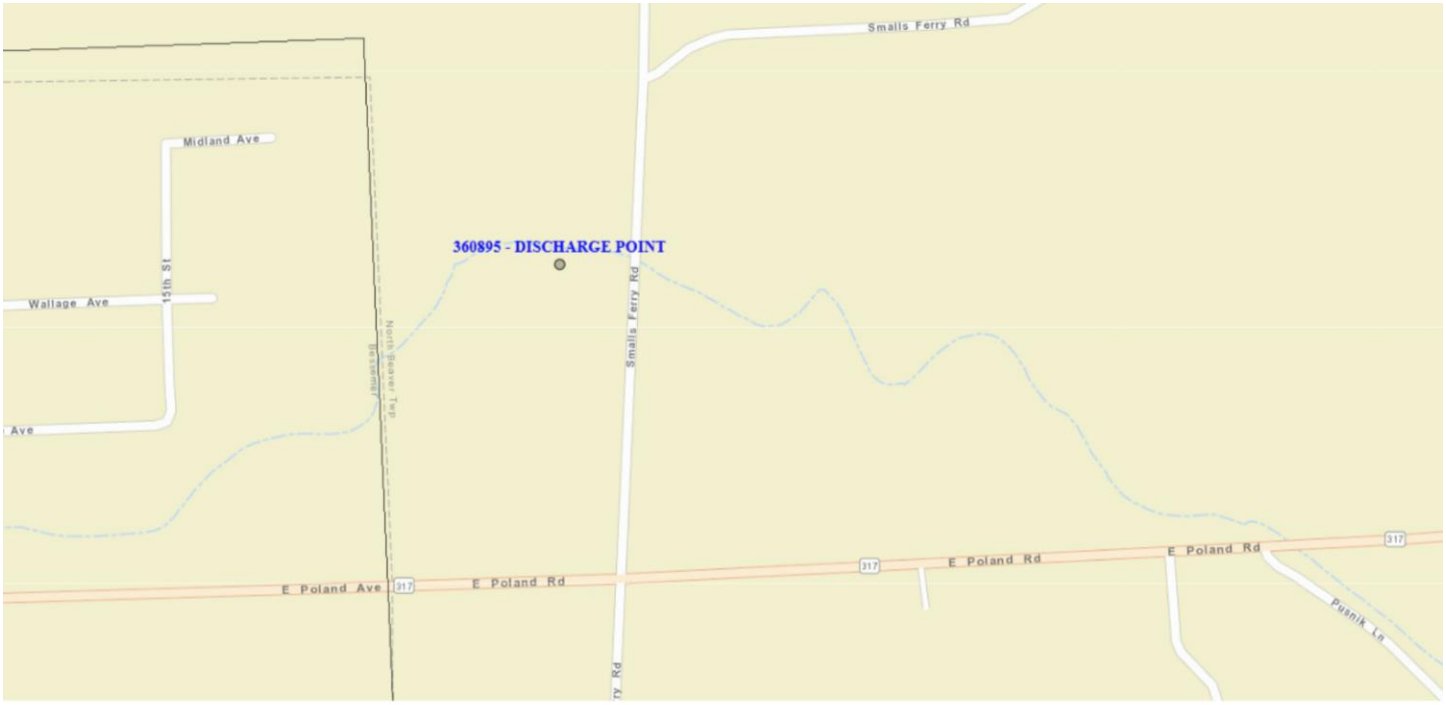
The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), 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 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
CBOD5	56.9	85.3	XXX	19.5	29.0	39	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	87.5	131.3	XXX	30.0	45.0	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-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	Report Avg Qrtly	Report Daily Max	XXX	1/quarter	Grab
Total Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Ammonia Nov 1 - Apr 30	20.1	XXX	XXX	6.9	XXX	13.8	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	6.7	XXX	XXX	2.3	XXX	4.6	1/week	24-Hr Composite
Total Phosphorus	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Zinc	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite

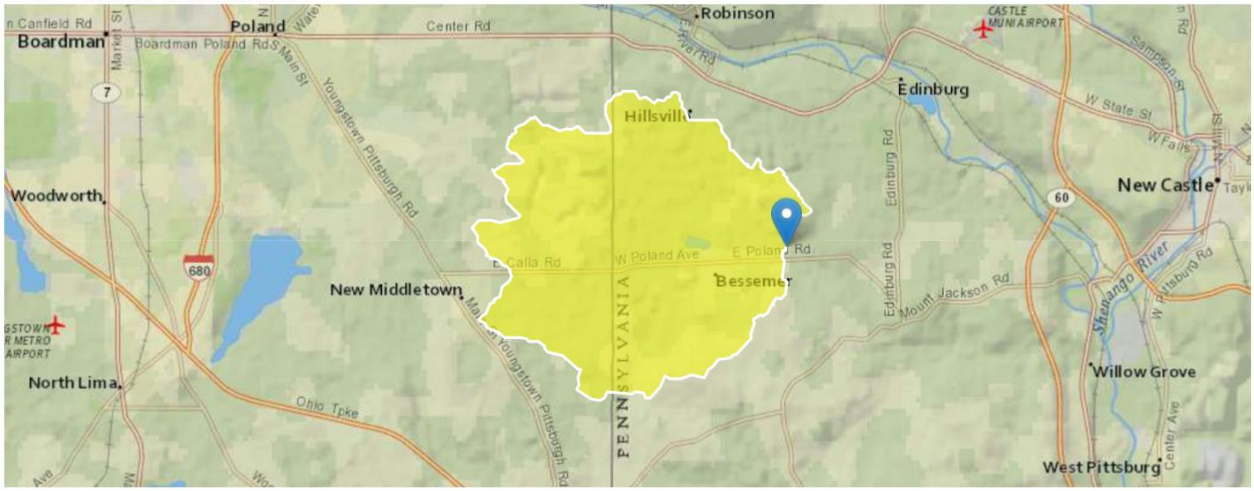
Compliance Sampling Location: Outfall 001

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


Smalls Ferry Rd
Midland Ave
360895 - DISCHARGE POINT
Wallage Ave
15th St
North Beaver Twp
Smalls Ferry Rd
E Poland Ave
317
E Poland Rd
E Poland Rd
317
E Poland Rd
317
Pusnik Ln

StreamStats Report

Region ID: PA
Workspace ID: PA20250316111817419000
Clicked Point (Latitude, Longitude): 40.97850, -80.46981
Time: 2025-03-16 07:18:43 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	15	square miles
ELEV	Mean Basin Elevation	1164	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	15	square miles	2.26	1400
ELEV	Mean Basin Elevation	1164	feet	1050	2580

Low-Flow Statistics Flow Report [Low Flow Region 4]

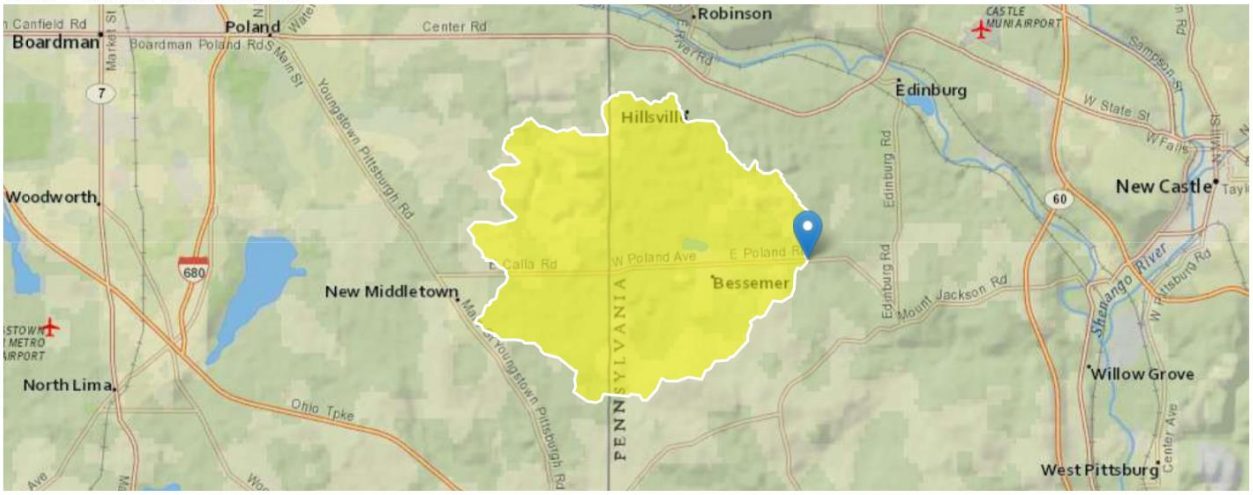
PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.599	ft^3/s	43	43
30 Day 2 Year Low Flow	1.02	ft^3/s	38	38
7 Day 10 Year Low Flow	0.228	ft^3/s	66	66
30 Day 10 Year Low Flow	0.397	ft^3/s	54	54
90 Day 10 Year Low Flow	0.707	ft^3/s	41	41

Low-Flow Statistics Citations

StreamStats Report

Region ID: PA
Workspace ID: PA20250316113005279000
Clicked Point (Latitude, Longitude): 40.97625, -80.46282
Time: 2025-03-16 07:30:31 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	15.4	square miles
ELEV	Mean Basin Elevation	1162	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	15.4	square miles	2.26	1400
ELEV	Mean Basin Elevation	1162	feet	1050	2580

Low-Flow Statistics Flow Report [Low Flow Region 4]

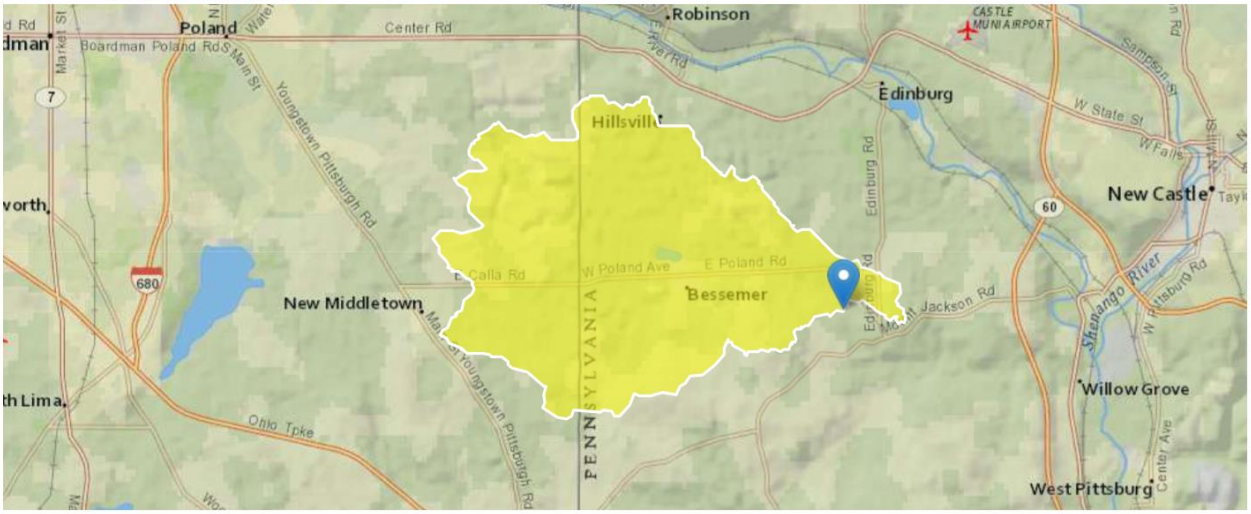
PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.616	ft^3/s	43	43
30 Day 2 Year Low Flow	1.04	ft^3/s	38	38
7 Day 10 Year Low Flow	0.235	ft^3/s	66	66
30 Day 10 Year Low Flow	0.409	ft^3/s	54	54
90 Day 10 Year Low Flow	0.727	ft^3/s	41	41

Low-Flow Statistics Citations

StreamStats Report

Region ID: PA
Workspace ID: PA20250316121243465000
Clicked Point (Latitude, Longitude): 40.96807, -80.44737
Time: 2025-03-16 08:13:08 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	17.3	square miles
ELEV	Mean Basin Elevation	1157	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	17.3	square miles	2.26	1400
ELEV	Mean Basin Elevation	1157	feet	1050	2580

Low-Flow Statistics Flow Report [Low Flow Region 4]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.701	ft^3/s	43	43
30 Day 2 Year Low Flow	1.18	ft^3/s	38	38
7 Day 10 Year Low Flow	0.271	ft^3/s	66	66
30 Day 10 Year Low Flow	0.466	ft^3/s	54	54
90 Day 10 Year Low Flow	0.824	ft^3/s	41	41

StreamStats Gage Page

Gage Information

Name	Value
USGS Station Number	**03102500 (https://waterdata.usgs.gov/monitoring-location/03102500)**
Station Name	Little Shenango River at Greenville, Pa.
Station Type	Gaging Station, continuous record
Latitude	41.422
Longitude	-80.37617
NWIS Latitude	41.42199889
NWIS Longitude	-80.376178
Is regulated?	false
Agency	United States Geological Survey
NWIS Discharge Period of Record	01/01/1914 - 03/15/2025

Physical Characteristics

Filter By Statistic Group: Select ▾ Filter By Citation: Select ▾

Geological Characteristics

Characteristic Name	Value	Units	Citation
Depth to Rock	6.11916666666667	feet	**139**
Percent Carbonate	0	percent	**142**
Percent of Glaciation	100	percent	**139**
Percent Carbonate	0	percent	**169**

Basin Dimensional Characteristics

Characteristic Name	Value	Units	Citation
Drainage Area	104	square miles	**142**

Stream Channel Properties

Characteristic Name	Value	Units	Citation
Stream Density	2.27	miles per square mile	**139**

Topographical Characteristics

Characteristic Name	Value	Units	Citation
Mean Basin Elevation	1210	feet	**142**
Mean Basin Slope degrees	2.73	degrees	**139**
Maximum Basin Elevation	1478	feet	**169**
Mean Basin Slope degrees	3.06	degrees	**169**

Precipitation Statistics

Characteristic Name	Value	Units	Citation
Mean Annual Precipitation	40.51	inches	**139**

Land Cover Characteristics

Characteristic Name	Value	Units	Citation
Percent Forest	44.38	percent	**139**
Percent Storage	5.83	percent	**142**
Percent Urban	2.47	percent	**142**
Percent Storage	3.53	percent	**169**

Streamflow Statistics

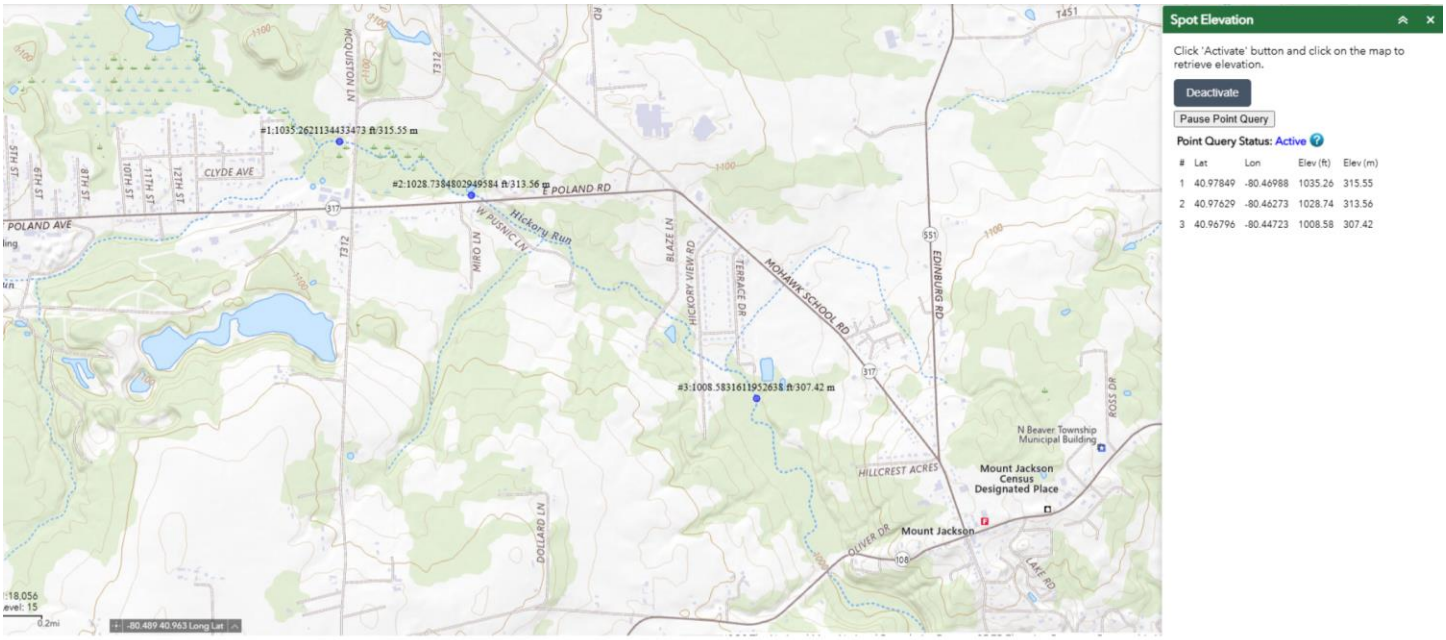
Filter By Statistic Group: Select Filter By Citation: Select Show Only Preferred

Peak-Flow Statistics

Low-Flow Statistics

Statistic Name	Value	Units	Preferred?	Years of Record	Standard Error, percent	Citation	Comments
1 Day 10 Year Low Flow	4.8	cubic feet per second	✓	90		**49**	Statistic Date Range 4/1/1914 - 3/31/2008
7 Day 2 Year Low Flow	10.4	cubic feet per second	✓	90		**49**	Statistic Date Range 4/1/1914 - 3/31/2008
7 Day 10 Year Low Flow	5.5	cubic feet per second	✓	90		**49**	Statistic Date Range 4/1/1914 - 3/31/2008
30 Day 2 Year Low Flow	13.8	cubic feet per second	✓	90		**49**	Statistic Date Range 4/1/1914 - 3/31/2008
30 Day 10 Year Low Flow	7.1	cubic feet per second	✓	90		**49**	Statistic Date Range 4/1/1914 - 3/31/2008
90 Day 10 Year Low Flow	9.7	cubic feet per second	✓	90		**49**	Statistic Date Range 4/1/1914 - 3/31/2008
Low flow years	90	years	✓	90		**49**	

Flow-Duration Statistics


Spot Elevation
Click 'Activate' button and click on the map to retrieve elevation.
Deactivate
Pause Point Query
Point Query Status: Active
Lat Lon Elev (ft) Elev (m)
1 40.97849 -80.46988 1035.26 315.55
2 40.97629 -80.46273 1028.74 313.56
3 40.96796 -80.44723 1008.58 307.42
#1:1035.2621134433473 ft/315.55 m
#2:1028.7384802949584 ft/313.56 m
#3:1008.5831611952638 ft/307.42 m
POLAND AVE
POLAND RD
CLYDE AVE
Hickory Run
MOHAWK SCHOOL RD
HILLCREST ACRES
Mount Jackson Census Designated Place
Mount Jackson
N Beaver Township Municipal Building
-80.489 40.963 Long Lat

TRC_CALC

1A	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	0.793269	= Q stream (cfs)		0.5	= CV Daily	
5	0.35	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)			=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 0.486		1.3.2.iii	WLA cfc = 0.467
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 0.181		5.1d	LTA_cfc = 0.271
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.223		AFC	
18			INST MAX LIMIT (mg/l) = 0.730			

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)

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Bessemer SP** NPDES Permit No.: **PA0210471** Outfall No.: **001**

Evaluation Type: **Custom / Additives** Wastewater Description: **Municipal 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
0.35	100	7.6						

				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
Total Copper	mg/L		0.021									
Total Lead	mg/L	<	0.005									
Total Zinc	mg/L		0.02									

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Bessemer SP, NPDES Permit No. PA0210471, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Hickory Run**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	035394	6.82	1035.26	15			Yes
End of Reach 1	035394	6.34	1028.74	15.4			Yes

Q $_{7\text{-}10}$

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	6.82	0.0529										100	7		
End of Reach 1	6.34	0.0529													

Q $_{h}$

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	6.82														
End of Reach 1	6.34														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Bessemer SP, NPDES Permit No. PA0210471, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 8.261 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.16

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	13.439	14.0	34.5	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	201	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	295	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 8.261 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.16

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	8.956	9.33	23.0	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	7.84	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	295	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 8.261 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total 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): 6.856 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total 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
Total Copper	0.065	0.1	0.022	0.035	0.055	mg/L	0.022	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	mg/L	0.19	AFC	Discharge Conc > 10% WQBEL (no RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Lead	7.84	µg/L	Discharge Conc ≤ 10% WQBEL

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20B	35394	HICKORY RUN

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)
6.820	Bessemer STP	PA0210471	0.350	CBOD5	19.5		
				NH3-N	2.32	4.64	
				Dissolved Oxygen			4

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20B	35394	HICKORY RUN

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
6.820	Bessemer STP	4.76	5	4.76	5	0	0
6.340		NA	NA	4.75	NA	NA	NA

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
6.820	Bessemer STP	.84	2.32	.84	2.32	0	0
6.340		NA	NA	.84	NA	NA	NA

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)		
6.82	Bessemer STP	19.5	19.5	2.32	2.32	4	4	0	0
6.34		NA	NA	NA	NA	NA	NA	NA	NA

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20B	35394	HICKORY RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
6.820	0.350	22.028	7.827
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
18.810	0.551	34.143	0.129
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
9.10	1.269	1.00	0.818
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.522	3.304	Tsivoglou	4
Reach Travel Time (days)			
0.228			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.023	8.81	0.98	6.20
0.046	8.54	0.96	5.91
0.068	8.27	0.95	5.66
0.091	8.01	0.93	5.44
0.114	7.76	0.91	5.25
0.137	7.52	0.89	5.08
0.159	7.29	0.88	4.94
0.182	7.06	0.86	4.82
0.205	6.84	0.85	4.72
0.228	6.63	0.83	4.64

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
6.340	0.350	21.996	7.830
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
18.793	0.550	34.157	0.131
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
6.55	1.097	0.82	0.816
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
4.700	4.023	Tsivoglou	4
Reach Travel Time (days)			
0.578			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.058	6.11	0.78	4.82
0.116	5.70	0.74	4.95
0.173	5.32	0.71	5.11
0.231	4.96	0.68	5.27
0.289	4.63	0.65	5.43
0.347	4.32	0.62	5.60
0.404	4.03	0.59	5.77
0.462	3.76	0.56	5.93
0.520	3.51	0.54	6.09
0.578	3.27	0.51	6.24

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	4		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20B	35394	HICKORY RUN

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												
6.820	0.79	0.00	0.79	.5414	0.00257	.551	18.81	34.14	0.13	0.228	22.03	7.83
6.340	0.81	0.00	0.81	.5414	0.00308	.55	18.79	34.16	0.13	0.578	22.00	7.83
Q1-10 Flow												
6.820	0.51	0.00	0.51	.5414	0.00257	NA	NA	NA	0.11	0.261	22.58	7.77
6.340	0.52	0.00	0.52	.5414	0.00308	NA	NA	NA	0.11	0.662	22.55	7.78
Q30-10 Flow												
6.820	1.08	0.00	1.08	.5414	0.00257	NA	NA	NA	0.14	0.204	21.67	7.86
6.340	1.11	0.00	1.11	.5414	0.00308	NA	NA	NA	0.15	0.518	21.64	7.87

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
20B	35394	HICKORY RUN	**6.820**	1035.26	15.00	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	0.053	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	8.10	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
Bessemer STP	PA0210471	0.3500	0.3500	0.3500	0.000	25.00	7.60

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	19.50	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	2.50	0.10	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
20B	35394	HICKORY RUN	**6.340**	1028.74	15.40	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	0.053	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	8.10	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	3.00	8.24	0.00	0.00
NH3-N	0.00	0.10	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
20B	35394	HICKORY RUN	**5.100**	1008.58	17.30	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	0.053	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	8.10	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
Hickoryview STP	PA0104108	0.2230	0.2230	0.2230	0.000	25.00	7.20

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	3.20	0.10	0.00	0.70