pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0209261**
Facility Type	**Municipal**	APS ID	**1010557**
Major / Minor	**Minor**	Authorization ID	**1304010**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Liberty Township, Montour County**	Facility Name	**Liberty Township Mooresburg Village WWTP**
Applicant Address	197 Mooresburg Road	Facility Address	1316 Bald Top Road
	Danville, PA 17821-7030		Danville, PA 17821
Applicant Contact	Linda Llewellyn, Twp Sec.	Facility Contact	Gary Krick, Supervisor
Applicant Phone	(570) 275-2211	Facility Phone	(570) 275-2211
Client ID	25304	Site ID	257852
Ch 94 Load Status	Not Overloaded	Municipality	Liberty Township
Connection Status	No Limitations	County	Montour
Date Application Received	January 31, 2020	EPA Waived?	No
Date Application Accepted	February 4, 2020	If No, Reason	Discharge is subject to an EPA-approved TMDL
Purpose of Application	Renewal of a NPDES Permit		

Summary of Review

The subject facility is a Publicly Owned Treatment Work (POTW) serving Liberty Township, Montour County in the vicinity of the village of Mooresburg.

A map of the discharge location is attached.

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 21, 2020
X		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	April 22, 2020

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.013
Latitude	40º 58' 54.26"	Longitude	-76º 42' 10.42"
Quad Name	Riverside, PA	Quad Code	1132
Wastewater Description:	Sewage Effluent		
Receiving Waters	Mauses Creek (CWF)	Stream Code	27331
NHD Com ID	65641597	RMI	4.97
Drainage Area	0.30 mi^2	Yield (cfs/mi^2)	0.168
Q_{7-10} Flow (cfs)	0.05	Q_{7-10} Basis	Streamgage No. 01420500
Elevation (ft)	620	Slope (ft/ft)	0.00758
Watershed No.	5-E	Chapter 93 Class.	CWF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	SILTATION,		
Source(s) of Impairment	AGRICULTURE		
TMDL Status	Final	Name	Mahoning Creek Watershed TMDL
Nearest Downstream Public Water Supply Intake	Cherokee Pharmaceuticals, LLC		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	5,000,000
PWS RMI	135.7	Distance from Outfall (mi)	8.6

Changes Since Last Permit Issuance: None. The above discharge and drainage characteristics were determined for the previous review and remain adequate.

Other Comments:

The discharge has received wasteload allocations for Total Phosphorus and Sediment under the Mahoning Creek Watershed TMDL, which are further discussed in the Development of Effluent Limitations section below.

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: Mooresburg Wastewater Treatment Plant

WQM Permit No.	Issuance Date	
4796402	6/13/96	Original permit for treatment system
Amendment A-1	10/12/18	Phosphorus Removal

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Phosphorus Reduction	Septic Tank Sand Filter	Hypochlorite	0.013

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

Changes Since Last Permit Issuance: 4796402 Amendment No. 1 was issued in 2018 but the Township has not installed the phosphorus removal yet because the TP limits have been met.

Other Comments: The treatment facility, as approved by WQM Permit No. 4796402 consists receipt of septic tank effluent from individual homes, a dosing tank, two sand filters, and chlorination with a contact tank.

Hauled in Waste

Per the application, the permittee has not accepted any trucked in waste in the past three years and does not anticipate receiving any over the next permit term.

Sludge/Biosolids Disposal

Septic tank septage is removed to a permitted facility for ultimate disposal or beneficial reuse. No sludge is typically produced from the main facility due to the nature of the treatment.

Compliance History

DMR Data for Outfall 001 (from February 1, 2019 to January 31, 2020)

Parameter	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19	AUG-19	JUL-19	JUN-19	MAY-19	APR-19	MAR-19	FEB-19
Flow (MGD) Average Monthly	0.0034	0.0035	0.0039	0.0039	0.0036	0.0038	0.0036	0.0038	0.0041	0.0040	0.0036	0.0036
Flow (MGD) Daily Maximum	0.0036	0.0039	0.0043	0.0043	0.0039	0.0040	0.0039	0.0041	0.0043	0.0042	0.0041	0.0040
pH (S.U.) Daily Minimum	6.2	6.4	6.2	6.2	6.3	6.3	6.3	6.2	6.2	6.2	6.2	6.2
pH (S.U.) Instantaneous Maximum	6.5	6.7	6.7	6.5	6.6	6.7	6.6	6.5	6.5	6.6	6.5	6.6
DO (mg/L) Minimum	8.0	8.0	8.0	7.0	6.0	6.0	6.0	6.0	7.0	8.0	8.0	8.0
TRC (mg/L) Average Monthly	0.32	0.33	0.35	0.31	0.34	0.32	0.33	0.33	0.29	0.29	0.31	0.32
TRC (mg/L) Instantaneous Maximum	0.51	0.47	0.62	0.61	0.59	0.48	0.63	0.64	0.56	0.50	0.74	0.61
CBOD5 (lbs/day) Average Monthly	0.12	0.07	0.07	0.069	0.1	0.07	0.066	0.074	0.08	0.08	0.11	0.10
CBOD5 (lbs/day) Weekly Average	0.18	0.07	0.07	0.075	0.123	0.07	0.070	0.075	0.08	0.09	0.12	0.12
CBOD5 (mg/L) Average Monthly	5.0	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	3.0	4.0	4.0
CBOD5 (mg/L) Weekly Average	7.0	2.2	2.2	2.2	2.2	2.4	2.2	2.2	2.2	3.0	4.0	4.0
TSS (lbs/day) Daily Maximum	0.11	0.13	0.14	0.13	0.12	0.13	0.15	0.14	0.14	0.13	0.12	0.19
TSS (mg/L) Average Monthly	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0	4.0	4.0	4.0	7.0
TSS (mg/L) Weekly Average	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0	4.0	4.0	4.0	8.0
Fecal Coliform (No./100 ml) Average Monthly	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fecal Coliform (No./100 ml) Instantaneous Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Total Nitrogen (lbs/day) Annual Average		0.04										
Total Nitrogen (mg/L) Annual Average		1.3										
Ammonia (lbs/day) Average Monthly	0.009	0.003	0.003	0.003	0.003	0.003	0.0003	0.003	0.0035	0.10	0.22	0.084
Ammonia (lbs/day) Weekly Average	0.011	0.003	0.003	0.003	0.003	0.003	0.0003	0.003	0.0035	0.16	0.22	0.088
Ammonia (mg/L) Average Monthly	0.26	0.10	0.10	0.10	0.10	0.10	0.01	0.10	0.10	3.3	7.9	2.8
Ammonia (mg/L) Weekly Average	0.42	0.10	0.10	0.10	0.10	0.10	0.01	0.10	0.10	5.3	8.2	3.0
Total Phosphorus (lbs/day) Daily Maximum	0.075	0.069	0.051	0.079	0.068	0.063	0.057	0.048	0.042	0.067	0.034	0.032
Total Phosphorus (mg/L) Average Monthly	2.1	2.0	1.5	2.1	2.2	1.9	1.6	1.3	1.07	1.4	1.3	1.0
Total Phosphorus (mg/L) Daily Maximum	2.8	2.3	1.6	2.3	2.2	1.9	1.8	1.4	1.2	2.0	1.5	1.1

Compliance History, Cont'd	
Summary of Inspections:	The facility has been inspected annually by the Department over the past permit term. The most recent inspection on February 7, 2020 identified no violations.
Other Comments:	A query in WMS found no open violations in eFACTS for Liberty Township, Montour 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	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Weir
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.37	XXX	1.21	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	2.7	4.3 Wkly Avg	XXX	25.0	40.0	50	2/month	8-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Suspended Solids	XXX	3.25	XXX	30	45	60	2/month	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200	XXX	1000	2/month	Grab
Total Nitrogen	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Ammonia-Nitrogen Nov 1 - May 31	2.0	2.9 Wkly Avg	XXX	18.0	27.0	36	2/month	8-Hr Composite
Ammonia-Nitrogen Jun 1 - Oct 31	0.7	1.0 Wkly Avg	XXX	6.0	9.0	12	2/month	8-Hr Composite
Total Phosphorus	XXX	0.08	XXX	Report	Report Daily Max	XXX	2/month	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.013
Latitude 40º 58' 54.40" **Longitude** -76º 42' 10.20"
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 limits are applicable and already included in the existing permit except for a more stringent water quality-based TRC limit which will remain.

Water Quality-Based Limitations

CBOD5, NH3-N & DO

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. The facility has existing water quality-based limits for ammonia-nitrogen and Dissolved Oxygen.

WQM7.0 modeling performed for the discharge to Mauses Creek for the previous review (see Attachment B) indicated that the existing CBOD5, DO, and NH3 limits are adequate to protect the receiving stream.

Total Residual Chlorine

The Department uses a modeling spreadsheet to analyze the toxicity of a discharge's Total Residual Chlorine (TRC) in a receiving stream. The attached modeling shows that the existing water quality-based limit of 0.37 mg/L is adequate to protect the receiving stream.

Toxics Management

No further "Reasonable Potential Analysis" was conducted to determine additional parameters as candidates for limitations or monitoring for this minor sewage treatment facility with no industrial users.

Mahoning Creek TMDL/Chesapeake Bay/ Nutrient Requirements

Pursuant to the Mahoning Creek Watershed TMDL, the Liberty Township facility has received a daily maximum loading limitation for Total Phosphorus of 0.8 lbs/day. In addition, the discharge has received a daily maximum loading limitation for TSS. These limitations were included in the previous permit renewal with a compliance schedule for meeting the Total Phosphorus loading.

In addition, according to the Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, this facility is considered a Phase 5 Chesapeake Bay sewage discharger, and as such requires no nutrient loading limits. Per a review of the facility DMRs over the past two years the Total Nitrogen has averaged 14.8 mg/L while the Total Phosphorus over the past year has averaged 1.5 mg/L. Because the total nitrogen levels in the discharge have adequately been characterized, existing annual Total Nitrogen monitoring will be removed from this proposed draft permit consistent with the Phase III WIP wastewater supplement. Total Phosphorus monitoring will remain due to the TMDL limitation.

Best Professional Judgment (BPJ) Limitations

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

Anti-Backsliding

No proposed limitations were made less stringent consistent with the anti-degradation requirements of the Clean Water Act and 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" (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	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Weir
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.37	XXX	1.21	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	2.7	4.3 Wkly Avg	XXX	25.0	40.0	50	2/month	8-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Suspended Solids	XXX	3.25	XXX	30	45	60	2/month	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200	XXX	1000	2/month	Grab
Ammonia-Nitrogen Nov 1 - May 31	2.0	2.9 Wkly Avg	XXX	18.0	27.0	36	2/month	8-Hr Composite
Ammonia-Nitrogen Jun 1 - Oct 31	0.7	1.0 Wkly Avg	XXX	6.0	9.0	12	2/month	8-Hr Composite

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	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Phosphorus	XXX	0.08	XXX	Report	Report Daily Max	XXX	2/month	8-Hr Composite

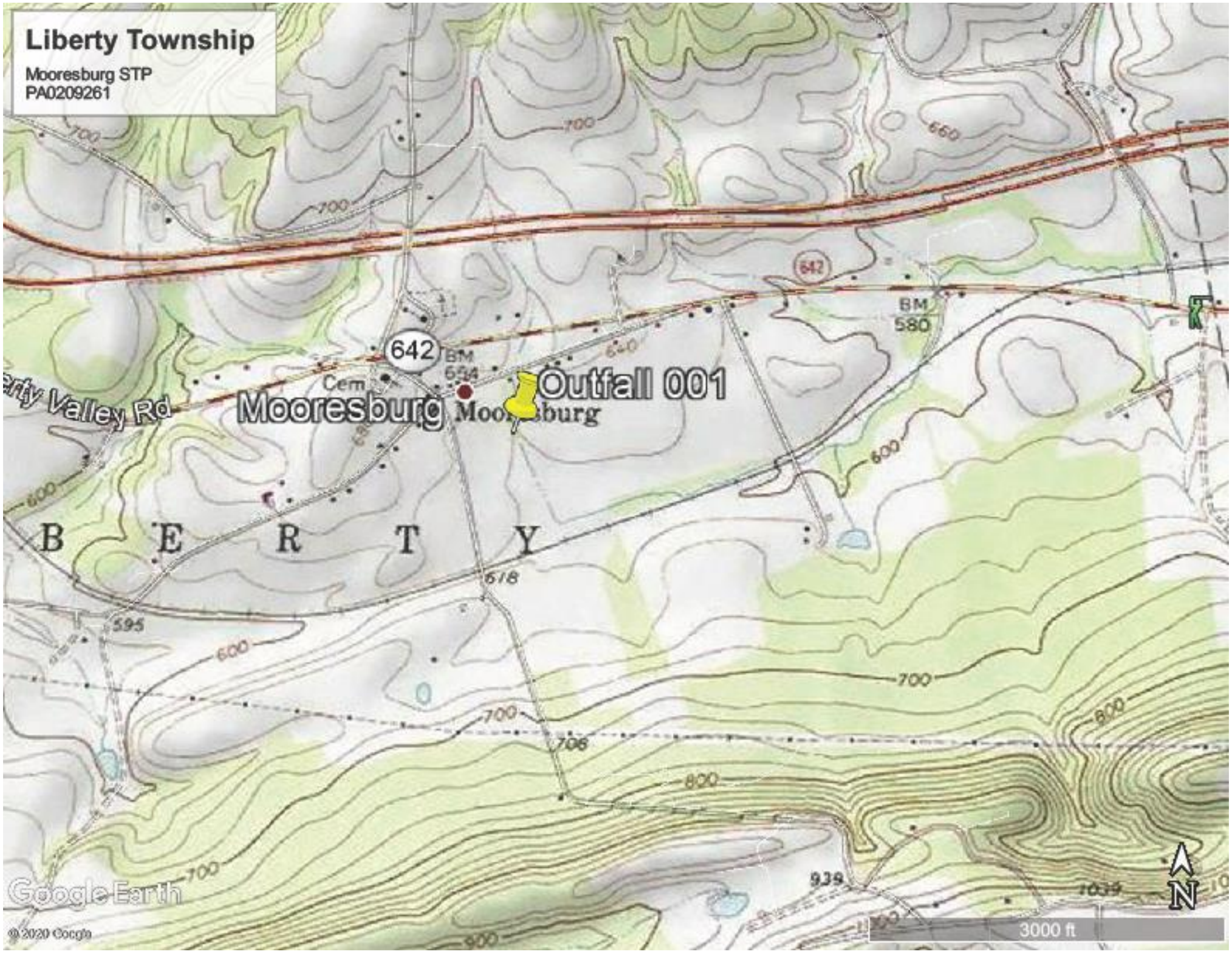
Compliance Sampling Location: Outfall 001

Other Comments: The only proposed change from the existing limitations and monitoring requirements is the removal of Total Nitrogen monitoring as mentioned above.

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

Attachments:

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


Liberty Township
Mooresburg STP
PA0209261
Outfall 001
Mooresburg
642
Google Earth
© 2020 Google
3000 ft
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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
05E	27331	MAUSES CREEK	**4.970**	620.00	0.30	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	0.168	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.50	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
MooresburgWWTP	PA0209261	0.0130	0.0130	0.0130	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	6.00	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	27331	MAUSES CREEK	**3.970**	580.00	1.76	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	0.168	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.50	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
05E	27331	MAUSES 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												
4.970	0.05	0.00	0.05	.0201	0.00758	.341	3.22	9.45	0.06	0.952	21.43	6.59
Q1-10 Flow												
4.970	0.05	0.00	0.05	.0201	0.00758	NA	NA	NA	0.06	0.980	21.50	6.60
Q30-10 Flow												
4.970	0.06	0.00	0.06	.0201	0.00758	NA	NA	NA	0.07	0.862	21.20	6.58

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	0.93	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.27	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
05E	27331	MAUSES 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
4.970	MooresburgWWT	10.46	12	10.46	12	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
4.970	MooresburgWWT	2.26	6	2.26	6	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)		
4.97	MooresburgWWTP	25	25	6	6	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
05E	27331	MAUSES CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
4.970	0.013	21.426	6.594
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
3.221	0.341	9.446	0.064
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
8.56	1.037	1.71	0.781
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.748	26.092	Owens	5
Reach Travel Time (days)			
0.952			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.095	7.70	1.59	8.03
0.190	6.93	1.47	8.03
0.286	6.24	1.37	8.03
0.381	5.61	1.27	8.03
0.476	5.05	1.18	8.03
0.571	4.55	1.10	8.03
0.666	4.09	1.02	8.03
0.762	3.68	0.94	8.03
0.857	3.31	0.88	8.03
0.952	2.98	0.81	8.03

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
05E	27331	MAUSES 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)
4.970	MooresburgWWTP	PA0209261	0.013	CBOD5	25		
				NH3-N	6	12	
				Dissolved Oxygen			3

TRC_CALC

TRC EVALUATION

Mooresburg Wastewater Treatment Plant

0.05	= Q stream (cfs)	0.5	= CV Daily
0.013	= 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)
1	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.812	1.3.2.iii	WLA cfc = 0.784
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.303	5.1d	LTA_cfc = 0.456
		WQBEL_afc= 0.372		WQBEL_cfc= 0.561

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.372	AFC
		INST MAX LIMIT (mg/l) = 1.218	

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)**