pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0022195**
Facility Type	**Municipal**	APS ID	**1102131**
Major / Minor	**Minor**	Authorization ID	**1464033**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Catawissa Borough Columbia County**	Facility Name	**Catawissa Borough STP**
Applicant Address	307 Main Street	Facility Address	S First Street
	Catawissa, PA 17820-1315		Catawissa, PA 17820-0044
Applicant Contact	Connie Cole	Facility Contact	Bob Dunkleburger
Applicant Phone	(570) 356-2561	Facility Phone	(570) 355-2561
Client ID	65143	Site ID	257479
Ch 94 Load Status	Not Overloaded	Municipality	Catawissa Borough
Connection Status	No Limitations	County	Columbia
Date Application Received	November 28, 2023	EPA Waived?	Yes
Date Application Accepted	December 12, 2023	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit

Summary of Review

The subject facility is a minor Publicly Owned Treatment Works (POTW) serving Catawissa Borough in Columbia County.

A map of the discharge location is attached (Attachment A).

Sludge use and disposal description and location(s): The facility's dewatered sludge is sent to other WWTPs for further processing.

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
✓		Keith C. Allison Keith C. Allison / Project Manager	May 22, 2024
✓		N. W. H. Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	May 23, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.2
Latitude	40º 57' 3.55"	Longitude	-76º 27' 58.27"
Quad Name	Catawissa, PA	Quad Code	1134
Wastewater Description:	Sewage Effluent		
Receiving Waters	Catawissa Creek (TSF)	Stream Code	27529
NHD Com ID	65641537	RMI	0.06
Drainage Area	153 mi^2	Yield (cfs/mi^2)	0.335
Q_{7-10} Flow (cfs)	51.2	Q_{7-10} Basis	Streamgage No. 01468500, Schuylkill River @Pandingville, PA
Elevation (ft)	447	Slope (ft/ft)	0.00032
Watershed No.	5-E	Chapter 93 Class.	TSF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	METALS		
Source(s) of Impairment	ACID MINE DRAINAGE		
TMDL Status	Final	Name	Catawissa Creek
Nearest Downstream Public Water Supply Intake	Danville Municipal Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	1,130
PWS RMI	138.06	Distance from Outfall (mi)	7

Changes Since Last Permit Issuance: The above stream and drainage characteristics were determined for a previous review and remain adequate except for an updated flow yield and stream flow.

Other Comments: This discharge is not affecting the above-listed impairment by AMD metals in Catawissa Creek and is not identified as a contributor to the impairment in the TMDL. The impairment to Catawissa Creek is due to mine drainage. The permittee provided monitoring results for Total Aluminum, Total Iron, and Total Manganese - the metals typically associated with AMD impairment. The results for all three are below their respective instream criteria and therefore, the discharge is not expected to be contributing to the impairment and no additional monitoring will be required at this time related to these impairments.

The discharge is not expected to affect any downstream water supply at this time with the limitations and monitoring proposed.

Treatment Facility Summary

Treatment Facility Name: Borough of Catawissa

WQM Permit No.	Issuance Date	Permit For:
1987406	A-3 – 2/14/20 A-2 – 7/2/15 T-1 – 6/21/94 Original – 8/20/87_	Replacement of air piping, diffusers, valves, and clarifier skimmers Change from gas to liquid chlorination Transfer

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Hypochlorite	0.2

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.2	340	Not Overloaded	Dewatering	Other WWTP

Changes Since Last Permit Issuance: The improvements under WQM Permit No. 1987406 A-3 have been made.

Other Comments: The facilities as permitted under WQM Permit No. 1987406 A-3 consists of two comminutors, a manual bar screen, two aeration tanks, two clarifiers, two chlorine contact tanks with sodium hypochlorite disinfection, and an aerated sludge holding tank.

Industrial Users

The facility does not have any significant industrial users. The industrial users identified in the application include:

- Catawissa Bottling (<75 GPD)
- Mellick Aqua Feed (<75 GPD)
- Catawissa Monument (<75 GPD)

Hauled-In-Waste

Per the application, the facility has not received any hauled-in wastes over the past three years and the permittee does not anticipate receiving any over the next permit term.

Compliance History

DMR Data for Outfall 001 (from April 1, 2023 to March 31, 2024)

Parameter	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23
Flow (MGD) Average Monthly	0.1270	0.0740	0.1210	0.1000	0.0670	0.0750	0.0700	0.0730	0.0680	0.0540	0.0920	0.0470
Flow (MGD) Daily Maximum	0.2910	0.1180	0.3610	0.3840	0.1450	0.1420	0.1580	0.1550	0.1620	0.0780	0.4590	0.1160
pH (S.U.) Instantaneous Minimum	6.4	6.4	6.4	6.3	6.3	6.2	6.6	6.6	6.6	6.3	6.5	6.3
pH (S.U.) Instantaneous Maximum	6.8	6.9	6.9	6.9	6.9	7.0	7.1	7.0	7.1	7.1	7.1	7.1
DO (mg/L) Instantaneous Minimum	7.0	8.2	7.6	5.0	5	5.0	5.0	5.0	5.0	5.0	5.0	5
TRC (mg/L) Average Monthly	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.10	0.20	0.10
TRC (mg/L) Instantaneous Maximum	0.50	0.10	0.10	0.10	0.10	0.10	0.40	0.20	0.20	0.30	0.20	0.20
CBOD5 (lbs/day) Average Monthly	< 7	< 3	< 5	< 8	< 3	< 4	< 3	< 4	< 3	< 3	< 7	< 2
CBOD5 (lbs/day) Weekly Average	< 11	< 4	< 9	< 19	< 4	< 5	< 5	< 6	< 4	< 4	< 19	< 3
CBOD5 (mg/L) Average Monthly	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.78	< 6.0
CBOD5 (mg/L) Weekly Average	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	9.88	< 6.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	170	154	249	198	324	195	138	174	226	236	147	78
BOD5 (mg/L) Raw Sewage Influent Average Monthly	197	282	317	302	632	329	259	257	396	515	266	189
TSS (lbs/day) Average Monthly	18	< 6	11	< 51	< 6	< 4	< 5	< 4	4	< 3	< 6	3
TSS (lbs/day) Raw Sewage Influent Average Monthly	235	99	248	191	197	131	101	141	191	54	207	108

TSS (lbs/day) Weekly Average	29	10	21	184	13	5	8	7	5	3	< 16	4
TSS (mg/L) Average Monthly	16.0	< 11.7	11.3	< 21.3	< 11.8	< 6.4	< 8.3	< 6.4	7.1	< 5.1	< 6.4	7.3
TSS (mg/L) Raw Sewage Influent Average Monthly	257	177	325	268	378	227	179	208	326	310	215	312
TSS (mg/L) Weekly Average	19.5	16.7	16.3	57.5	26.1	7.2	11.1	10.2	8.0	5.4	9.0	9.0
Fecal Coliform (No./100 ml) Geometric Mean	< 12	< 1	< 1	< 2	< 1	< 1	< 6	< 1	< 1	< 1	< 5	< 1
Fecal Coliform (No./100 ml) Instantaneous Maximum	2419.6	1.0	1	24.9	2	< 1	1299.7	1	< 1	2	2419.6	< 1
Total Nitrogen (lbs/day) Average Monthly	13	11	13	16	6	6	8	583	5	3	8	5
Total Nitrogen (mg/L) Average Monthly	8.88	17.32	25.03	26.61	10.24	12.31	12.95	592.91	9.92	7.36	12.74	26.01
Ammonia (lbs/day) Average Monthly	4	0.3	< 0.1	0.2	0.4	0.1	1	2	2	1	1	0.1
Ammonia (mg/L) Average Monthly	2.44	0.44	< 0.2	0.338	0.579	0.295	2.32	2.41	3.47	2.4	1.84	0.726
Total Phosphorus (lbs/day) Average Monthly	4	2	2	2	1	2	3	4	2	1	1	0.8
Total Phosphorus (mg/L) Average Monthly	2.67	3.17	3.84	3.7	1.65	3.54	4.56	4.55	4.97	3.48	2.33	4.18
Total Copper (lbs/day) Daily Maximum				0.007								
Total Copper (mg/L) Daily Maximum				0.0347								

Compliance History

Effluent Violations for Outfall 001, from: April 1, 2023 To: March 31, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TSS	12/31/23	Avg Mo	< 51	lbs/day	50	lbs/day
TSS	12/31/23	Wkly Avg	184	lbs/day	75	lbs/day
TSS	12/31/23	Wkly Avg	57.5	mg/L	45.0	mg/L
Fecal Coliform	05/31/23	IMAX	2419.6	No./100 ml	1000	No./100 ml
Fecal Coliform	09/30/23	IMAX	1299.7	No./100 ml	1000	No./100 ml

Compliance History	
Summary of Inspections:	The facility has been inspected at least annually over the past permit term. The most recent inspection on January 25, 2023 identified a DMR violation but no operational violations at the time of inspection.
Other Comments:	A query in WMS found no open violations in eFACTS for Catawissa Borough.

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	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	41	65	XXX	25.0	40.0	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	50	75	XXX	30.0	45.0	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	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
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Ammonia	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Copper	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.2
Latitude 40º 57' 5.40" **Longitude** -76º 27' 56.50"
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: The above limitations are applicable and are included in the existing permit.

Water Quality-Based Limitations

DO, CBOD5 and NH3-N

The WQM7.0 model allows the Department to evaluate point source discharges of dissolved oxygen (DO), carbonaceous BOD ($CBOD_5$), and ammonia-nitrogen (NH_3-N) into free-flowing streams and rivers. To accomplish this, the model simulates two basic processes: the mixing and degradation of NH_3-N in the stream and the mixing and consumption of DO in the stream due to the degradation of $CBOD_5$ and NH_3-N. WQM7.0 modeling was performed (see Attachment B) for the discharge to the Catawissa Creek and showed that no limitations are necessary for these parameters beyond the technology-based secondary treatment limits listed above.

Total Residual Chlorine

The Department uses a modeling spreadsheet to analyze the toxicity of a discharge's TRC in a receiving stream, accounting for available dilution. The attached results of the TRC spreadsheet (see Attachment C) show that the technology-based limit of 0.5 mg/l is adequate to protect the receiving stream.

Water Quality Toxics Management

A "Reasonable Potential Analysis" was performed to determine additional parameters with the reasonable potential to violate water quality standards (see the Toxics Management Spreadsheet, Attachment D). The Toxics Management Spreadsheet (TMS) is a mass-balance water quality analysis model that includes consideration for mixing and other factors to determine recommended water quality-based effluent limits. The model incorporates the water quality criteria of 25 Pa.Code §93.

The TMS recommended that the existing monitoring for Total Copper continue and thus is will remain at the existing annual frequency.

Pollutant	Highest Sample Results (µg/L)	WQBEL (µg/L)	TMS Result
Total Copper	77	200	Monitoring Recommended

Chesapeake Bay/Nutrient Requirements

A portion of the Chesapeake Bay and many of its tidal tributaries have been listed as impaired under Section 303(d) of the Water Pollution Control Act, 33 U.S.C. §1313(d). Total Nitrogen and Total Phosphorus cap loads have been established for significant dischargers in Pennsylvania in order to reduce the total nutrient load to the Bay and meet State of Maryland Water Quality Standards. Catawissa Borough is considered a Phase 4, Non-Significant Chesapeake Bay discharger and thus has received no nutrient cap loads pursuant to the Phase III Watershed Implementation Plan. Monitoring performed over the past permit term for Total Nitrogen and Total Phosphorus has averaged 30.8 mg/L and 3.9 mg/L, respectively. Monthly monitoring will continue consistent with the Phase III WIP for this Phase 4 discharge.

Best Professional Judgment (BPJ) Limitations

Comments: No additional BPJ limitations are necessary at this time beyond the technology and water quality-based limitations noted above.

Anti-Backsliding

No proposed limitations have been made less stringent consistent with the Anti-degradation requirements of The Clean Water Act and 40 CFR 122.44(I).

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	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	41	65	XXX	25.0	40.0	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	50	75	XXX	30.0	45.0	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	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
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Ammonia	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Copper	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/year	Grab

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		
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	Grab

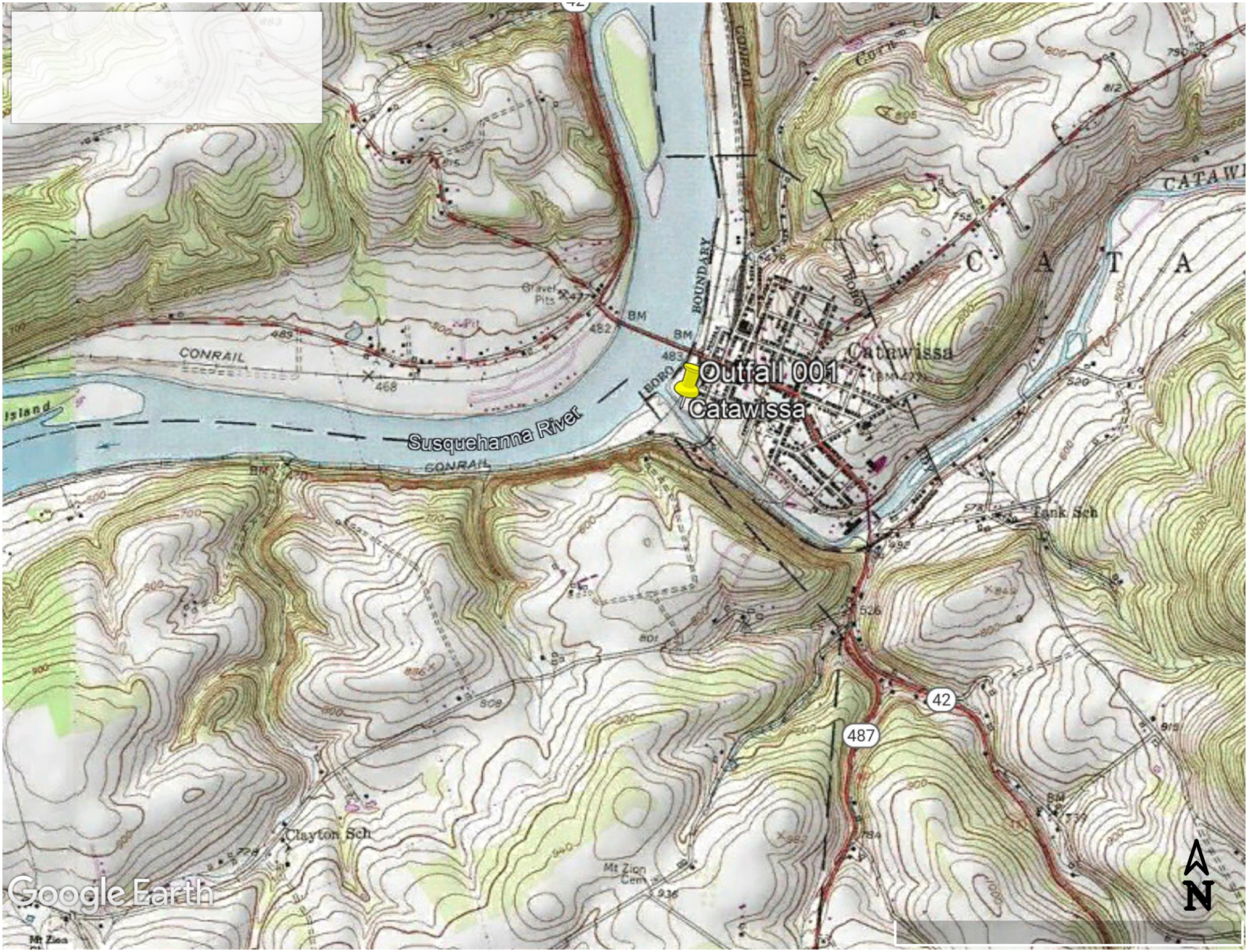
Compliance Sampling Location: Outfall 001

Other Comments: E. coli monitoring is new consistent with recent changes to Chapter 93 of the Department's regulations and current Department policy.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	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:

Attachments:

A. Discharge Location Map
B. WQM7.0
C. TRC Model
D. Toxics Management Spreadsheet


Outfall 001
Catawissa
Susquehanna River
CONRAIL
BOUNDARY
BORO
Catawissa
Clayton Sch
Mt Zion Cem
Tank Sch
42
487
Google Earth
N

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
05E	27529	CATAWISSA CREEK	**0.060**	447.00	152.81	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	0.335	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	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
Catawissa Boro	PA0022195	0.2000	0.0000	0.0000	0.000	25.00	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

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
05E	27529	CATAWISSA CREEK	**0.000**	446.90	152.82	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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.335	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	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 (ºC)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	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 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
05E	27529	CATAWISSA CREEK

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 (ºC)	Analysis pH
Q7-10 Flow												
0.060	51.19	0.00	51.19	.3094	0.00032	.973	105.42	108.39	0.50	0.007	20.03	7.00
Q1-10 Flow												
0.060	32.76	0.00	32.76	.3094	0.00032	NA	NA	NA	0.39	0.009	20.05	7.00
Q30-10 Flow												
0.060	69.62	0.00	69.62	.3094	0.00032	NA	NA	NA	0.60	0.006	20.02	7.00

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	6		

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
05E	27529	CATAWISSA CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
0.060	0.200	20.030	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
105.416	0.973	108.393	0.502
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.14	0.105	0.15	0.702
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.211	0.741	Tsivoglou	6
Reach Travel Time (days)			
0.007			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.001	2.14	0.15	8.21
0.001	2.14	0.15	8.21
0.002	2.14	0.15	8.21
0.003	2.14	0.15	8.21
0.004	2.14	0.15	8.21
0.004	2.14	0.15	8.21
0.005	2.14	0.15	8.21
0.006	2.14	0.15	8.21
0.007	2.14	0.15	8.21
0.007	2.14	0.15	8.21

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
05E	27529	CATAWISSA CREEK

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
0.060	Catawissa Boro	16.7	50	16.7	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
0.060	Catawissa Boro	1.88	25	1.88	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)		
0.06	Catawissa Boro	25	25	25	25	3	3	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
05E	27529	CATAWISSA CREEK

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)
0.060	Catawissa Boro	PA0022195	0.200	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

51.2	= Q stream (cfs)	0.5	= CV Daily
0.2	= 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)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 52.808	1.3.2.iii	WLA cfc = 51.476
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 19.677	5.1d	LTA_cfc = 29.926

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)

Discharge Information

Instructions | Discharge | Stream

Facility: **Catawissa Borough** NPDES Permit No.: **PA002195** Outfall No.: **001**

Evaluation Type **Custom / Additives** Wastewater Description: **POTW**

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
0.2	100	7						

				0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Total Copper	mg/L		0.0304									
Total Lead	mg/L		0.00205									
Total Zinc	mg/L		0.0523									
Total Aluminum	mg/L		0.158									
Total Iron	mg/L		0.253									
Total Manganese	mg/L		0.015									

Stream / Surface Water Information

Catawissa Borough, NPDES Permit No. PA002195, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Catawissa Creek**

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	027529	0.06	447	152.81			Yes
End of Reach 1	027529	0.001	446.9	152.82			Yes

Q ***7-10***

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	0.06	0.335										100	7		
End of Reach 1	0.001	0.335													

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	0.06														
End of Reach 1	0.001														

Model Results

Catawissa Borough, NPDES Permit No. PA002195, Outfall 001

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

☑ ***Hydrodynamics***

Q 7-10

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
0.06	51.19		51.19	0.309	0.00032	0.972	105.345	108.381	0.503	0.007	875.337
0.001	51.19		51.1947								

Q h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
0.06	231.65		231.65	0.309	0.00032	1.885	105.345	55.895	1.168	0.003	327.249
0.001	231.66		231.66								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 10.323 PMF: 0.131 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	13.439	14.0	317	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	1,850	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	2,715	Chem Translator of 0.978 applied
Total Aluminum	0	0		0	750	750	16,994	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	

☑ ***CFC*** CCT (min): 720 PMF: 0.907 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	8.956	9.33	1,409	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	481	Chem Translator of 0.791 applied

Total Zinc	0	0		0	118.139	120	18,099	Chem Translator of 0.986 applied
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	249,680	WQC = 30 day average; PMF = 1
Total Manganese	0	0		0	N/A	N/A	N/A	

☑ ***THH*** CCT (min): 720 PMF: 0.907 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	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	151,056	

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

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total 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	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	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	Report	Report	Report	Report	Report	mg/L	0.2	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	481	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	1.74	mg/L	Discharge Conc ≤ 10% WQBEL
Total Aluminum	10,893	µg/L	Discharge Conc ≤ 10% WQBEL

Total Iron	249,680	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	151,056	µg/L	Discharge Conc ≤ 10% WQBEL