Pennsylvania Department of Environmental Protection

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0115088**
Facility Type	**Municipal**	APS ID	**1151352**
Major / Minor	**Minor**	Authorization ID	**1550684**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Benton Borough Municipal Water & Sewer Authority Columbia County**	Facility Name	**Benton Municipal Water & Sewer Authority Sewer System**
Applicant Address	PO Box 516	Facility Address	1A 3rd Street Ext
	Benton, PA 17814-0516		Benton, PA 17814
Applicant Contact	John Watson	Facility Contact	Richard Clocker
Applicant Phone	(570) 925-6341	Facility Phone	(570) 925-6341
Client ID	66431	Site ID	462771
Ch 94 Load Status	Not Overloaded	Municipality	Benton Borough
Connection Status	No Limitations	County	Columbia
Date Application Received	November 24, 2025	EPA Waived?	Yes
Date Application Accepted	December 2, 2025	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 Benton Borough and neighboring areas of Benton Township in Tioga County.

Sludge use and disposal description and location(s): The facility's dewatered sludge is either disposed by both landfill or transferred to other treatment facilities for further processing. Per the application 6.55 dry tons were removed in the previous year.

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	April 16, 2026
✓		N. W. H. Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	April 16, 2026

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.132
Latitude	41º 11' 28.72"	Longitude	-76º 23' 11.07"
Quad Name	Benton, PA	Quad Code	0934
Wastewater Description:	Sewage Effluent		
Receiving Waters	Fishing Creek (CWF)	Stream Code	27623
NHD Com ID	65636313	RMI	22.38
Drainage Area	72.3 mi^2	Yield (cfs/mi^2)	0.061
Q_{7-10} Flow (cfs)	4.34	Q_{7-10} Basis	USGS Stream Gage No. 01539000, Fishing Creek near Bloomsburg, PA
Elevation (ft)	710	Slope (ft/ft)	0.095
Watershed No.	5-C	Chapter 93 Class.	CWF
Existing Use	**CWF**	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Attaining Use(s)		
Nearest Downstream Public Water Supply Intake	Suez Water PA, Inc - Bloomsburg		
PWS Waters	Fishing Creek	Flow at Intake (cfs)	16.8
PWS RMI	2.68	Distance from Outfall (mi)	19.7

Changes Since Last Permit Issuance: The above stream and drainage characteristics have been updated.

Other Comments:

No downstream water supply is expected to be affected by the discharge at this time with the limitations and monitoring proposed.

Treatment Facility Summary

Treatment Facility Name: Benton Municipal Water & Sewer Authority

WQM Permit No.	Issuance Date	Permit Coverage:
1973401	6/4/1973	Initial construction of original plant and collection system.
1992410	11/23/1993	Initial construction of new plant and pump stations.
1992410-A1	2/25/2003	Removal of basket strainer and installation of comminutor.
1992410-A2	9/5/2008	Drying bed synthetic media and drain system and polymer feed system.
1992410-A3	5/28/2019	Improvements to EQ tank, aeration tanks, and chlorination system

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Gas Chlorine	0.132

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.132	275.22	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: Improvements under WQM Permit No. 1992410 Amendment No. 3 were completed in the past permit term.

Other Comments: The treatment facilities as permitted consists of: influent pump station, comminutor, manual bar screen, EQ tank, two aeration tanks, two clarifiers, gas chlorination, chlorine contact tank, two sludge digesters, and four drying beds.

Industrial Users

The facility has no industrial users.

Hauled-In-Waste

The facility receives no hauled in wastes.

Compliance History

DMR Data for Outfall 001 (from March 1, 2025 to February 28, 2026)

Parameter	FEB-26	JAN-26	DEC-25	NOV-25	OCT-25	SEP-25	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25
Flow (MGD) Average Monthly	0.043	0.044	0.041	0.043	0.046	0.045	0.043	0.062	0.079	0.073	0.046	0.046
Flow (MGD) Daily Maximum	0.049	0.053	0.055	0.05	0.062	0.087	0.053	0.105	0.102	0.125	0.056	0.060
pH (S.U.) Instantaneous Minimum	7.5	7.3	7.2	7.0	7.0	7.3	7.1	7.0	7.3	7.2	7.5	7.4
pH (S.U.) Instantaneous Maximum	7.7	7.9	7.5	7.4	7.5	7.6	7.7	7.5	7.5	7.6	7.8	7.7
DO (mg/L) Minimum	3.1	2.5	2.6	3.0	2.6	2.8	3.0	2.2	3.2	3.8	3.1	3.8
TRC (mg/L) Average Monthly	0.15	0.29	0.32	0.30	0.15	0.21	0.31	0.22	0.11	0.11	0.20	0.33
TRC (mg/L) Instantaneous Maximum	0.38	0.50	0.50	0.55	0.44	0.53	0.68	0.50	0.32	0.25	0.47	0.74
CBOD5 (lbs/day) Average Monthly	6	6	3	4	< 4	4	4	< 5	< 6	4	< 3	< 5
CBOD5 (lbs/day) Weekly Average	10	7	3	6	8	5	6	9	15	5	6	7
CBOD5 (mg/L) Average Monthly	17.0	14.0	7.0	11.0	< 11.0	11.0	9.0	< 10.0	< 9.0	7.0	< 9.0	< 12.0
CBOD5 (mg/L) Weekly Average	26.0	19.0	9.0	15.0	20.0	14.0	14.0	19.0	22.0	8.0	16.0	16.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	257	246	200	224	212	188	173	275	161	141	154	180
BOD5 (lbs/day) Raw Sewage Influent Weekly Average	376	317	254	574	260	236	258	454	193	196	205	213
BOD5 (mg/L) Raw Sewage Influent Average Monthly	669.0	624.0	584.0	628.0	514.0	619.0	450.0	513.0	247.0	235.0	384.0	467.0
TSS (lbs/day) Average Monthly	< 2	< 2	< 1	2	< 2	< 2	< 2	3	< 3	4	< 2	3

TSS (lbs/day) Raw Sewage Influent Average Monthly	238	204	242	190	170	325	136	805	201	118	92	99
TSS (lbs/day) Raw Sewage Influent Weekly Average	533	336	708	407	244	325	222	1739	438	240	180	133
TSS (lbs/day) Weekly Average	3	2	2	< 2	3	2	2	5	4	5	3	6
TSS (mg/L) Average Monthly	< 5.0	< 5.0	< 4.0	< 5.0	< 5.0	< 5.0	< 4.0	5.0	< 5.0	7.0	< 6.0	9.0
TSS (mg/L) Raw Sewage Influent Average Monthly	615.0	523.0	700.0	526.0	415.0	859.0	351.0	1427.0	329.0	199.0	226.0	255.0
TSS (mg/L) Weekly Average	8.0	6.0	5.0	6.0	7.0	5.0	4.0	6.0	6.0	8.0	8.0	14.0
Fecal Coliform (No./100 ml) Geometric Mean	< 3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 2	< 2.0	< 7.0
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 10.0	< 1.0	< 1.0	1.0	4.1	< 1.0	< 1.0	307.4	4.1	< 4	6.8	110.0
Ammonia (lbs/day) Average Monthly	6	9	7	7	5	6	3	6	8	9	8	5
Ammonia (lbs/day) Weekly Average	6	11	8	7	6	7	4	13	8	10	9	6
Ammonia (mg/L) Average Monthly	15.6	20.1	20.4	19.3	11.3	16.1	7.0	11.9	11.6	15.1	20.7	12.4

Compliance History, Continued	
Summary of Inspections:	The most recent inspection by the Department of the facility on January 23, 2026 identified no violations.
Comments:	There are no open violations in eFACTS for Locust Township, Columbia County.

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	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	28	44	XXX	25.0	40.0	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	33	50	XXX	30.0	45.0	60	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Nov 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Oct 31	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ammonia	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.132
Latitude 41º 11' 29.10" **Longitude** -76º 23' 11.70"
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 Fishing Creek showed that the existing technology-based limits noted above for $CBOD_5$ and NH_3-N are adequate to protect the receiving waters.

Consistent with the Department's Standard Operating Procedures, a minimum DO limitation of 4.0 mg/L will be included pursuant to Best Professional Judgment (BPJ). Because this limitation does not appear achievable based on the existing data a compliance schedule will be included in the permit for the permittee to meet this limitation as listed below.

SCHEDULE OF COMPLIANCE

A. The permittee shall achieve compliance with the final effluent limitation for Dissolved Oxygen or terminate this discharge in accordance with the following schedule:

1. Submit Progress Report — *One year after permit effective date*

2. Submit WQM Application, If necessary — *Two years after permit effective date*

3. Compliance with effluent limitations — *Three years after permit effective date*

B. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit to DEP a written notice of compliance or non-compliance with the specific schedule requirement. Each notice of non-compliance shall include the following information:
1. A short description of the non-compliance.

2. *A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirement.*
3. *A description of any factors which tend to explain or mitigate the non-compliance.*
4. *An estimate of the date that compliance with the elapsed schedule requirement will be achieved and an assessment of the probability that the next scheduled requirement will be met on time.*

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 existing technology-based limit of 0.5 mg/l is adequate to protect the receiving stream.

Water Quality Toxics Management

No "Reasonable Potential Analysis" was performed to determine additional parameters with the reasonable potential to violate water quality standards for this minor STP discharge with no industrial influent.

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. This facility is considered a Phase 5, Significant Chesapeake Bay discharger. Therefore, no Nutrient cap loads have been established for this facility pursuant to the Phase III Watershed Implementation Plan. Monitoring data for a previous permitting period showed the Total Nitrogen and Total Phosphorus to average 26 mg/L and 2.5 mg/L, respectively.

E. Coli Monitoring

Quarterly E. Coli monitoring will be included in the draft permit consistent with recent changes to Chapter 93 of the Department's regulations and Departmental policy.

Best Professional Judgment (BPJ) Limitations

Comments: No additional BPJ limitations are necessary at this time beyond the technology-based limitations noted above besides the DO BPJ limitation mentioned above.

Anti-Backsliding

No proposed technology or BPJ-based 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 - Interim	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
DO - Final	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	28	44	XXX	25.0	40.0	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	33	50	XXX	30.0	45.0	60	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Nov 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Oct 31	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ammonia-Nitrogen	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	Grab

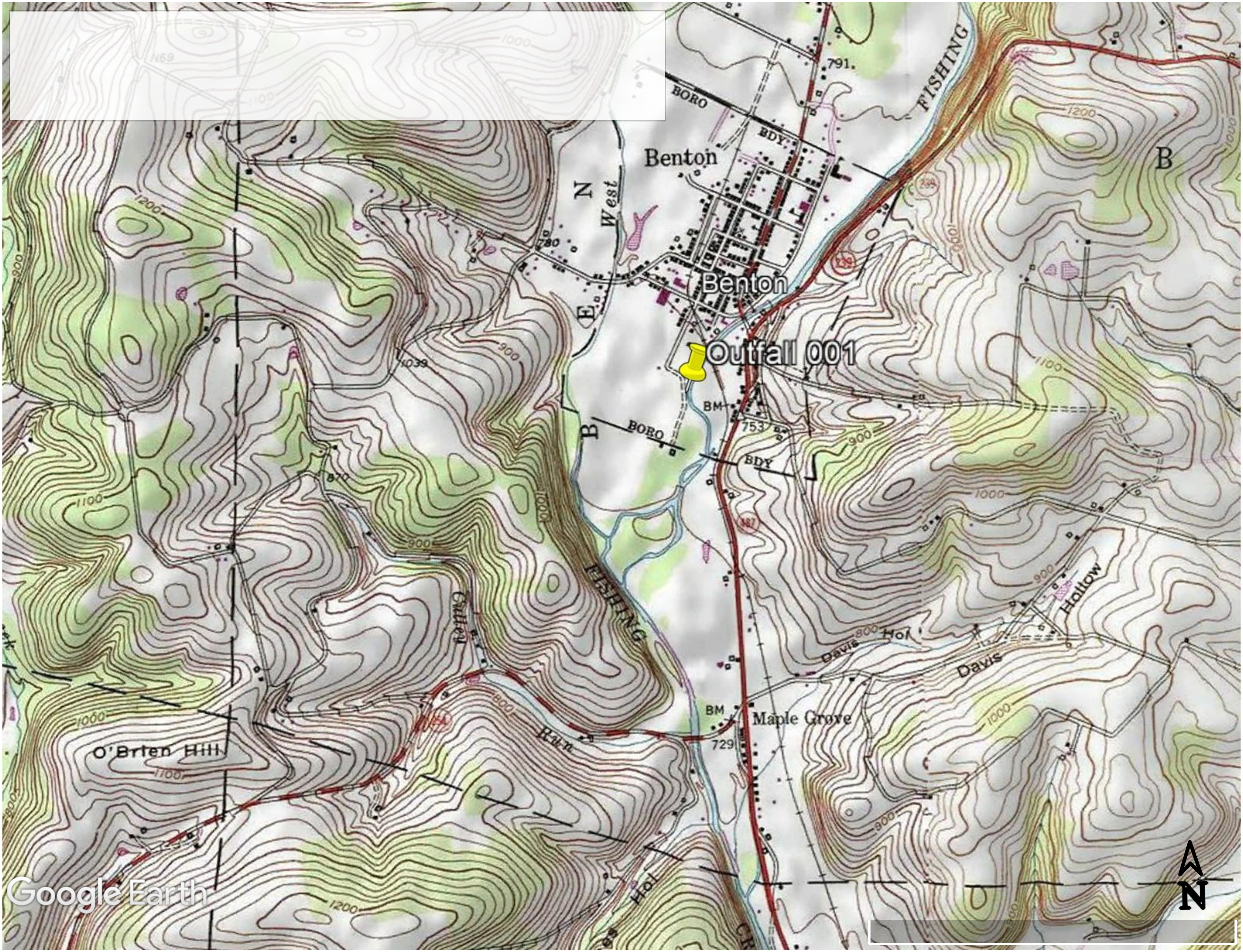
Compliance Sampling Location: Outfall 001

Other Comments: E. Coli monitoring is new as mentioned above.

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 Model
C. TRC Model


Benton
Benton
Outfall 001
FISHING
West
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Maple Grove
O'Brien Hill
Davis
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753
729
780
791
1039
870
Google Earth
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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
05C	27623	FISHING CREEK	**22.380**	710.00	72.30	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	0.060	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
Benton	PA0115088	0.1320	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	4.00	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
05C	27623	FISHING CREEK	**22.360**	700.00	73.00	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	0.060	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
		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
05C	27623	FISHING 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												
22.380	4.34	0.00	4.34	.2042	0.09470	1.065	17.48	16.42	0.24	0.005	20.22	7.00
Q1-10 Flow												
22.380	2.78	0.00	2.78	.2042	0.09470	NA	NA	NA	0.19	0.006	20.34	7.00
Q30-10 Flow												
22.380	5.90	0.00	5.90	.2042	0.09470	NA	NA	NA	0.29	0.004	20.17	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
05C	27623	FISHING CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
22.380	0.132	20.225	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
17.479	1.065	16.416	0.244
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.03	0.554	1.12	0.712
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.052	220.796	Tsivoglou	6
Reach Travel Time (days)			
0.005			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.001	3.03	1.12	8.16
0.001	3.03	1.12	8.21
0.002	3.03	1.12	8.21
0.002	3.03	1.12	8.21
0.003	3.03	1.12	8.21
0.003	3.03	1.12	8.21
0.004	3.03	1.12	8.21
0.004	3.03	1.12	8.21
0.005	3.03	1.12	8.21
0.005	3.03	1.12	8.21

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
05C	27623	FISHING 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
22.380	Benton	16.29	50	16.29	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
22.380	Benton	1.87	25	1.87	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)		
22.38	Benton	25	25	25	25	4	4	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
05C	27623	FISHING 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)
22.380	Benton	PA0115088	0.132	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

4.34	= Q stream (cfs)	0.5	= CV Daily
0.132	= 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 = 6.799	1.3.2.iii	WLA cfc = 6.621
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 2.533	5.1d	LTA_cfc = 3.849

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)