pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0114081**
Facility Type	**Non-Municipal**	APS ID	**1029892**
Major / Minor	**Minor**	Authorization ID	**1338699**

Applicant and Facility Information

Applicant Name	**Orange Township, Columbia County**	Facility Name	**Woods Edge Estates STP**
Applicant Address	2028 State Route 487	Facility Address	181 Draketown Road
	Orangeville, PA 17859-9029		Bloomsburg, PA 17815-7708
Applicant Contact	Calvin Fox	Facility Contact	John Bauer, Operator
Applicant Phone	(570) 683-5836	Facility Phone	(570) 784-1653
Client ID	115590	Site ID	254209
Ch 94 Load Status	Not Overloaded	Municipality	Orange Township
Connection Status	Dept. Imposed Connection Prohibitions	County	Columbia
Date Application Received	December 29, 2020	EPA Waived?	Yes
Date Application Accepted	January 11, 2021	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit

Summary of Review

The subject permit is a Publicly Owned Treatment Works serving the Woods Edge subdivision in Orange Township, Columbia County.

A map of the discharge location is attached.

Sludge use and disposal description and location(s): The facility's 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
✓		*Keith C. Allison* Keith C. Allison / Project Manager	May 12, 2021
✓		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	May 13, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.021
Latitude	41º 2' 26.46"	Longitude	-76º 25' 38.85"
Quad Name	Bloomsburg, PA	Quad Code	1034
Wastewater Description:	Sewage Effluent		
Receiving Waters	Fishing Creek (WWF, MF)	Stream Code	27623 (Fishing Creek) 1.24 (UNT)
NHD Com ID	65639951	RMI	7.9 (Fishing Creek)
Drainage Area	285 mi^2 (Fishing Creek) 0.0517 mi^2 (UNT) 0.00317 (UNT)	Yield (cfs/mi^2)	0.0613
Q_{7-10} Flow (cfs)	17.5 (Fishing Creek)	Q_{7-10} Basis	USGS Gage 01539000, Fishing Creek @ Bloomsburg (1940-2008)
Elevation (ft)	820	Slope (ft/ft)	0.0454
Watershed No.	5-C	Chapter 93 Class.	WWF, MF
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, Bloomsburg		
PWS Waters	Fishing Creek	Distance from Outfall (mi)	Approx. 6

Changes Since Last Permit Issuance: None

Other Comments: The discharge is to a small stream that ultimately drains to Fishing Creek. An Aquatic Biological Investigation by the Department on May 6, 2014 found sufficient aquatic life in the Unnamed Tributary to consider it worthy of protection as a perennial stream. This assessment also found significant impact to the receiving waters below the discharge from the Woods Edge Estates treatment plant as compared to above the discharge. The stream degradation was still noticeable at a sample site approximately 0.8 miles below the discharge point. The presence of aquatic life in the receiving stream and the degradation to the stream will again be considered in the limits determination.

No downstream water supply is expected to be affected by this discharge with the monitoring and limitations proposed given the distance and ample dilution in Fishing Creek.

Treatment Facility Summary

Treatment Facility Name: Woods Edge Estates

WQM Permit No.	Issuance Date	Permit For:
1988407	A-2 – 9/3/20	Installation of dechlorination and aeration
	T-1 – 6/28/16	Transfer to Orange Township
	A-1 – 6/11/93	Amended to modify language in special condition for connecting to municipal facilities
	Original - 11/18/88	Original permit for treatment plant and sewer system

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration With Solids Removal	Hypochlorite	0.021

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.021	36.8	Not Overloaded		

Changes Since Last Permit Issuance: The WQM permit amendment issued in 2020 for the installation of a new two compartment chlorine contact tank. One compartment provides chlorine contact time and the other provides dechlorination utilizing a tablet feeder. Fine bubble diffusers were also installed to increase dissolved oxygen levels

Other Comments: The treatment facility is a package extended aeration plant followed by sand filters and consists of: bar screen, 21,000-gallon aeration tank, 4,300-gallon settling tank, siphon tank, two intermittent sand filters, erosion chlorinator, erosion dechlorinator, and two compartment chlorine contact tank.

Compliance History

DMR Data for Outfall 001 (from March 1, 2020 to February 28, 2021)

Parameter	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20
Flow (MGD) Average Monthly	0.0092	0.0106	0.0093	0.00978	0.0088	0.01	0.0131	0.0098	0.0084	0.0091	0.0088	0.0089
Flow (MGD) Daily Maximum	0.0159	0.0553	0.0062	0.0189	0.0127	0.07	0.0857	0.0312	0.0116	0.0137	0.0142	0.0104
pH (S.U.) Minimum	6.8	6.7	6.9	6.7	6.8	6.8	6.9	6.9	6.8	6.8	6.9	6.8
pH (S.U.) Maximum	7.3	7.3	7.2	7.1	7.3	7.3	7.4	7.3	7.4	7.3	7.3	7.2
DO (mg/L) Minimum	9.8	9.4	8.7	7.4	6.9	7.0	5.3	7.4	7.3	7.4	7.5	7.6
TRC (mg/L) Average Monthly	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	0.01	0.01	0.01	0.01
TRC (mg/L) Instantaneous Maximum	0.07	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
CBOD5 (lbs/day) Average Monthly	< 0.50	< 0.40	< 0.40	< 0.50	< 0.40	< 0.20	< 0.50	< 0.50	< 0.40	< 0.40	< 0.50	< 0.60
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	< 6.0	< 6.0
CBOD5 (mg/L) Instantaneous Maximum	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	9.0	28.0	5.0	10.0	8.0	6.0	23.0	21	9	21	12	18
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	9.0	39.0	6.0	13.0	13.0	6.0	37.0	21	10	27	17	18
BOD5 (mg/L) Raw Sewage Influent Average Monthly	109	385.0	65.0	113	136.0	86.0	302.0	280	138	297	150	187
TSS (lbs/day) Average Monthly	< 0.40	< 0.50	< 0.40	< 0.40	< 0.30	0.20	< 0.40	< 0.40	< 0.30	< 0.40	< 0.40	< 0.50
TSS (lbs/day) Raw Sewage Influent Average Monthly	8	27.0	5.0	11.0	6.0	9.0	19.0	12	3	13	7	9
TSS (lbs/day) Raw Sewage Influent Daily Maximum	10	42.0	6.0	19.0	6.0	10.0	27.0	13	6	15	7	10
TSS (mg/L) Average Monthly	< 5.0	< 7.0	< 5.0	< 5.0	< 5.0	5.0	< 5.0	< 5.0	< 5.0	< 5.1	< 5.0	< 5.0
TSS (mg/L) Raw Sewage Influent Average Monthly	97	367.0	62.0	131	92.0	140.0	250.0	155	46	180	89	99
TSS (mg/L) Instantaneous Maximum	< 5.0	8.3	< 5.0	< 5.0	< 5.0	5.0	< 5.0	< 5.0	< 5.0	5.2	< 5.0	< 5.0
Fecal Coliform (CFU/100 ml) Geometric Mean	< 2.0	< 4.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1	< 1	< 1	< 1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	3.1	13.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1	< 1	< 1	< 1

Ammonia (lbs/day) Average Monthly	0.10	< 0.020	1.00	0.30	0.02	0.02	0.03	< 0.02	< 0.30	< 0.04	< 0.20	0.20
Ammonia (mg/L) Average Monthly	1.2	< 0.30	11.6	3.0	0.4	0.3	0.3	< 0.2	< 4.08	< 0.52	2.716	1.678
Ammonia (mg/L) Instantaneous Maximum	1.65	< 0.40	21.0	3.68	0.423	0.493	0.373	< 0.2	7.77	0.83	4.44	2.91

Compliance History

Effluent Violations for Outfall 001, from: April 1, 2020 To: February 28, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
DO	09/30/20	Min	5.3	mg/L	6.0	mg/L
Ammonia	07/31/20	Avg Mo	< 0.30	lbs/day	0.28	lbs/day
Ammonia	01/31/21	Avg Mo	1.00	lbs/day	0.83	lbs/day
Ammonia	01/31/21	Avg Mo	11.6	mg/L	4.7	mg/L
Ammonia	07/31/20	Avg Mo	< 4.08	mg/L	1.6	mg/L
Ammonia	05/31/20	Avg Mo	2.716	mg/L	1.6	mg/L
Ammonia	05/31/20	IMAX	4.44	mg/L	3.2	mg/L
Ammonia	07/31/20	IMAX	7.77	mg/L	3.2	mg/L
Ammonia	01/31/21	IMAX	21.0	mg/L	9.5	mg/L

Compliance History

Summary of Inspections:	The facility has been inspected at least annually by the Department over the past permit term. The most recent inspection on January 29, 2021 identified NPDES effluent violations.
Other Comments:	A query in WMS found no open violations in eFACTS for Orange 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	Daily Maximum	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.02	XXX	0.07	1/day	Grab
CBOD5	1.75	XXX	XXX	10.0	XXX	20.0	2/month	Grab
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	Grab
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	Grab
TSS	1.75	XXX	XXX	10.0	XXX	20.0	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	XXX	XXX	Report	XXX	XXX	1/year	Grab
Ammonia Nov 1 - Apr 30	0.83	XXX	XXX	4.7	XXX	9.5	2/month	Grab
Ammonia May 1 - Oct 31	0.28	XXX	XXX	1.6	XXX	3.2	2/week	Grab
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/year	Grab

Permit No. PA0114081

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	0.021
Latitude	41º 3' 22.24"	**Longitude**	-76º 24' 54.81"
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 technology-based secondary treatment limits above for TSS and $CBOD_5$ are not as stringent as the facility's existing limits for the dry stream discharge as discussed below.

The TRC BAT limit from 92a applies to this facility. However, as noted below a more stringent water quality-based limitation has been applied to the discharge.

Water Quality-Based Limitations

The facility has existing limits of 10 mg/L for TSS and $CBOD_5$ to protect the receiving stream that were taken from the Department's Dry Stream's Guidance as well as existing water quality-based limits for NH_3-N and DO. These will be retained to address the minimal flow and potential nuisance conditions in the receiving stream with the exception of NH_3-N as noted below.

The WQM7.0 model allows the Department to evaluate point source discharges of Carbonaceous BOD ($CBOD_5$), ammonia-nitrogen (NH_3-N) and dissolved oxygen (DO) 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 has been performed at this time which includes recent updates to the Department's NH3-N criteria to address protection of the receiving stream. The results of the WQM7.0 modeling are attached (See Attachment B) showing the existing Ammonia-Nitrogen limit of 1.58 mg/L and Dissolved Oxygen limit of 6 mg/L are adequate.

The Department uses a spreadsheet to model the toxicity of Total Residual Chlorine in a receiving stream. Modeling of the unnamed tributary for the previous review produced a limit of 0.023 mg/L (See Attachment C).

Toxics Management

No further "Reasonable Potential Analysis" was performed to determine additional pollutants for monitoring or limitations for this minor municipal treatment plant with no industrial influent.

Best Professional Judgment (BPJ) Limitations

Comments: No BPJ limits are necessary beyond the technology and water quality-based limits noted above.

Permit No. PA0114081

Chesapeake Bay/Nutrient Requirements

According to the Pennsylvania Chesapeake Bay Tributary Implementation Plan for NPDES Permitting, this facility is considered an existing Phase 5 Chesapeake Bay sewage discharger. Under the previous permit annual monitoring was conducted and the average Total Nitrogen concentration for the past two years was 7.3 mg/L and the Total Phosphorus was 0.85 mg/L. Therefore, because the nutrient levels in the effluent have adequately been characterized no further nutrient monitoring will be required at this time.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.02	XXX	0.07	1/day	Grab
CBOD5	1.75	XXX	XXX	10.0	XXX	20.0	2/month	Grab
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	Grab
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	Grab
TSS	1.75	XXX	XXX	10.0	XXX	20.0	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 Nov 1 - Apr 30	0.83	XXX	XXX	4.7	XXX	9.5	2/month	Grab
Ammonia May 1 - Oct 31	0.28	XXX	XXX	1.6	XXX	3.2	2/week	Grab
e. Coli Bacteria	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab

Compliance Sampling Location: Outfall 001

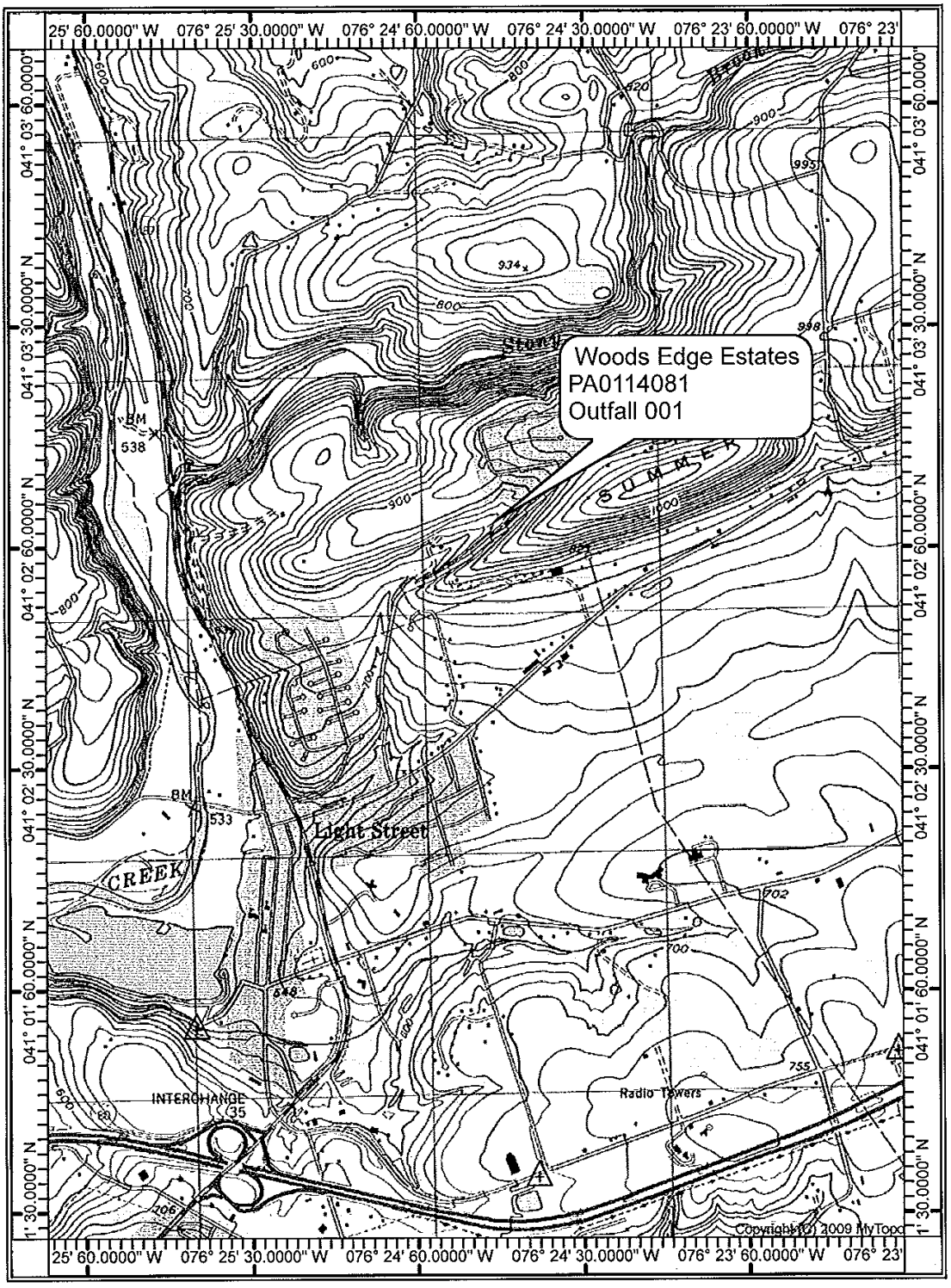
Other Comments: The above limitations and monitoring are unchanged from the existing permit except for the removal of nutrient as noted above.
In addition, consistent with recent changes to Chapter 93 of the Department's regulations e. coli monitoring will be included in the permit at a frequency of once per quarter.

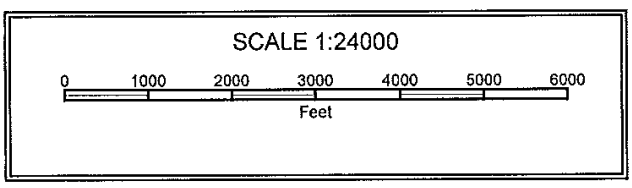
Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☒	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☒	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☒	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: Establishing Effluent Limitations for Individual Sewage Permits, rev. 3/22/21
☐	Other:

Attachments:

- Discharge Location Map
- WQM7.0 Model
- TRC Model

Permit No. PA0114081





Permit No. PA0114081

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	27754	Trib 27754 to Fishing Creek	1.240	820.00	0.05	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	0.061	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
Woods Edge	PA0114081	0.0210	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	10.00	2.00	0.00	1.50
Dissolved Oxygen	6.00	8.24	0.00	0.00
NH3-N	1.58	0.00	0.00	0.70

Permit No. PA0114081

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	27754	Trib 27754 to Fishing Creek	0.740	700.00	0.10	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	0.061	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	27754	Trib 27754 to 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												
1.240	0.00	0.00	0.00	.0325	0.04545	.34	1.39	4.09	0.08	0.406	24.57	7.00
Q1-10 Flow												
1.240	0.00	0.00	0.00	.0325	0.04545	NA	NA	NA	0.07	0.413	24.72	7.00
Q30-10 Flow												
1.240	0.00	0.00	0.00	.0325	0.04545	NA	NA	NA	0.08	0.399	24.43	7.00

Permit No. PA0114081

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	27754	Trib 27754 to 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
1.240	Woods Edge	11.34	3.16	11.34	3.16	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
1.240	Woods Edge	1.42	1.58	1.42	1.58	0	0

Dissolved Oxygen Allocations

		CBOD5		NH3-N		Dissolved Oxygen			
RMI	Discharge Name	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Critical Reach	Percent Reduction
1.24	Woods Edge	10	10	1.58	1.58	6	6	0	0

Permit No. PA0114081

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
05C	27754	Trib 27754 to Fishing Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.240	0.021	24.571	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1.390	0.340	4.092	0.075
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
9.31	1.459	1.44	0.995
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.193	31.501	Owens	6
Reach Travel Time (days)			
0.406			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.041	8.66	1.39	7.11
0.081	8.05	1.33	7.42
0.122	7.48	1.28	7.54
0.162	6.95	1.23	7.59
0.203	6.46	1.18	7.59
0.244	6.01	1.13	7.59
0.284	5.58	1.09	7.59
0.325	5.19	1.05	7.59
0.365	4.82	1.00	7.59
0.406	4.48	0.96	7.59

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
05C	27754	Trib 27754 to 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)
1.240	Woods Edge	PA0114081	0.021	CBOD5	10		
				NH3-N	1.58	3.16	
				Dissolved Oxygen			6

Permit No. PA0114081

TRC EVALUATION						
Client				Date		
0.00317	= Q stream (cfs)		0.5	= CV Daily		
0.021	= Q discharge (MGD)		0.5	= CV Hourly		
30	= no. samples		0.972	= 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)		
	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)		
Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	0.049	1.3.2.iii	WLA cfc =	0.041
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.018	5.1d	LTA_cfc =	0.024
		WQBEL_afc=	0.023		WQBEL_cfc=	0.030

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.023	AFC
		INST MAX LIMIT (mg/l) = 0.074	

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)**