pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0112381**
Facility Type	**Non-Municipal**	APS ID	**1090258**
Major / Minor	**Minor**	Authorization ID	**1442960**

Applicant and Facility Information

Applicant Name	**Columbia Investment Corp.**	Facility Name	**Madison Estates MHP**
Applicant Address	6009 Columbia Boulevard Bloomsburg, PA 17815-8800	Facility Address	1947 Millville Road Bloomsburg, PA 17815-6579
Applicant Contact	Frank Baker	Facility Contact	Frank Baker
Applicant Phone	(570) 387-0902	Facility Phone	(570) 387-0902
Client ID	6750	Site ID	4447
Ch 94 Load Status	Not Overloaded	Municipality	Madison Township
Connection Status	**N/A**	County	Columbia
Date Application Received	June 6, 2023	EPA Waived?	Yes
Date Application Accepted	June 12, 2023	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit for a discharge of treated sewage

Summary of Review

This subject facility is a non-municipal sewage treatment plant serving a mobile home park in Madison Township, Columbia County. A map of the discharge location is attached.

Sludge use and disposal description and location(s): The facility's wasted sludge is transferred 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
X		Keith C. Allison Keith C. Allison / Project Manager	April 16, 2024
X		N. W. H. Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	April 17, 2024

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.0045
Latitude	41º 4' 9.33"	Longitude	-76º 30' 26.16"
Quad Name	Millville, PA	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Little Fishing Creek (CWF)	Stream Code	27657
NHD Com ID	65639703	RMI	4.56 (@ L. Fishing Ck.)
Drainage Area	58.6 mi^2 (@ L. Fishing Ck)	Yield (cfs/mi^2)	0.1087
Q_{7-10} Flow (cfs)	6.37	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	548	Slope (ft/ft)	0.00261
Watershed No.	5-C	Chapter 93 Class.	CWF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Attaining Use(s)		
Nearest Downstream Public Water Supply Intake	United Water Pennsylvania		
PWS Waters	Fishing Creek	Distance from Outfall (mi)	Approx. 6 miles.

Changes Since Last Permit Issuance: None. Stream flow and drainage area were updated using the USGS StreamStats web application. Other stream characteristics are based on interpolation of USGS topographic maps.

Other Comments: Discharge is to a storm swale that drains to Little Fishing Creek. The first point of aquatic life use has previously been determined to be at the discharge into Little Fishing Creek. Inspections of the facility have not noted any problems in the receiving waters.

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

Treatment Facility Summary

Treatment Facility Name: Madison Estates MHP Sewer System

WQM Permit No.	Issuance Date
1997404	06/05/1997

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Hypochlorite	0.0045

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0045	21	Not Overloaded	Holding Tank	Other WWTP

Changes Since Last Permit Issuance: None

Other Comments: The treatment plant, as approved under WQM Permit No. 1997404 includes screening, equalization, aeration, clarification, disinfection (tablet chlorinator), and sludge holding.

Compliance History

DMR Data for Outfall 001 (from March 1, 2023 to February 29, 2024)

Parameter	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23
Flow (MGD) Average Monthly	0.00089	0.0012	0.0009	0.001	0.0010	0.0011	0.0010	0.0010	0.0011	0.0010	0.0008	0.0012
Flow (MGD) Daily Maximum	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014
pH (S.U.) Instantaneous Minimum	6.2	6.0	6.2	6.4	6.4	6.3	6.5	6.1	6.4	6.1	6.2	6.9
pH (S.U.) Instantaneous Maximum	8.3	8.5	7.7	7.2	7.5	7.7	8.8	6.8	6.8	6.7	6.7	7.4
DO (mg/L) Instantaneous Minimum	3.9	1.8	3.3	1.2	1.0	0.89	0.57	0.57	0.37	0.28	0.57	0.52
TRC (mg/L) Average Monthly	0.13	0.13	0.12	0.12	0.10	0.23	0.20	0.14	0.19	0.15	0.18	0.16
TRC (mg/L) Instantaneous Maximum	0.67	0.42	0.21	0.24	0.26	0.89	0.52	0.36	0.63	0.46	0.49	0.47
CBOD5 (mg/L) Average Monthly	3.7	3.3	< 1.3	6	2.6	2	< 2	< 1.8	< 1	3.2	1	< 1.6
TSS (mg/L) Average Monthly	6	5.5	5	7.5	< 4	< 4	4	7.5	4	< 4	5	4
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	1	< 1	< 1	17.9	1.4	< 1	< 1	< 1	< 1	< 1
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 1	< 1	1	< 1	< 1	322.3	2.0	< 1	< 1	< 1	< 1	< 1
Ammonia (mg/L) Average Monthly	15.7	9.8	0.6	1.0	2.6	0.28	0.98	4.0	1.5	6.3	0.57	2.0
Ammonia (mg/L) Instantaneous Maximum	25.5	16.6	1.1	1.9	2.6	0.35	1.7	5.2	2.1	10.4	0.87	4.0

Compliance History	
Summary of Inspections:	The facility has been inspected approximately annually by the Department over the past permit term. The most recent inspection on March 3, 2024 noted no violations at the time of inspection.
Other Comments:	There are no open violations in eFACTS for Columbia Investment Corp.

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	**Average Weekly**	**Minimum**	**Average Monthly**	**Maximum**	**Instant. Maximum**		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	5/week	Grab
DO	XXX	XXX	Report Inst Min	XXX	XXX	XXX	5/week	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	5/week	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	Grab
TSS	XXX	XXX	XXX	30	XXX	60	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Total Nitrogen	Report Annl Avg	Report Daily Max	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Ammonia	XXX	XXX	XXX	Report	XXX	Report	2/month	Grab
Total Phosphorus	Report Annl Avg	Report Daily Max	XXX	Report Annl Avg	XXX	XXX	1/year	Grab

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0045
Latitude 41º 4' 10.00" **Longitude** -76º 30' 27.00"
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)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
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 limits are included in the existing permit and remain appropriate.

Water Quality-Based Limitations

CBOD5, DO, 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 for the previous review for the discharge in the receiving dry swale and in Little Fishing Creek and showed that the secondary treatment limits listed above are adequate to protect the receiving waters. See Attachment B.

TRC

The Department uses a modeling spreadsheet to determine necessary WQBELs for TRC toxicity based on instream dilution. The attached modeling results (See attachment C) show that the BAT limit of 0.5 mg/l is adequate to protect the receiving stream.

Toxics Management

No further "Reasonable Potential Analysis" was performed to determine additional toxic parameters as candidates for limitations for this 0.0045 MGD facility sewage treatment facility receiving no industrial influent.

Dry Stream Discharge

Because the discharge is existing and there have been no noted effects on the storm swale directly receiving the discharge or Little Fishing Creek, the additional discharge requirements from the Department's *Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers* including the Advanced Treatment Requirements will not be required at this time.

Chesapeake Bay 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 to reduce the total nutrient load to the Bay and meet State of Maryland Water Quality Standards. The Madison Estates treatment plant is considered an existing Phase 5, insignificant Chesapeake Bay discharger per the Phase III Watershed Implementation Plan (WIP) and thus has not received Cap Loads. Monitoring

under the current permit found the Total Nitrogen and Total Phosphorus to average 21.8 and 3.1 mg/L, respectively. Because the current nutrient load from the discharge has adequately been characterized no further nutrient monitoring will be required at this time.

e. Coli

Annual e. coli monitoring will be required at this time due to recent changes to Chapter 93 of the Departments regulations and Department policy.

Best Professional Judgment (BPJ) Limitations

No additional BPJ limits are needed beyond the water quality and technology-based limits noted above.

Anti-Backsliding

No water quality based or BPJ limits were made less stringent consistent with the anti-backsliding requirements of 40 CFR 122.44(l).

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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	5/week	Grab
DO	XXX	XXX	Report Inst Min	XXX	XXX	XXX	5/week	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	5/week	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	Grab
TSS	XXX	XXX	XXX	30	XXX	60	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Ammonia	XXX	XXX	XXX	Report	XXX	Report	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

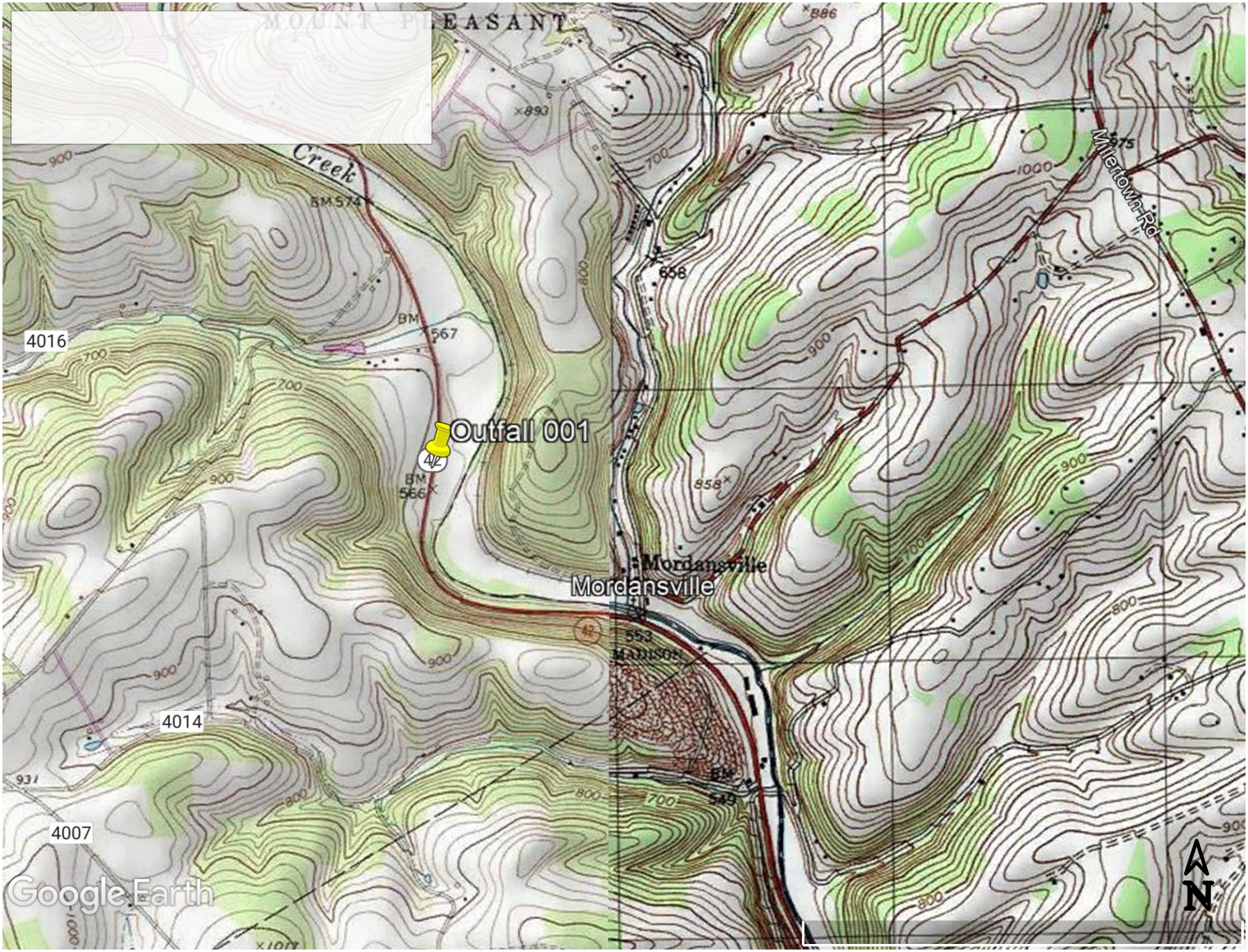
Compliance Sampling Location: Outfall 001

Other Comments: Monitoring for Total Nitrogen and Total Phosphorus have been removed as mentioned above. E. coli monitoring has now been included as noted above. The Department's permit writer's manual recommends daily monitoring for pH, DO, and TRC for discharges with design flows greater than 2000 gpd. Given the size of the discharge and the consistent quality of the discharge the sampling frequencies for pH, DO, and TRC above are unchanged.

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: Establishing Effluent Limitations for Individual Sewage Permits, rev. 03/24/2021
☐	Other:

Attachments:

A. Discharge Location Map
B. WQM7.0 Model
C. TRC Model


Outfall 001
Mordansville
Mordansville
Millertown Rd
Creek
4016
4014
4007
Google Earth
N

Discharge to Roadside ditch

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (fl/ft)	PWS Withdrawal (mgd)	Apply FC
05C	27664	Trib 27664 to Little Fishing Creek	**0.170**	574.00	0.03	0.00000	0.00	

Stream Data

Design Cond.	LFY (efsm)	Trib Flow (efs)	Stream Flow (cfs)	Reh Trav Time (days)	Reh Velocity (fps)	WD Ratio	Reh Width (ft)	Reh Depth (ft)	Tributaty Temp ('C)	Tributaty pH	Stream Temp ('C)	Stream pH
Q7-10	0.109	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
Madison Est	PA0112381a	0.0045	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Cone (mg/L)	Trib Cone (mg/L)	Stream Cone (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
05C	27664	Trib 27664 to Little Fishing Creek	**0.001**	548.00	0.05	0.00000	0.00	

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (els)	Stream Flow (els)	Reh Trav Time (days)	Reh Velocity (fps)	WD Ratio	Reh Width (ft)	Reh Depth (ft)	Tributary Temp ('C)	Tributary pH	Stream Temp ('C)	Stream pH
Q7-10	0.109	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)
CB0D5	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	27664	Trib 27664 to Little 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 ('C)	Analysis pH
Q7-10 Flow												
0.170	0.00	0.00	0.00	NA	0.02914	.278	.91	3.28	0.04	0.256	23.40	7.00
Q1-10 Flow												
0.170	0.00	0.00	0.00	NA	0.02914	NA	NA	NA	0.00	0.000	0.00	0.00
Q30-10 Flow												
0.170	0.00	0.00	0.00	NA	0.02914	NA	NA	NA	0.00	0.000	0.00	0.00

WQM 7.0 Modeling Specifications

Parameters	D.O.	Use Inputted Q1-10 and Q30-10 Flows	
WLA Method	**Simulation**	**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
OSC	27664	Trib 27664 to Little Fishing Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.170	0.004	23.405	7.000
Reach Width (ft)	Reach Depth (ft)	Reach WDRatio	Reach Velocity (fps)
0.911	0.278	3.277	0.040
Reach CBOD5 (mg/L)	Reach Kc (1/days)	Reach NH3-N (mg/L)	Reach Kn (1/days)
17.66	1.432	17.02	0.910
Reach DO (mg/L)	Reach Kr (1/days)	Kr Equation	Reach DO Goal (mg/L)
4.673	29.285	Owens	6
Reach Travel Time (days)			
0.256			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.026	16.92	16.63	4.71
0.051	16.21	16.25	4.79
0.077	15.53	15.88	4.89
0.102	14.88	15.51	4.99
0.128	14.26	15.16	5.10
0.153	13.66	14.81	5.20
0.179	13.09	14.47	5.30
0.205	12.54	14.13	5.40
0.230	12.01	13.81	5.49
0.256	11.51	13.49	5.59

Discharge into Little Fishing Creek

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	27657	LITTLE FISHING CREEK	**4.560**	548.00	58.60	0.00000	0.00	

Stream Data

Design Cond.	LFY (efsm)	Trib Flow (efs)	Stream Flow (cfs)	Reh Trav Time (days)	Reh Velocity (fps)	WO Ratio	Reh Width (ft)	Reh Depth (fl)	Tributary Temp ('C)	Tributary pH	Stream Temp ('C)	Stream pH
Q7-10	0.109	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
Madison Estates	PA0112381	0.0045	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Coric (mg/L)	Trib Cone (mg/L)	Stream Cone (mg/L)	Fate Coe! (1/days)
CBOD5	11.51	2.00	0.00	1.50
Dissolved Oxygen	5.59	8.24	0.00	0.00
NH3-N	13.49	0.00	0.00	0.70

Outputs from dry reach

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	27657	LITTLE FISHING CREEK	3.970	540.00	60.00	0.00000	0.00	

Stream Data

Design Cond.	LFY (efsm)	Trib Flow (els)	Stream Flow (els)	Reh Trav Time (days)	Reh Velocity (fps)	WD Ratio	Reh Width (ft)	Reh Depth (ft)	Tributary Temp ("C)	Tributary pH	Stream Temp ("C)	Stream pH
Q7-10	0.109	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 H)t'.drod)t'.namic Out uts

SWP Basin	Stream Code	Stream Name
OSC	27657	LITTLE FISHING CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (els)	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												
4.560	6.37	0.00	6.37	.007	0.00257	.713	39.05	54.8	0.23	0.157	20.01	7.00
Q1-10 Flow												
4.560	4.08	0.00	4.08	.007	0.00257	NA	NA	NA	0.18	0.202	20.01	7.00
Q30-10 Flow												
4.560	8.66	0.00	8.66	.007	0.00257	NA	NA	NA	0.27	0.133	20.00	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 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
05C	27657	LITTLE 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
4.560	Madison Estates	9.67	26.98	9.67	26.98	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
4.560	Madison Estates	1.92	13.49	1.92	13.49	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxy:gen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
4.56	Madison Estates	11.51	11.51	13.49	13.49	5.59	5.59	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
DSC	27657	LITTLE FISHING CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
4.560	0.004	20.005	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
39.053	0.713	54.795	0.229
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.01	0.008	0.01	0.700
Reach DO (mg/l)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.240	5.591	**Tsivoglou**	6
Reach Travel Time (days)			
0.157			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.016	2.01	0.01	8.24
0.031	2.01	0.01	8.24
0.047	2.01	0.01	8.24
0.063	2.01	0.01	8.24
0.079	2.01	0.01	8.24
0.094	2.01	0.01	8.24
0.110	2.01	0.01	8.24
0.126	2.01	0.01	8.24
0.142	2.01	0.01	8.24
0.157	2.01	0.01	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
05C	27657	LITTLE 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)
4.560	**Madison Estates**	PA0112381	0.004	CBODS	11.51		
				NH3-N	13.49	26.98	
				Dissolved Oxygen			5.59

Input levels are protective

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0528	= Q stream (cfs)	0.5	= CV Daily
0.01	= 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 = 1.108	1.3.2.iii	WLA cfc = 1.072
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.413	5.1d	LTA_cfc = 0.623

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)