pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0085511**
Facility Type	**Municipal**	APS ID	**42121**
Major / Minor	**Minor**	Authorization ID	**1351289**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**West Hanover Township Water & Sewer Authority**	Facility Name	**West Hanover Township STP**
Applicant Address	7901 Jonestown Road	Facility Address	7901 Jonestown Road
	Harrisburg, PA 17112-9728		Harrisburg, PA 17112-9728
Applicant Contact	Mark Salisbury	Facility Contact	Jamie Aston
Applicant Phone	717-540-0124	Facility Phone	717-540-0124
Client ID	63776	Site ID	451782
Ch 94 Load Status	Not Overloaded	Municipality	West Hanover Township
Connection Status	No Limitations	County	Dauphin
Date Application Received	April 22, 2021	EPA Waived?	No
Date Application Accepted	May 6, 2021	If No, Reason	Significant CB Discharge

Purpose of Application: Permit renewal with Bay Cap Load.

Summary of Review

1.0 General Discussion

This fact sheet supports a second draft permit for renewal of an existing NPDES permit for discharge of treated domestic wastewater from West Hanover Township Water & Sewer Authority (Authority) wastewater treatment plant (WWTP). A draft permit was issued on May 05, 2022, but the permittee had an opportunity to resample some pollutants that were reported as non-detect using a more sensitive analytical method. The permit is being re-drafted to include the new data submitted. See section 4.4.11 of the factsheet for details. The Authority owns, operates, and maintains the WWTP. The facility is located in West Hanover Township, Dauphin County. The facility serves West Hanover Township. The sewer collection system is not combined in these areas and there are no bypasses of overflows in the collection system. The treatment plant has a hydraulic design capacity of 1.4 MGD and an annual average design flow of 0.78 MGD. The organic capacity of the facility is 3,527lbs/day- BOD5. The discharge goes to an UNT of Manada Creek which is classified for warm water fishes in 25 PA Code, Chapter 93. The existing NPDES permit was issued on October 12, 2016 with an expiration date of October 31, 2021. The applicant submitted a timely NPDES permit 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 Sludge use and disposal description and location(s):

The facility produces Class B Biosolids which is land applied under a biosolids permit number PAG-08-3518.

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	August 19, 2022
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	September 14, 2022
X		*Maria D. Bebenek* Maria D. Bebenek, P.E./ Program Manager	September 14, 2022

Summary of Review

1.2 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.

1.3 Changes to the existing permit

- E. Coli monitoring has been added
- Total Copper and Total Lead monitoring have been added.
- Limitation on Total Zinc has been added
- Limitation on ammonia-nitrogen has been revised.

1.4 Existing Limitations and Monitoring Requirements

DISCHARGE LIMITATIONS								MONITORING REQUIREMENTS	
	Mass Units lbs/day			Concentrations mg/l					
Discharge Parameter	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Inst. Maximum	Monitoring Frequency	Sample Type
Flow (mgd)	Monitor & Report	XXX	Monitor & Report	XXX	XXX	XXX	XXX	1/week	Wier
pH (S.U.)	XXX	XXX	XXX	From 6.0 to 9.0 inclusive				1/day	Grab
D.O.	XXX	XXX	XXX	Minimum of 5.0 mg/l at all times				1/day	Grab
TSS	195	292	XXX	30	45	XXX	60	1/week	24-hour comp
$CBOD_5$	162	260	XXX	25	40	XXX	50	1/week	24-hour comp
NH_3-N (5/1 to 10/31)	13	XXX	XXX	2.0	XXX	XXX	4.0	2/week	24-hour comp
NH_3-N (11/1 to 4/30)	39	XXX	XXX	6.0	XXX	XXX	12	2/week	24-hour comp
Fecal Col. (5/1 to 9/30)	XXX	XXX	XXX	200	XXX	XXX	XXX	1/week	Grab
Fecal Col. (10/1 to 4/30)	XXX	XXX	XXX	2,000	XXX	XXX	XXX	1/week	Grab
Total Phos.	13	XXX	XXX	2.0	XXX	XXX	4.0	2/week	24-hour comp

Summary of Review

1.4.1 Chesapeake Bay Limitations

Discharge Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Load(lbs)		Concentrations (mg/l)				
	Monthly	Annual	Minimum	Monthly Average	Maximum	Minimum Measurement Frequency	Required Sample Type
Ammonia---N	Report	Report	XXX	Report	XXX	2/week	24-hr Comp
Kjeldahl---N	Report	XXX	XXX	Report	XXX	2/Week	24-hr Comp
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/Week	24-hr Comp
Total Nitrogen	Report	Report	XXX	Report	XXX	1/Month	Calculate
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	24-hr Comp
Net Total Nitrogen	Report	14,246	XXX	XXX	XXX	1/Month	Calculate
Net Total Phos.	Report	1,900	XXX	XXX	XXX	1/Month	Calculate

1.5 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.78
Latitude	40º 20' 52.47"	Longitude	-76º 43' 1"
Quad Name	Hershey	Quad Code	1632
Wastewater Description:	Sewage		
Receiving Waters	Unnamed Tributary of Manada Creek	Stream Code	09582
NHD Com ID	56399105	RMI	0.10
Drainage Area	0.29	Yield (cfs/mi^2)	0.11
Q_{7-10} Flow (cfs)	0.031	Q_{7-10} Basis	USGS Gage Station
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Pathogens,		
Source(s) of Impairment	Source Unknown,		
TMDL Status		Name	

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

Nearest Downstream Public Water Supply Intake	PA American Water Company		
PWS Waters	Manada Creek	Flow at Intake (cfs)	8.5
PWS RMI		Distance from Outfall (mi)	

Changes Since Last Permit Issuance: None

1.5.1 Water Supply Intake:

The closest water supply intake located downstream from the discharge is the PA American Water Company on Manada Creek in South Hanover Township, Dauphin County. The distance downstream from the discharge to the intake is approximately 8.5 miles. No impact is expected from this discharge

2.0 Treatment Facility Summary

Treatment Facility Name: West Hanover Township STP

WQM Permit No.	Issuance Date
2294401 10-1	10/12/2011

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Sequencing Batch Reactor	Ultraviolet	0.78

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
1.4	3527	Not Overloaded	Aerobic Digestion	

Changes Since Last Permit Issuance: None

2.1 Treatment Facility Description

The treatment plant consists of influent pump station, screening units, 3 SBR tanks, 3 aerobic digesters, UV disinfection, post aeration cascade and belt filter press. Aluminum sulfate is added to the SBR tanks for phosphorus removal and polymer is added for coagulation.

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from July 1, 2021 to June 30, 2022)

Parameter	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21
Flow (MGD) Average Monthly	0.438	0.684	0.640	0.474	0.578	0.447	0.396	0.449	0.427	0.688	0.497	0.531
Flow (MGD) Daily Maximum	0.629	2.086	1.284	0.582	1.015	0.633	0.502	0.596	0.671	2.297	0.736	0.798
pH (S.U.) Minimum	6.5	6.3	6.2	6.2	6.4	6.4	6.4	6.5	6.4	6.6	6.4	6.5
pH (S.U.) Daily Maximum	6.8	6.5	6.6	6.9	6.8	6.9	6.9	7.0	7.0	7.0	6.9	7.1
DO (mg/L) Minimum	5.73	6.63	6.49	6.55	6.95	6.18	5.96	6.35	5.46	5.41	5.5	5.58
CBOD5 (lbs/day) Average Monthly	14	21	26	16.0	19.0	17.0	14.0	15.0	13.0	22.0	24.0	19.0
CBOD5 (lbs/day) Weekly Average	16	33	40	18.0	22.0	20.0	23.0	22.0	14.0	38.0	53.0	24.0
CBOD5 (mg/L) Average Monthly	3.9	4.0	4.8	4.1	4.6	4.2	4.3	4.2	3.7	5.2	6.2	4.0
CBOD5 (mg/L) Weekly Average	4.1	4.2	6.5	4.4	5.7	5.1	6.8	5.3	4.1	9.3	15.1	4.2
BOD5 (lbs/day) Raw Sewage Influent Ave. Monthly	485	474	400	440.0	443.0	898	322	453	438	427	499	412.0
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	562	636	493	584.0	539.0	1255	531	607	532	500	916	500.0
BOD5 (mg/L) Raw Sewage Influent Ave. Monthly	119.0	85	71	101.0	94.0	200	89	115	119	96	117	88.0
TSS (lbs/day) Average Monthly	22	36	56	55.0	28.0	19.0	18.0	37.0	18.0	17.0	16.0	18.0
TSS (lbs/day) Raw Sewage Influent Ave. Monthly	921	2014	1660	1059.0	1192.0	975	923	649	860	931	855	1216.0
TSS (lbs/day) Raw Sewage Influent Daily Maximum	989	4724	2167	2248.0	2692.0	1049	1009	848	1160	1270	1096	2041.0
TSS (lbs/day) Weekly Average	44	73	92	88.0	64.0	24.0	33.0	78.0	28.0	21.0	15.0	25.0
TSS (mg/L) Average Monthly	6.0	6.0	11.0	15.0	6.0	5.0	6.0	10.0	5.0	4.0	4.0	4.0

TSS (mg/L) Raw Sewage Influent Average Monthly	223.0	379.0	314	245.0	271.0	213	253	161	227	215	202	252.0
TSS (mg/L) Weekly Average	12.0	9.0	18.0	25.0	11.0	6.0	12.0	19.0	7.0	4.0	4.0	4.0
Fecal Coliform (CFU/100 ml) Geometric Mean	19	4.0	6.0	2.0	1.0	5.0	19.0	4.0	8.0	6.0	13.0	1.0
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	43	16.0	19.0	4.0	2.0	27.0	2420.0	63.0	461.0	387	85.0	2.0
UV Transmittance (%) Minimum	64.3	56.3	56.5	52.0	69.9	52.8	60.2	58.5	57.9	73.3	56.1	70.0
Nitrate-Nitrite (mg/L) Average Monthly	2.26	2.12	1.73	1.75	1.66	1.19	1.51	2.37	1.87	3.39	2.93	3.8
Nitrate-Nitrite (lbs) Total Monthly	249.2	340.7	269.6	221.5	188.2	139.7	148.8	246.8	194.5	624.3	377.3	522.6
Total Nitrogen (mg/L) Average Monthly	4.23	4.41	3.59	3.95	5.15	4.07	3.75	3.72	3.24	4.61	4.1	5.71
Total Nitrogen (lbs) Effluent Net Total Monthly	469.9	671.0	560.0	495.2	545.2	479.5	376.5	389.2	337.9	865.9	522.3	774.3
Total Nitrogen (lbs) Total Monthly	469.9	671.0	560.0	495.2	545.2	479.5	376.5	389.2	337.9	865.9	522.3	774.3
Total Nitrogen (lbs) Effluent Net Total Annual										7234		
Total Nitrogen (lbs) Total Annual										7234		
Ammonia (lbs/day) Average Monthly	0.37	0.5	1.79	1.45	8.15	4.47	1.27	0.37	0.37	0.68	0.54	0.44
Ammonia (mg/L) Average Monthly	0.10	0.10	0.37	0.37	2.3	1.15	0.37	0.11	0.11	0.1	0.12	0.1
Ammonia (lbs) Total Monthly	11.1	15.5	53.7	45.0	228.3	138.6	39.4	11.1	11.5	20.5	16.1	13.6
Ammonia (lbs) Total Annual										307		
TKN (mg/L) Average Monthly	2.0	2.3	1.9	2.2	3.5	2.9	2.2	1.4	1.4	1.22	1.17	1.91
TKN (lbs) Total Monthly	220.8	330.3	290.4	273.7	357.0	339.8	227.6	142.4	143.4	241.6	145.0	251.7
Total Phosphorus (lbs/day) Average Monthly	2.79	1.59	1.66	2.66	2.91	1.88	0.86	3.45	1.33	1.52	1.22	1.32

Total Phosphorus (mg/L) Average Monthly	0.75	0.32	0.32	0.65	0.73	0.49	0.27	0.99	0.4	0.21	0.29	0.31
Total Phosphorus (lbs) Effluent Net Total Monthly	83.7	49.4	49.7	82.4	81.4	58.3	26.6	103.6	41.1	45.5	36.6	41.1
Total Phosphorus (lbs) Total Monthly	83.7	49.4	49.7	82.4	81.4	58.3	26.6	103.6	41.1	45.5	36.6	41.1
Total Phosphorus (lbs) Effluent Net Total Annual										706		
Total Phosphorus (lbs) Total Annual										706		

3.2 Summary of Discharge Monitoring Reports (DMRs):

DMRs review for the facility for the last 12 months of operation, presented in section 3.1 indicate permit limits have been met consistently. No effluent violations were noted on DMRs during the period reviewed.

3.3 Summary of Inspections:

The facility has been inspected a couple times during last permit cycle. No effluent violations were found during plant inspections. The facility is operated and well maintained.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .78
Latitude 40º 20' 52.47" **Longitude** -76º 43' 1.00"
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: TRC limitation not applicable, the permittee utilizes UV for wastewater disinfection.

4.3 Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34

4.4 Water Quality-Based Limitations

4,4,1 Receiving Stream

The receiving stream is an unnamed tributary to Manada Creek. According to 25 PA § 93.9o, this stream is protected for Warm Water Fishes (WWF) and Migratory Fishes (MF). It is located in Drainage List O and State Watershed 7-D. It has been assigned stream code 09582. According to the Department's *Integrated Water Quality Monitoring and Assessment Report*, this stream is impaired for Portable Water Supply and recreational use. The cause of impairment is pathogens, and source of the impairment is unknown.

4.4.2 Stream flows

The Technical Support Document for Water Quality-Based Toxics Control (TSD) (EPA, 1991) and the Pennsylvania Water Quality Standards PA WQS) recommend the flow conditions for use in calculating water quality-based effluent limits

(WQBELs) using steady-state modeling. The TSD and the PA WQS state that WQBELs intended to protect aquatic life uses should be based on the lowest seven-day average flow rate expected to occur once every ten years (Q_{7-10}) for chronic criteria and the lowest one-day average flow rate expected to occur once every ten years (Q_{1-10}) for acute criteria. However, because the chronic criterion for ammonia is a 30-day average concentration not to be exceeded more than once every three years, EPA has used the Q_{30-10} for the chronic ammonia criterion instead of the Q_{7-10}. The Q_{30-10} is a biologically based design flow intended to ensure an excursion frequency of once every three years for a 30-day average flow rate. These flows were determined by correlating with the yield of nearby USGS gauging station No 01573500 on Manada Creek. The drainage area of the gage is 14.2 sq.mi. The yield at the gage are:

- Q_{7-10} =(1.51)/(14.2) = 0.11 cfs/sq.mi.
- Q_{30-10} / Q_{7-10} = 1.23
- Q_{1-10} / Q_{7-10} = 0.89

The drainage area at discharge = 0.28 mi^2
The Q_{7-10} at discharge = 0.28 mi^2 x 0.11$ft^3/s/mi^2$ = 0.031ft^3/s.

4.4.3 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 = 6.5 (DMR median)
- STP Temperature = 25 ^{o} C (Default)
- Stream pH = 7.0 (Default)
- Stream Temperature = 20 ^{o} C (Default)
- Background NH_3-N = 0.0 (default)

4.4.4 $CBOD_5$

The attached results of WQM 7.0 stream model presented in attachment B indicates that an average monthly limit (AML) of 25 mg/l CBOD5 is required to protect the water quality of the stream. This is consistent with the existing permit limitation. Therefore, the existing AML of 25 mg/l, average weekly limit (AWL) of 40mg/l and IMAX of 50mg/l will remain in the permit. Past DMRs and inspection reports show the STP has been consistently achieving below 10 mg/l CBOD5. Mass limits are calculated using the equation presented in section 4.3.

4.4.5 NH_3-N

The attached results of WQM 7.0 stream model indicates that a summer limit of 1.5 mg/l NH_3 as a monthly average is necessary to protect the aquatic life from toxicity effects. This limit is slightly more stringent than the exiting limit of 2.0mg/l, but the facility can meet the limit. Therefore, a summer average monthly limit of 1.5 mg/l and a winter limit of 4.5mg/l will be required in the new permit. Winter limit is 3 times the summer limit.

4.4.6 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.

4.4.7 Total Suspended Solids (TSS):

There is no water quality criteria for TSS. A limit of 30 mg/l AML in the existing permit which was 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) and an AWL of 45mg/l per 40CFR 133.102(b)(2) and 25 PA § 92a.47(a)(2) with associated mass limits will remain in the permit. Mass limits are calculated using the equation presented in section 4.3.

4.4.8 Phosphorus

The average monthly limit of 2mg/l phosphorus in the existing permit was based on the requirement to control phosphorus loading to Lower Susquehanna River Basin. That requirement has been superseded by the development of Chesapeake Bay TMDL in 2010, however due to anti-backsliding restrictions the limit will remain in the permit.

4.4.9 Chesapeake Bay Strategy:

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay requirements to reduce point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP) to the Bay. In the Strategy, sewage dischargers have been prioritized by DEP based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers received 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. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mdg) are required to monitor and report TN and TP during permit renewal and any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. EPA published Chesapeake Bay TMDL in December of 2010. In order to address the TMDL, Pennsylvania developed Chesapeake Watershed Implementation Plan (WIP) Phase 1, Phase 2 and currently Phase 3 WIP and a supplement to the WIPs to be implemented with the original Chesapeake Bay Strategy.

As outlined in the current Phase 3 WIP and the current supplement to the WIP, re-issuing permits for significant dischargers would follow the same phased approach formulated in the original Bay strategy whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewals.

This facility falls in phase 2 of the strategy and is required to meet a total maximum annual Total Nitrogen Cap load of 14,246lbs/year based on a design annual wasteflow of 0.78 MGD and 6 mg/l Total Nitrogen and a TP cap load of 1,900 lbs/year based on annual wasteflow of 0.78 MGD and 0.8 mg/l Total Phosphorus. The facility is in compliance with the bay cap load requirements.

The Department approved a Total Nitrogen offset of 2,250lbs of nitrogen based on 90EDUs at 25lbs/EDU for the Authority. The offsets is for 25 EDUs on-lot disposal systems that have been connected to the sewer conveyance system. These on-lot systems were put into use prior to January 1, 2003 and retired after January 1, 2003. The approved offsets are only for compliance purposes and are not available for trading or selling and will not be added to the base TN cap load. The permit will show the base cap load on the effluent page and show the offsets as a foot note with a language indicating the offsets may be applied throughout the compliance year or during the truing period. A complete list of addresses of the dwellings that were served by the retired on-lot systems that are now connected to the sewage conveyance system is on file.

4.4.10 Total Residual Chlorine

The discharge does not have a reasonable potential to cause or contribute to a water quality standards violation for total residual chlorine since the permittee utilizes UV for wastewater disinfection. Therefore, the proposed permit does not contain effluent limits for total residual chlorine. Existing daily UV transmittance monitoring and reporting will continue in the permit to ensure routine check for UV efficiency.

4.4.11 Toxics

A reasonable potential (RP) analysis was done for pollutants sampled and the re-sampled in support of the permit renewal application. All pollutants that were presented in the original application sampling data and the re-sampled ones were entered into DEP's Toxics Management Spreadsheet (TMS) to calculate WQBELs. The results of the TMS analysis are presented in attachment C. Permit limit is recommended for Total Zinc and monitoring is recommended for Total Copper, and Total Lead. The permit will be drafted with 1/month monitoring for Total Copper and Total Lead and the recommended limit of 0.024mg/l AML for Total Zinc with a sample frequency of 1/week.

The recommended limitations follow the logic presented in DEPs SOP, to establish limits in the permit where the maximum reported concentration exceeds 50% of the WQBEL, or for non-conservative pollutants, to establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL, or to establish monitoring requirements for conservative pollutants where the maximum reported concentration is between 10% - 50% of the WQBEL.

4.4.12 TDS, Chloride, Sulfate, Bromide, and 1,4-dioxane

The maximum daily TDS data submitted with the application is 844 mg/l which is equivalent to 5494 lbs/day based on the permitted flow of 0.78 MGD. The discharge level for TDS is well below 1000 mg/l and the 20,000lbs/day cut-off to require monitoring in the permit. There is no data on 1,4-dioxane.

4.4.13 Influent BOD and TSS Monitoring

The permit will include influent BOD5 and TSS monitoring at the same frequency as is done for effluent in order to implement Chapter 94.12 and assess percent removal requirements.

4.4.14 Fecal Coliform and E. Coli

The existing Fecal Coliform limit is consistent with the technology limits recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. In March of 2021, EPA approved DEP's Triennial Review of Water Quality Standards, which included a new swimming season criterion for E.coli. As a result, DEP is including monitoring requirements for E. Coli in new and renewed sewage permits above 2000gpd. Monitoring frequency is based on annual average flow as follows: 1/month for design flows >= 1 MGD, 1/quarter for design flows >= 0.05 and < 1 MGD and 1/year for design flows of 0.002 – 0.05 MGD. Your discharge of 0.78MGD requires 1/quarter monitoring as included in the permit.

4.4.15 Stormwater

The application identifies the existing outfall 002(Lat:40°20'54**"**, Long:76°42'54 as receiving stormwater runoff from the treatment plant site. A stormwater collection swale collects stormwater runoff from the Northeast and Eastern portions of the site and conveys it to detention basin situated behind the belt filter press building. The detention basin is designed to contain all runoff on site and is equipped with emergency spillway to outfall 002. This storm water outfall will not be included in Part C of the permit since stormwater is not expected to reach the outfall.

4.4.16 Industrial Users

This Wastewater Treatment Plant does not receive wastewater from any significant industrial users.

4.4.17 Biosolids Management:

Biosolids handling at the facility occurs in several stages. Waste Activated sludge is pumped directly from the SBR tanks to one of the three aerobic digesters for digestion. Digested biosolids is dewatered by belt filter press and lime amended to Class B status. It's then stored on-site before eventually land applied at approved farms. The Department has a separate biosolids permit for facilities that land apply. This facility has a biosolids permit PAG-08-3518 and is required to sample pollutants and pathogens once a year for the purpose of regulating biosolids.

4.4.18 Pretreatment Requirements

The design annual average flow of the treatment plant is 0.78 MGD and the facility receives no flow from significant Industrial users. EPA does not require development of pretreatment program for facilities with design flow less than 5MGD. However, the permit contain standard conditions requiring the permittee to monitor and control industrial users if applicable.

5.0 Other Requirements

5.1 Anti-backsliding

Not applicable to this permit

5.2 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.

5.3 Class A Wild Trout Fisheries

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

5.4 303d Listed Streams

The discharge is located on a stream segment that is designated on the 303(d) list as impaired for Portable Water Supply. The cause of impairment is pathogens, and source of the impairment is unknown. TMDL is slated for future; no further action is warranted at this time.

5.5 Special Permit Conditions

The permit contains the following special conditions:

- Stormwater Prohibition, Approval Contingencies, Solids Management, Restriction on receipt of hauled in waste under certain conditions, Chlorine minimization and Storm water requirement

5.6 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).

5.7 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)	Required
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum	Measurement Frequency	Sample Type
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	XXX	XXX	XXX	1/day	Grab
CBOD5	162	260	XXX	25.0	40.0	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	195	292	XXX	30.0	45.0	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation

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	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	29	XXX	XXX	4.5	XXX	9.0	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	10	XXX	XXX	1.5	XXX	3.0	2/week	24-Hr Composite
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	13	XXX	XXX	2.0	XXX	4	2/week	24-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Copper, Total	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Lead, Total	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Zinc, Total	1.55	XXX	XXX	0.24	XXX	0.25	1/week	24-Hr Composite

Compliance Sampling Location: At Outfall 001

6.1 Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

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
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Total Nitrogen (lbs) Effluent Net	XXX	14246 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Ammonia (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs) Effluent Net	XXX	1900 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: At Outfall 001

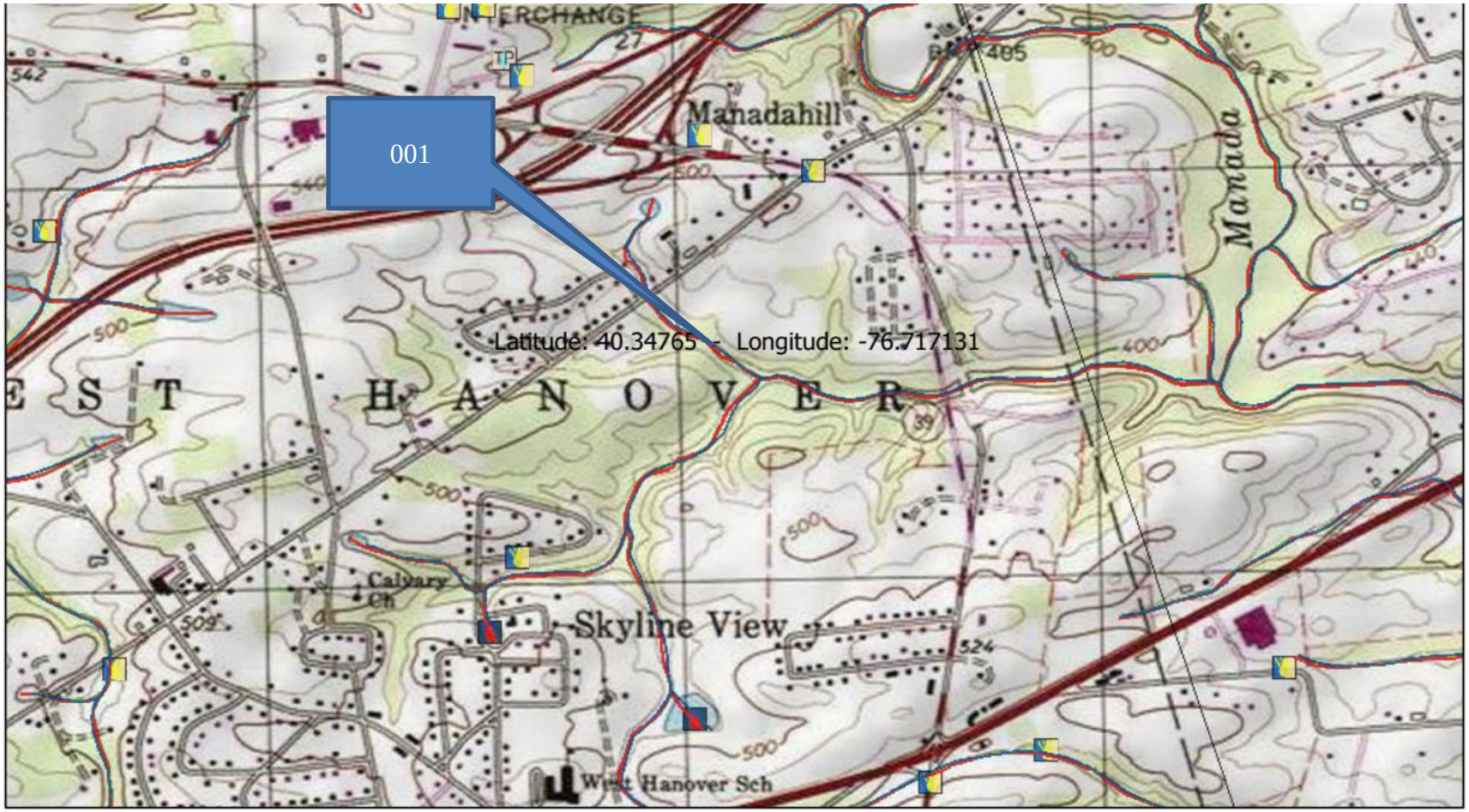
Other Comments:

The permittee is authorized to use 2,250 lbs/year as Total Nitrogen (TN) offsets toward compliance with the Annual Net TN mass load limitations (Cap Loads), in accordance with Part C of this permit. These Offsets may be applied throughout the Compliance Year or during the Truing Period. The application of offsets must be reported to DEP as described in Part C. The Offsets are authorized for the following pollutant load reduction activities: Connection of 90 on-lot sewage disposal systems to the public sewer system after January 1, 2003, in which 25 lbs/year of TN offsets are granted per connection.

7.0 Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	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 limitation for individual sewage permit
☐	Other:

8. Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07D	9582	Trib 09582 of Manada 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)
0.100	West Hanover T	PA0085511	0.780	CBOD5	25		
				NH3-N	1.61	3.22	
				Dissolved Oxygen			5

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
07D	9582	Trib 09582 of Manada Creek	**0.100**	440.00	0.29	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	0.110	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
West Hanover T	PA0085511	0.7800	0.7800	0.7800	0.000	25.00	6.50

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

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
07D	9582	Trib 09582 of Manada Creek	**0.001**	435.00	0.35	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	0.110	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	25.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07D	9582	Trib 09582 of Manada Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.100	0.780	24.871	6.508
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
6.707	0.563	11.918	0.328
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
24.41	1.497	1.56	1.018
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.084	33.480	Tsivoglou	5
Reach Travel Time (days)			
0.018			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.002	24.32	1.56	5.15
0.004	24.24	1.56	5.21
0.006	24.16	1.56	5.26
0.007	24.07	1.55	5.32
0.009	23.99	1.55	5.37
0.011	23.91	1.55	5.41
0.013	23.83	1.54	5.46
0.015	23.74	1.54	5.50
0.017	23.66	1.54	5.54
0.018	23.58	1.54	5.58

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	0.89	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.23	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
07D	9582	Trib 09582 of Manada 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
0.100	West Hanover T	15.08	15.44	15.08	15.44	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
0.100	West Hanover T	1.56	1.61	1.56	1.61	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)		
0.10	West Hanover T	25	25	1.61	1.61	5	5	0	0

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07D	9582	Trib 09582 of Manada 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												
0.100	0.03	0.00	0.03	1.2067	0.00957	.563	6.71	11.92	0.33	0.018	24.87	6.51
Q1-10 Flow												
0.100	0.03	0.00	0.03	1.2067	0.00957	NA	NA	NA	0.33	0.018	24.89	6.51
Q30-10 Flow												
0.100	0.04	0.00	0.04	1.2067	0.00957	NA	NA	NA	0.33	0.018	24.84	6.51

C. Toxic Management Spreadsheet

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **West Hanover Twp** NPDES Permit No.: **PA0085511** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Sewage**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.78	229	6.5						

					0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		844									
	Chloride (PWS)	mg/L		424									
	Bromide	mg/L	<	0.5									
	Sulfate (PWS)	mg/L		5									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L											
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L		5.5									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L		1.1									
	Total Manganese	µg/L											
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L											
	Total Silver	µg/L											
	Total Thallium	µg/L											
	Total Zinc	µg/L		133									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

Stream / Surface Water Information

West Hanover Twp, NPDES Permit No. PA0085511, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **UNT Manada Creek**

No. Reaches to Model: 1

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	009582	0.1	440	0.29			Yes
End of Reach 1	009582	0.001	435	0.35			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	0.1	0.11										100	7		
End of Reach 1	0.001	0.11													

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	0.1														
End of Reach 1	0.001														

Model Results

West Hanover Twp, NPDES Permit No. PA0085511, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | (•) All ( ) Inputs ( ) Results ( ) Limits

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ ***AFC*** CCT (min): 0.001 PMF: 1 Analysis Hardness (mg/l): 225.68 Analysis pH: 6.51

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	28.935	30.1	30.9	Chem Translator of 0.96 applied
Total Lead	0	0		0	154.721	230	236	Chem Translator of 0.672 applied
Total Zinc	0	0		0	233.542	239	245	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 0.001 PMF: 1 Analysis Hardness (mg/l): 225.68 Analysis pH: 6.51

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	17.954	18.7	19.2	Chem Translator of 0.96 applied
Total Lead	0	0		0	6.029	8.97	9.2	Chem Translator of 0.672 applied
Total Zinc	0	0		0	235.453	239	245	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 0.001 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	

Total Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 0.069 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Copper	Report	Report	Report	Report	Report	µg/L	19.2	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Lead	Report	Report	Report	Report	Report	µg/L	9.2	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	1.55	1.59	239	245	245	µg/L	239	AFC	Discharge Conc ≥ 50% WQBEL (RP)

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable