pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0080527**
Facility Type	**Non-Municipal**	APS ID	**498753**
Major / Minor	**Minor**	Authorization ID	**1299685**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Olivers Upper Lawn Mobile Home Comm**	Facility Name	**Olivers Upper Lawn MHC**
Applicant Address	23 Mockingbird Lane	Facility Address	296 Long Road
	Palmyra, PA 17078-9159		Palmyra, PA 17078-8380
Applicant Contact	Steven Oliver	Facility Contact	Steven Oliver
Applicant Phone	(717) 838-6748	Facility Phone	(717) 838-6748
Client ID	214240	Site ID	251028
Ch 94 Load Status	Not Overloaded	Municipality	South Londonderry Township
Connection Status	No Limitations	County	Lebanon
Date Application Received	December 6, 2019	EPA Waived?	Yes
Date Application Accepted	December 20, 2019	If No, Reason	

Purpose of Application: NPDES permit renewal for discharge of treated sewage

Summary of Review

1.0 General discussion

This fact sheet supports the re-issuance of an existing NPDES permit for discharge of treated sewage from a wastewater treatment plant that serves Oliver's Mobile Home Community (MHC). Oliver MHC consists of three sections of mobile homes. The original section flows by gravity while the subsequent two sections are served by pump stations. The secondary treatment plant discharges treated sewage to an unnamed tributary to Conewago Creek, which is classified for Trout Stocking (TSF). The facility has an average annual design flow of 0.029 MGD. The existing NPDES permit was issued on June 18, 2015 with an effective date of July 1, 2015 and expiration date of June 30, 2020. The applicant submitted timely NPDES renewal application to the Department and is currently operating under the terms and conditions in the existing permit under administrative extension provisions pending Department action on the renewal application.

A topographic map showing the discharge location is presented in attachment A.

1.1 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*

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	January 10, 2021
X		Daniel W. Martin, P.E. / Environmental Engineer Manager	January 25, 2021
X		Maria D. Bebenek, P.E./ Program Manager	January 25, 2021

Summary of Review

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.

1.2 Existing Limits and Monitoring Requirements

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Instantaneous Maximum		
Flow (mgd)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/Day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/Day	Grab
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-hr comp
$CBOD_5$	XXX	XXX	XXX	25	XXX	50	2/month	8-hr comp
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	2.5	XXX	5.0	2/month	8-hr comp
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	7.5	XXX	15.0	2/month	8-hr comp
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4.0	2/month	8-hr comp
Fecal Coliform (5/1 to 9/30)[(5)]	XXX	XXX	XXX	200	XXX	XXX	2/month	Grab
Fecal Coliform (10/1 to 4/30)	XXX	XXX	XXX	2,000	XXX	XXX	2/month	Grab
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	2/month	8-hr comp
Total Phosphorus	177 Annual Total	XXX	XXX	XXX	XXX	XXX	1/year	Calculate
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite

1.3 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.029
Latitude	40° 13’ 36.22”	Longitude	76° 34’ 13.42”
Quad Name	Elizabethtown	Quad Code	1733
Wastewater Description:	Sewage		
Receiving Waters	Unnamed Tributary to Conewago Creek	Stream Code	09281
NHD Com ID	56402687	RMI	1.28
Drainage Area	0.34	Yield (cfs/mi^2)	0.1
Q_{7-10} Flow (cfs)	0.034	Q_{7-10} Basis	USGS
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-G	Chapter 93 Class.	TSF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	Final, 04/09/2001	Name	Conewago Creek Watershed

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	Colombia Borough		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	>40

Changes Since Last Permit Issuance: None

1.31 Public Water Supply Intake

The nearest water supply intake is about 40 miles downstream at Columbia Borough, Lancaster County on the Susquehanna River by the Columbia Water Authority. No impact is expected from this discharge.

2.0 Treatment Facility Summary

Treatment Facility Name: Oliver MHP

WQM Permit No.	Issuance Date

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Hypochlorite	0.029

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.029	49.3	Not Overloaded	Aerobic Digestion	Hauled out

Changes Since Last Permit Issuance: Refurbished sand filter and replaced sand

Other Comments:

2.1 The Existing Treatment System

The existing treatment plant has two identical treatment trains consisting of a bar screen, aeration tank, clarifier, and open sand filter followed by a common chlorine contact tank and de-chlorination using tablets. The facility was updated in 2015 to upgrade headworks and install a new manhole that directs flow from gravity line and pump station to an EQ tank through the new manhole installed at the treatment plant. A grinder pump is expected to feed the two treatment trains with influent. The comminutor has been eliminated from the treatment process.

2.2 Chemical Additives

The following chemicals are added for treatment. Aluminum sulfate is added for phosphorus removal, Chlorine tablet added for disinfection and sodium bisulfite tablets is added for de-chlorination.

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from December 1, 2019 to November 30, 2020)

Parameter	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19
Flow (MGD) Average Monthly	0.015	0.014	0.018	0.021	0.021	0.020	0.018	0.02	0.023	0.020	0.016	0.014
Flow (MGD) Daily Maximum	0.017	0.016	0.024	0.024	0.026	0.023	0.022	0.027	0.027	0.024	0.019	0.016
pH (S.U.) Minimum	6.42	6.29	6.06	6.04	6.93	6.51	7.17	7.21	7.22	7.52	7.27	7.10
DO (mg/L) Minimum	7.98	6.54	7.09	6.09	5.77	6.12	5.47	6.85	7.10	8.15	6.61	7.13
TRC (mg/L) Average Monthly	0.03	0.02	0.04	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03
TRC (mg/L) Instant. Maximum	0.14	0.11	0.16	0.16	0.14	0.12	0.15	0.12	0.09	0.11	0.11	0.20
CBOD5 (mg/L) Average Monthly	< 2.0	< 2.0	< 2.35	< 2.0	< 2.40	< 2.0	< 2.35	< 2.0	7.25	2.40	< 2.20	13.55
TSS (mg/L) Average Monthly	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 6.0	6.50	< 17.50	< 5.0	< 5.0	< 5.0
Fecal Coliform (CFU/100 ml) Average Monthly	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.41	< 1.0	< 2.65	< 1.0	< 1.0	< 1.0
Fecal Coliform (CFU/100 ml) Instant. Maximum	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.0	1.0	7.0	< 1.0	< 1.0	< 1.0
Nitrate-Nitrite (mg/L) Average Monthly	34.05	44.25	47.45	31.70	41.25	34.10	32.15	16.30	25.65	27.40	28.2	18.15
Total Nitrogen (mg/L) Average Monthly	35.05	< 45.25	< 48.45	< 32.70	< 42.25	< 35.10	< 33.15	< 17.55	< 26.65	< 28.40	< 29.35	< 19.15
Ammonia (mg/L) Average Monthly	< 0.100	< 0.100	< 1.0	< 0.279	< 0.100	< 0.100	< 0.105	0.411	0.104	< 0.14	< 0.10	0.287
TKN (mg/L) Average Monthly	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.25	< 1.0	< 1.0	< 1.15	< 1.0
Total Phosphorus (mg/L) Aver. Monthly	0.875	1.235	1.05	1.25	1.15	2.15	1.95	1.65	2.0	1.38	0.820	0.945
Total Phosphorus (lbs) Total Monthly	3.15	4.03	5.25	6.665	5.95	11.25	8.99	8.82	12.37	6.13	3.255	3.27
Total Phosphorus (lbs) Final Effluent Total Annual												82.24

Compliance History

3.2 Effluent Violations for Outfall 001, from: January 1, 2020 To: November 30, 2020

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Total Phosphorus	06/30/20	Avg Mo	2.15	mg/L	2.0	mg/L

3.3 Summary of DMRs:

DMR summary of the past 12-month of operation is attached in section 3.1. One DMR violation noted for the past 12 months of operation as shown in section 3.2 above. The violation appears to be one-time occurrence.

3.4 Summary of Inspections:

The facility has been inspected about several times during the permit cycle. The distribution piping for one of the sand filters are broken and was noted as an operation and maintenance violation during plant inspection on 2/4/20.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .029
Latitude 40º 13' 36.22" **Longitude** -76º 34' 13.43"
Wastewater Description: Sewage Effluent

4.1 Basis for Effluent Limitations

In general, the Clean Water Act(AWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

4.2 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: Weekly averages are not applicable for this discharge

4.3 Water Quality-Based Limitations

4.3.1 Receiving Stream

The receiving stream is an unnamed tributary of Conewago Creek. According to 25 PA § 93.9o, this stream is protected for Trout Stocking (TSF) and Migratory Fishes (MF). It is located in Drainage List O and State Watershed 7-G It has been assigned stream code 09281. According to the Department's *Integrated Water Quality Monitoring and Assessment Report*, this segment of the stream is attaining its designated uses. A TMDL was developed for Conewago Watershed for Total phosphorus and was approved by EPA in 2001. See further discussion under Total Phosphorus section for waste load allocation to this discharge.

4.3.2 Stream flows

Streamflows flows were determined by correlating with the yield of USGS gage station No. 01571500 on Susquehanna River at Harrisburg. The $Q_{7\text{-}10}$ and drainage area at the gage is 2610ft^3/s and 24100mi^2 respectively. The resulting yields are as follows:

- $Q_{7\text{-}10}$ = (2610ft^3/s)/24100 mi^2 = 0.10 $ft^3/s/\ mi^2$
- $Q_{30\text{-}10}$ / $Q_{7\text{-}10}$ = 1.17
- $Q_{1\text{-}10}$ / $Q_{7\text{-}10}$ = 0.95

The drainage area at discharge taken from the previous permit= 0.34mi^2

The Q_{7-10} at discharge = 0.34 mi^2 x 0.10 $ft^3/s/mi^2$ = 0.034 ft^3/s.

4.3.3 NH_3N Calculations

NH_3N calculations will be based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the instream NH_3N criteria used in the attached computer model of the stream:

STP pH	=	6.06 (DMRs median between July-September.)
STP Temp	=	25°C (Default)
Stream pH	=	7.0 (Default)
Stream Temp	=	20°C (Default)
Background NH_3N	=	0 mg/l (Assumed)

4.3.4 $CBOD_5$ & NH_3-N

WQM7.0 is a steady state model that simplifies many natural processes into a reach-by-reach simulation was used for the analysis. The attached result of the WQM 7.0 stream model presented in attachment B indicates an average monthly limit (AML) of 25mg/l $CBOD_5$ is required to protect the water quality of the stream. This limit is consistent with the existing permit and past DMRs and inspection reports show that the STP has been consistently achieving below this limitation. Therefore, a limit of 25mg/l AML and 50 mg/l IMAX is recommended for this permit cycle.

The attached model results of the WQM 7.0 stream model also indicates that a summer limitation of 4.5 mg/l NH_3-N as a monthly average is necessary to protect the aquatic life from toxicity effects. This limit is less stringent than the existing limit of 2.5mg/l. Due to anti-backsliding restrictions, the existing limit of 2.5mg/l will remain in the permit. Winter limit of 7.5mg/l is 3 times the summer limit.

4.3.5 Dissolved Oxygen

The existing permit contains a limit of 5 mg/l for Dissolved Oxygen (DO). DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001, 10/97) suggests that either the adopted minimum stream D.O. criteria for the receiving stream or the effluent level determined through water quality modeling be used for the limit. Since the WQM 7.0 model was run using a minimum D.O. of 5.0 mg/l, this limit will be continued in the renewed permit with a daily monitoring requirement per DEP guidance.

4.3.6 Total Suspended Solids(TSS):

There is no water quality criterion for TSS. The existing limit of 30 mg/l AML is based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 PA § 92a.47(a)(1) will remain in the permit.

4.3.7 Total Phosphorus

The limit of 2 mg/l established in the existing permit was for the protection of the Lower Susquehanna River basin has been superseded by the Chesapeake Bay Strategy, but will remain in the permit due to anti-backsliding. This STP was designed to remove phosphorus and contains phosphorus limits in all previous permits. Past DMRs and inspection reports show that the STP is in compliance with effluent levels.

4.3.8 Total Maximum Daily Load (TMDL)

A TMDL for the Conewago Creek basin was completed and approved on March 2, 2001 and revised on November 15, 2006. The TMDL allocates a Phosphorus annual load of 177 lbs/yr (Subbasin A) based on the design flow of 0.029 MGD and a concentration of 2 mg/l to this discharge. This allocation has been incorporated into the previous NPDES permits and the facility has been complying with the TMDL limit.

4.3.8 Total Residual Chlorine

The attached TRC results utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The Guidance references Chapter 92a, Section 92a.48 (b) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The attached results presented in attachment C indicates that a water quality limit of 0.12 mg/l would be needed to prevent toxicity concerns. This is consistent with the existing permit. Past DMRs document that the STP has been capable of achieving well below the limit consistently. Therefore, it is recommended that a TRC limit of 0.12 mg/l monthly average (0.39 mg/l maximum) be applied for this permit cycle. De-chlorination is being used (sodium bisulfite tablets) to comply with the TRC limits.

4.3.9 Toxics

The facility treats mainly domestic sewage, with annual design flow of 0.029MGD. There are no parameters of concern associated with this discharge.

4.3.10 Chesapeake Bay Strategy

The Department formulated a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). Sewage discharges have been prioritized based on their delivered TN and TP loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. These limits may be achieved through a combination of treatment technology, credits, or offsets if approved by DEP. Phase 4 (0.2 - 0.4mgd) and Phase 5(below 0.2mdg) will be required to monitor and report TN and TP during permit renewal. Any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. This facility is 0.029 mgd plant, classified as a phase 5, and will be required to monitor and report Nitrate-Nitrite as N, Total Kjeldahl Nitrogen and Total Nitrogen throughout next permit cycle. Total Phosphorus monitoring is not required since there is a Total phosphorus limitation in the permit. A reduced monitoring frequency of once per month is required for Total Nitrogen, Nitrate-Nitrite as N, and Total Kjeldahl Nitrogen for this current renewal. The previous permit required 2/month that produced enough data for Total Nitrogen, Nitrate-Nitrite as N, and Total Kjeldahl Nitrogen to support a reduced monitoring frequency.

5.0 Other Requirements

5.1 Anti-backsliding

Not applicable to this permit

5.2 Stormwater:

No storm water outfall is associated with this facility

5.3 Special Permit Conditions

The permit will contain the following special conditions:

Stormwater Prohibition, Approval Contingencies, Management of collected screenings, slurries, sludges and other solids and Chlorine minimization

5.4 Biosolids Management

Digested sludge is periodically hauled out to Manheim wastewater treatment plant for further treatment.

5.5 Anti-Degradation (93.4)

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

5.6 Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

5.7 303d Listed Streams:

The discharge is not located on a 303d listed stream segment. However, the main stem of the Conewago Creek downstream was listed as impaired due to excessive nutrient and sediment loads from agriculture. A TMDL for the Conewago Creek basin was completed and approved on March 2, 2001 and revised on November 15, 2006. The TMDL allocates a Phosphorus annual load of 177 lbs/yr (Subbasin A) based on the design flow of 0.029 MGD and a concentration of 2 mg/l. This allocation was incorporated into the previous NPDES permits and will remain in the permit for the current permit cycle. The facility has no problem meeting the TMDL limitation.

5.8 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

5.9 Effluent Monitoring Frequency

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

6.0 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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.12	XXX	0.39	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	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
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	7.5	XXX	15	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.5	XXX	5	2/month	8-Hr Composite
TKN	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite

Outfall 001, Continued (from Permit Effective Date through Permit Expiration Date)

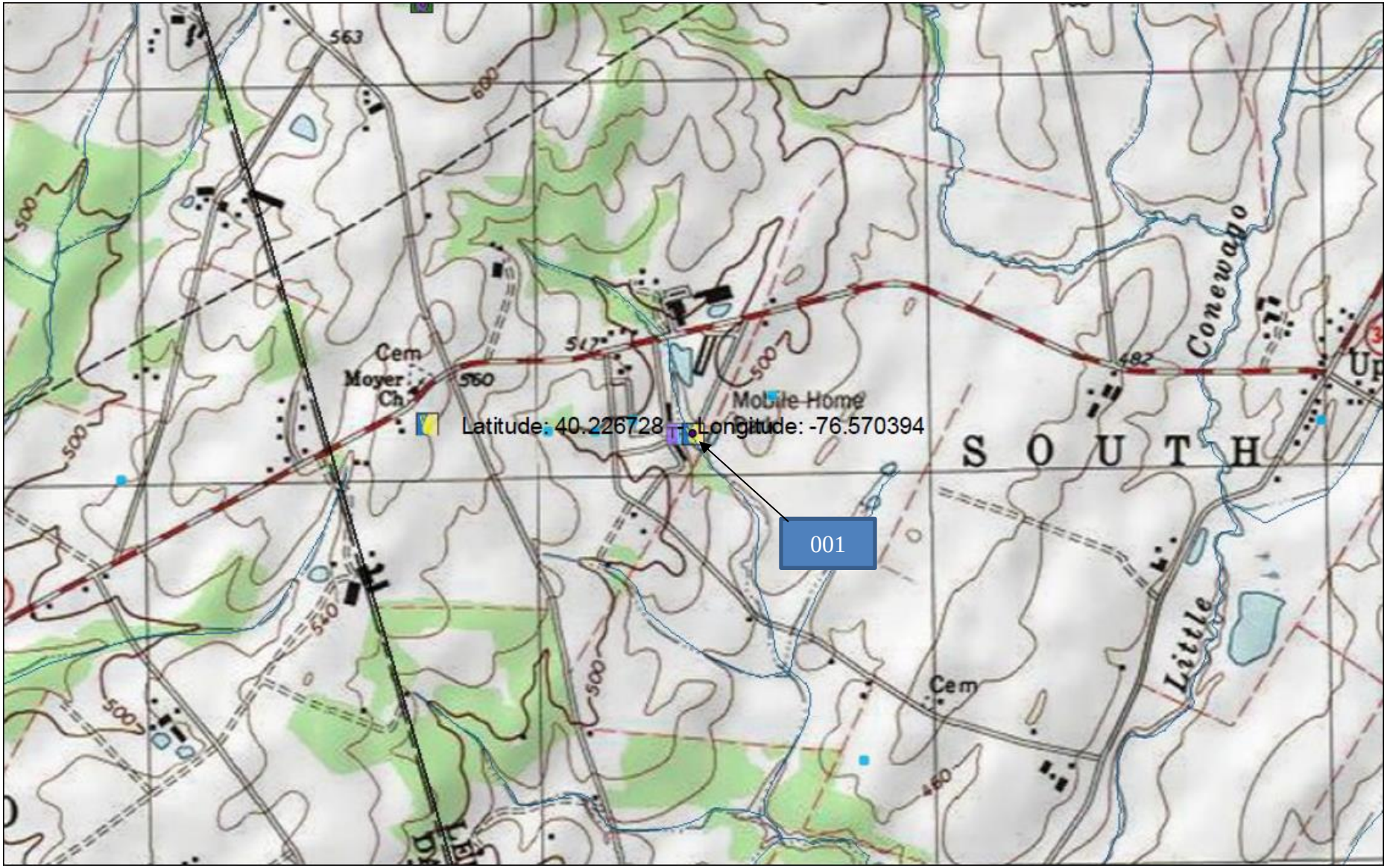
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs)	XXX	177 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: At Outfall 001

7.0 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 NPDES permits
☒	Other: WIP 2 and Supplement

8. Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07G	9281	Trib 09281 to Conewago 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)
1.280	Olivers MHP	PA0080527	0.029	CBOD5	25		
				NH3-N	4.54	9.08	
				Dissolved Oxygen			5

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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
07G	9281	Trib 09281 to Conewago Creek	**1.280**	470.00	0.34	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	0.100	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
Olivers MHP	PA0080527	0.0290	0.0290	0.0290	0.000	25.00	6.06

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	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

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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
07G	9281	Trib 09281 to Conewago Creek	**0.650**	455.00	0.40	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	0.100	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	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

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WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07G	9281	Trib 09281 to Conewago 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												
1.280	0.03	0.00	0.03	.0449	0.00451	.35	3.53	10.08	0.06	0.605	22.84	6.27
Q1-10 Flow												
1.280	0.03	0.00	0.03	.0449	0.00451	NA	NA	NA	0.06	0.612	22.91	6.26
Q30-10 Flow												
1.280	0.04	0.00	0.04	.0449	0.00451	NA	NA	NA	0.07	0.581	22.65	6.29

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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	0.95	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.17	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

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WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07G	9281	Trib 09281 to Conewago 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
1.280	Olivers MHP	10.08	17.34	10.08	17.34	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
1.280	Olivers MHP	2.41	4.54	2.41	4.54	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)		
1.28	Olivers MHP	25	25	4.54	4.54	5	5	0	0

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07G	9281	Trib 09281 to Conewago Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.280	0.029	22.844	6.269
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
3.534	0.350	10.085	0.064
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
15.08	1.357	2.58	0.871
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.398	25.523	Owens	5
Reach Travel Time (days)			
0.605			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.060	13.74	2.45	6.88
0.121	12.51	2.33	7.09
0.181	11.39	2.21	7.23
0.242	10.38	2.09	7.35
0.302	9.45	1.99	7.46
0.363	8.61	1.88	7.56
0.423	7.84	1.79	7.65
0.484	7.14	1.70	7.73
0.544	6.50	1.61	7.81
0.605	5.92	1.53	7.83

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C. TRC Calculations

1A	B	C	D	E	F	G
2	**TRC EVALUATION**			**Enter Facility Name in E3**		
3	Input appropriate values in B4:B8 and E4:E7					
4	0.034	= Q stream (cfs)		0.5	= CV Daily	
5	0.029	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Dischar		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
		= % Factor of Safety (FOS)			=Decay Coefficient (K)	
#	Source	Reference	AFC Calculations		Reference	CFC Calculations
#	TRC	1.3.2.iii	WLA afc = 0.261		1.3.2.iii	WLA cfc = 0.247
#	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
#	PENTOXSD TRG	5.1b	LTA_afc= 0.097		5.1d	LTA_cfc = 0.143
#						
#	Source		Effluent Limit Calculations			
#	PENTOXSD TRG	5.1f	AML MULT = 1.231			
#	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.120		AFC	
#			INST MAX LIMIT (mg/l) = 0.391			

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)