pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0028487**
Facility Type	**Municipal**	APS ID	**993731**
Major / Minor	**Major**	Authorization ID	**1274132**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Hermitage Municipal Authority**	Facility Name	**Hermitage Municipal Authority STP**
Applicant Address	800 North Hermitage Road	Facility Address	2133 Broadway Road
	Hermitage, PA 16148		Hermitage, PA 16148
Applicant Contact	Thomas Darby, Manager	Facility Contact	Thomas Darby, Manager
Applicant Phone	(724) 347-4941	Facility Phone	(724) 347-4941
Client ID	62690	Site ID	263151
Ch 94 Load Status	Not Overloaded	Municipality	Hermitage City
Connection Status	Dept. Imposed Connection Prohibitions	County	Mercer County
Date Application Received	May 1, 2019	EPA Waived?	No
Date Application Accepted	May 22, 2019	If No, Reason	Major Facility, Pretreatment
Purpose of Application	Renewal of a major NPDES Permit for an existing discharge of treated sanitary wastewater from a municipal sewer system.		

Summary of Review

Act 14 - Proof of Notification was submitted and received.

A Part II Water Quality Management permit is not required at this time.

The applicant should be able to meet the limits of this permit, which will continue to protect the uses of the receiving stream.

I. OTHER REQUIREMENTS:
- A. Stormwater into sewers
- B. Right of way
- C. Solids handling
- D. Effluent Chlorine Optimization and Minimization
- E. Batch discharges
- F. Ultraviolet (UV) Light Disinfection Reporting

SPECIAL CONDITIONS:
- II. Compliance Schedule for Dissolved Oxygen (DO)
- III. POTW Pretreatment Program Implementation
- IV. Solids Management
- V. Water Quality-Based Effluent Limitations for Toxic Pollutants
- VI. Whole Effluent Toxicity (WET)
- VII. Requirements Applicable to Stormwater Outfalls

There are 3 open violations in efacts associated with the subject Client ID (62690) as of 10/6/2020 (see Attachment 7).

Approve	Deny	Signatures	Date
X		Stephen A. McCauley Stephen A. McCauley, E.I.T. / Environmental Engineering Specialist	10/6/2020
X		Justin C. Dickey Justin C. Dickey, P.E. / Environmental Engineer Manager	October 6, 2020

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	7.7
Latitude	41º 11' 31.05"	Longitude	-80º 28' 10.92"
Quad Name	-	Quad Code	-
Wastewater Description:	Sewage Effluent		
Receiving Waters	Shenango River (WWF)	Stream Code	35482
NHD Com ID	130033642	RMI	23.4
Drainage Area	710	Yield (cfs/mi^2)	0.16 (Sharpsville 03103500)
Q_{7-10} Flow (cfs)	113.6	Q_{7-10} Basis	Calculated
Elevation (ft)	836	Slope (ft/ft)	0.000076
Watershed No.	20-A	Chapter 93 Class.	WWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired*		
Cause(s) of Impairment	Metals and Polychlorinated Biphenyls (PCBs)		
Source(s) of Impairment	Source Unknown		
TMDL Status	PCBs - Final (4/9/2001) Metals - Pending	Name	Shenango River

Background/Ambient Data		Data Source
pH (SU)	-	-
Temperature (°F)	-	-
Hardness (mg/L)	116.1	Shenango River TMDL
Other:	-	-

Nearest Downstream Public Water Supply Intake		Pennsylvania American Water Company - New Castle	
PWS Waters	Shenango River	Flow at Intake (cfs)	100
PWS RMI	5.1	Distance from Outfall (mi)	18.0

* - This discharge is not expected to be a source of any PCBs. The impairment caused by unknown metals is being addressed by ensuring the discharge does not contain any metals in amounts that would exceed the assimilative capacity of the Shenango River (see sections 4 and 5 below).

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.

Narrative: This Fact Sheet details the determination of draft NPDES permit limits for an existing discharge of 7.7 MGD of treated sewage from a Publicly Owned Treatment Works (POTW) in Hermitage City, Mercer County.

Treatment permitted under WQM Permit 4303416 consists of: A coarse bar screen, three fine screen units, a grit chamber, a pump station with four wet wells and two aerated equalization tanks. Three SBR tanks, two aerated high flow storage tanks, and Ultraviolet (UV) light disinfection. Sludge handling consists of anaerobic digestion using a thermophilic digester and three mesophilic digesters.

Facility Area: See the topographical map (Attachment 1) and the aerial image (Attachment 2)

1. Streamflow: Shenango River @ Outfall 001:

The flow in the Shenango River is regulated at the Shenango River Reservoir Dam. The base flow is set to 141.9 cfs based on 1967-1992 data. With a drainage area of 584 square miles, the yieldrate calculates as 0.24 cfsm.

Drainage Area:	710	sq. mi.	(USGS StreamStats)
Yieldrate:	0.24	cfsm	(see above - regulated flow)
Q_{7-10}:	170.4	cfs	(calculated)

% of stream allocated: 100% Basis: No nearby discharges

2. Wasteflow:

Maximum discharge: 7.7 MGD = 11.9 cfs

Runoff flow period: 24 hours Basis: Runoff flow for a Municipal STP

There is greater than 3 parts stream flow (Q7-10) to 1 part effluent (design flow). In accordance with the SOP, since this is an existing discharge, the treatment requirements in document number 391-2000-014, titled, "Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers", dated April 12, 2008, will not be implemented in this NPDES Permit.

3. Parameters:

The following parameters were evaluated: pH, Total Suspended Solids, Fecal Coliform, Phosphorus, NH_3-N, $CBOD_5$, Dissolved Oxygen, and Total Residual Chlorine. NH_3-N, $CBOD_5$, and Dissolved Oxygen were evaluated using WQM 7.0 at the discharge point.

a. pH

Between 6.0 and 9.0 at all times

Basis: Application of Chapter 93.7 technology-based limits. The measurement frequency was previously set to 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001), which will be retained.

b. Total Suspended Solids

Limits are 30 mg/l as a monthly average and 60 as a daily maximum.

Basis: Application of Chapter 92a47 technology-based limits

c. Fecal Coliform

05/01 - 09/30:	200/100ml	(monthly average geometric mean)
	1,000/100ml	(instantaneous maximum)

10/01 - 04/30: 2,000/100ml (monthly average geometric mean)
10,000/100ml (instantaneous maximum)

Basis: Application of Chapter 92a47 technology-based limits

d. Phosphorus

☐ Limit necessary due to:

☐ Discharge to lake, pond, or impoundment
☐ Discharge to stream

Basis: N/A

☒ Limit not necessary

Basis: Chapter 96.5 does not apply. However, the previous monitoring for Total Phosphorus will be retained in accordance with the SOP, based on Chapter 92a.61.

e. Total Nitrogen

The previous monitoring for Total Nitrogen will be retained in accordance with the SOP, based on Chapter 92a.61.

f. Ammonia-Nitrogen (NH_3-N)

Median discharge pH to be used: 6.9 Standard Units (S.U.)

Basis: default value used in the absence of data

Discharge temperature: 25°C (default value used in the absence of data)

Median stream pH to be used: 7.0 Standard Units (S.U.)

Basis: default value used in the absence of data

Stream Temperature: 25˚C (default value used for WWF modeling)

Background NH_3-N concentration: 0.1 mg/l

Basis: Default value.

Calculated NH_3-N Summer limits: 18.8 mg/l (monthly average)
37.6 mg/l (instantaneous maximum)

Calculated NH_3-N Winter limits: 25.0 mg/l (monthly average)
50.0 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the summer water quality-based limits above (see Attachment 3). The winter limits are calculated as three times the summer limits, but since the technology-based limits are more protective, they will be used. Since the previously set summer limits of 11 mg/l and 22 mg/l are attainable based on eDMR data, they will be retained. Since the previous winter NH3-N was set as monitor only, and the technology-based limits are protective, per the SOP, the winter NH3-N will remain monitor only.

g. $CBOD_5$

Median discharge pH to be used: 6.9 Standard Units (S.U.)

Basis: default value used in the absence of data

Discharge temperature: 25°C (default value used in the absence of data)

Median stream pH to be used: 7.0 Standard Units (S.U.)

Basis: default value used in the absence of data

Stream Temperature: 25˚C (default value used for WWF modeling)

Background $CBOD_5$ concentration: 2.0 mg/l

Basis: Default value

$CBOD_5$ Summer limits: 25.0 mg/l (monthly average)
50.0 mg/l (instantaneous maximum)

$CBOD_5$ Winter limits: 25.0 mg/l (monthly average)
50.0 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the calculated summer limits above (see Attachment 3), which are the same as the previous NPDES Permit. The winter limits are calculated as three times the summer limits, but since the technology-based limits are more protective, they will be used. Since the summer limits and the winter limits are the same, the limits for $CBOD_5$ will be set year-round as in the previous NPDES Permit.

h. Dissolved Oxygen (DO)

- ☒ 4.0 mg/l - minimum desired in effluent to protect all aquatic life
- ☐ 5.0 mg/l - desired in effluent for CWF, WWF, or TSF
- ☐ 6.0 mg/l - minimum required due to discharge falling under guidance document 391-2000-014
- ☐ 8.0 mg/l - required due to discharge going to a naturally reproducing salmonid stream

Discussion: The Dissolved Oxygen minimum of 4.0 mg/l will be added with this renewal. The technology-based minimum of 4.0 mg/l is recommended by the WQ Model (see Attachment 3) and the SOP based on Chapter 93.7, under the authority of Chapter 92a.61. The measurement frequency was previously set to 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001), which will be retained. Dissolved Oxygen was previously set as monitor only in the previous permit. Based on the eDMR data, the new minimum of 4.0 mg/l may not be attainable so a one year compliance schedule was added.

i. Total Residual Chlorine (TRC)

☒ No limit necessary

Basis: Since Ultraviolet (UV) light is used for disinfection, limits for TRC are not necessary. UV Intensity reporting will be retained with this renewal. The measurement frequency was previously set to 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001), which will be retained.

☐ TRC limits: _____ mg/l (monthly average)
_____ mg/l (instantaneous maximum)

Basis: N/A

j. Influent Total Suspended Solids and BOD_5

Monitoring for these two parameters will be retained as recommended in the SOP for POTWs, and as authorized under Chapter 92a.61.

k. Anti-Backsliding

Since all the permit limits in this renewal are the same or more restrictive than the previous NPDES Permit, anti-backsliding is not applicable.

4. Reasonable Potential Analysis for Receiving Stream:

A Reasonable Potential Analysis was performed in accordance with State practices for Outfall 001 by first using the Toxics Screening Analysis Spreadsheet (see Attachment 4) to determine which parameters should be modeled using the PentoxSD program (see Attachment 5). The following parameters were modeled for Outfall 001:

Total Dissolved Solids, Chloride, Sulfate, Total Cadmium, Total Copper, Total Mercury, Total Selenium, 1,3-Dichloropropylene, 2,6-Dinitrotoluene, 4,4-DDT, 4,4-DDE, and 4,4-DDD.

Median stream pH to be used:	7.0	Standard Units (S.U.)
Stream hardness to be used:	116.1	mg/l
	Basis:	Default value (pH) and TMDL (hardness)
Median discharge pH to be used:	6.9	Standard Units (S.U.)
Discharge hardness to be used:	215	mg/l
	Basis:	eDMR and Renewal application sampling

Result: Based on the Toxics Screening Analysis Spreadsheet (see Attachment 4) and the PentoxSD program (see Attachment 5), limits would be required for Total Cadmium, Total Mercury, Total Selenium, 4,4-DDT, 4,4-DDE, and 4,4-DDD, and will be added to this renewal permit.

A pre-Draft survey letter (see Attachment 8) was mailed on February 25, 2020 to provide the Permittee the ability to sample at the target QLs set in the permit application. An email response (se Attachment 9) was received on March 30, 2020 declining to perform any additional sampling.

A request was made with the renewal application to remove the Total Copper limits that were set in the previous NPDES Permit. The TRE performed by the permittee showed that the Total Copper in the effluent originated, in large part, from the potable water supply and distribution system. Based on the Toxics Screening Analysis Spreadsheet (see Attachment 4), no reasonable potential for Total Copper was determined. Based on the TRE results and the Toxics Screening Analysis Spreadsheet results, no limits for Total Copper will be required with this renewal.

The previous limits for Total Antimony and Chlordane were also removed with this renewal based on the Toxics Screening Analysis Spreadsheet (see Attachment 4). Anti-backsliding is avoided since, under 40 CFR §122.44(l)(i)(B)(1), information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

5. Reasonable Potential for Downstream Public Water Supply (PWS):

Since PentoxSD does not calculate WQBELs for PWS-related parameters, NO_2-NO_3, Fluoride, Phenolics, Sulfates, Chlorides, and TDS can be evaluated at the nearest downstream potable water supply (PWS) using a mass-balance calculation (see below).

Based on the Toxics Screening Analysis Spreadsheet (see Attachment 4), Total Dissolved Solids was determined to have a reasonable potential, and Sulfate, Bromide, and Chloride were recommended to be monitored.

Bromide has been linked to the formation of disinfection byproducts at increased levels in public water systems. Where the concentration of bromide in a discharge exceeds 1 mg/L, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. From the NPDES Permit renewal application, the maximum level of Bromide sampled in the discharge was 0.34 mg/l. Based on that information, monitoring for Bromide will not be added to this renewal permit.

Nearest Downstream potable water supply (PWS): Pennsylvania American Water Company - New Castle

Distance downstream from the point of discharge: 18.0 miles (approximate)

PWS Evaluation:

Stream flow (sf) at the potable water supply intake = 189.6 cfs (0.24 cfsm x 790 sq.mi)
Waste flow (wf) from the STP = 7.7 MGD = 11.9 cfs
Total flow = 201.5 cfs

Background Concentrations: No data available

Mass balance for TDS at the potable water supply intake:

(sf @ PWS)(bkrd. conc.) + (wf)(x) = (tot. flow)(criteria)

(189.6 cfs)(0 mg/l) + (11.9 cfs)(x) = (201.5 cfs)(500 mg/l)

x = 8,466 mg/l (renewal application maximum was 597 mg/l - ok)

Mass balance for Chlorides at the potable water supply intake:

(sf @ PWS)(bkrd. conc.) + (wf)(x) = (tot. flow)(criteria)

(189.6 cfs)(0 mg/l) + (11.9 cfs)(x) = (201.5 cfs)(250 mg/l)

x = 4,233 mg/l (renewal application maximum was 222 mg/l - ok)

Mass balance for Sulfates at the potable water supply intake:

(sf @ PWS)(bkrd. conc.) + (wf)(x) = (tot. flow)(criteria)

(189.6 cfs)(0 mg/l) + (11.9 cfs)(x) = (201.5 cfs)(250 mg/l)

x = 4,233 mg/l (renewal application maximum was 69.7 mg/l - ok)

☒ No limits necessary
☐ Limits needed

Basis: Significant dilution available.

6. Flow Information:

The Hermitage Municipal Authority STP receives 92.3% of its flow from the Hermitage City. Clark Borough contributes 3.1%, South Pymatuning Township contributes 3%, Shenango Township contributes 0.1%, Wheatland Borough contributes 0.2%, and Jefferson Township contributes 2.1%

All six contributing municipalities are separate sewer systems.

7. Attachment List:

Attachment 1 - Topographical Map of the Facility Area
Attachment 2 - Aerial Map of the STP
Attachment 3 - WQ Modeling Printouts
Attachment 4 - Toxics Screening Analysis Spreadsheet
Attachment 5 - PentoxSD Modeling Printouts

Attachment 6 - WET Analysis Spreadsheet

Attachment 7 - Open Violations Spreadsheet

Attachment 8 - February 25, 2020 Pre-Draft Survey Letter

Attachment 9 - March 30, 2020 Pre-Draft Survey Letter Response

If viewing this electronically, please refer to the following PDF to view the above Attachments:

Adobe Acrobat Document

Compliance History

DMR Data for Outfall 001 (from August 1, 2019 to July 31, 2020)

Parameter	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19	AUG-19
Flow (MGD) Average Monthly	2.64	3.87	4.63	5.48	6.33	6.40	5.80	4.68	3.60	3.15	2.34	2.91
Flow (MGD) Weekly Average	3.18	4.87	4.74	7.15	7.03	5.60	6.23	5.44	3.65	4.47	2.53	3.47
pH (S.U.) Minimum	6.71	6.70	6.63	6.79	6.69	6.73	6.69	6.78	6.68	6.81	6.82	6.81
pH (S.U.) Maximum	7.04	7.04	7.22	7.12	7.03	7.08	7.04	7.15	7.17	7.08	7.14	7.16
DO (mg/L) Minimum	1.71	1.27	2.00	2.1	2.0	1.86	2.03	2.02	1.68	1.41	1.61	1.37
CBOD5 (lbs/day) Average Monthly	< 577	< 228	< 133	< 163	< 279	< 144	< 199	< 122	< 107	< 84	< 96	< 155
CBOD5 (lbs/day) Weekly Average	1262	281	< 161	< 756	< 192	< 160	< 301	< 136	< 126	< 145	< 193	272
CBOD5 (mg/L) Average Monthly	< 24.8	< 7.1	< 3.4	< 3.6	< 4.2	< 3.08	< 4.2	< 3.2	< 3.52	< 3.2	< 4.1	< 6.4
CBOD5 (mg/L) Weekly Average	53.1	9.2	< 4.0	< 9.6	< 3.4	< 3.07	< 6.9	< 3.7	< 4.11	< 3.9	< 7.4	10.2
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	3582	4400	3728	4001	4435	4372	4473	4312	4636	4643	3748	6162
BOD5 (mg/L) Raw Sewage Influent Average Monthly	162	136	102	89	94	95.0	95	110	155	180	172	243
TSS (lbs/day) Average Monthly	561	419	207	148	652	108	331	133	142	108	91	230
TSS (lbs/day) Raw Sewage Influent Average Monthly	3444	4377	4338	4735	5129	5328	4387	4733	5304	5579	4377	5907
TSS (lbs/day) Weekly Average	1789	561	290	2111	366	130	895	148	156	200	181	490
TSS (mg/L) Average Monthly	23.7	13.5	5.4	3.2	8.1	2.3	7.3	3.5	4.64	4.0	3.9	9.7
TSS (mg/L) Raw Sewage Influent Average Monthly	156	137	117	103	106	116	95	121	177	214	202	231
TSS (mg/L) Weekly Average	72.8	19.0	7.3	22.0	6.4	2.6	21.2	4.7	5.09	5.1	7.0	19.5

Fecal Coliform (CFU/100 ml) Geometric Mean	3.0	6	4.0	6	4.0	3.0	4.0	7.0	4.0	7.0	2.0	4.0
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	66	143	17	62	71	11.0	23	19	19	96	83	70
UV Intensity (µw/cm²) Average Monthly	43.0	49.1	45.0	43.7	48.5	43.6	43.9	48.0	53.6	54.0	46.2	46.1
Total Nitrogen (mg/L) Average Monthly		9.05			5.09			1.75			0.58	
Ammonia (lbs/day) Average Monthly	< 135	122	328	495	413	413	255	161	169	142	116	168
Ammonia (mg/L) Average Monthly	< 6.1	3.98	8.5	11.0	8.3	8.82	5.3	4.1	5.66	5.2	5.1	6.7
Total Phosphorus (mg/L) Average Monthly		0.13			7.0			1.4			0.37	
Total Copper (lbs/day) Average Monthly	0.259	0.003	0.003	0.15	0.23	0.14	0.17	0.15	0.080	0.06	< 0.070	< 0.054
Total Copper (mg/L) Average Monthly	0.011	0.003	0.003	0.004	0.005	0.003	0.004	0.003	0.003	0.003	< 0.003	< 0.002

Whole Effluent Toxicity (WET)

For Outfall 001, ☐ **Acute** ☒ **Chronic** WET Testing was completed:

☐ For the permit renewal application (4 tests).
☐ Quarterly throughout the permit term.
☐ Quarterly throughout the permit term and a TIE/TRE was conducted.
☒ Other: Annually throughout the permit term.

The dilution series used for the tests was: 100%, 60%, 30%, 5%, and 2%.
The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 5%.

Summary of Four Most Recent Test Results

(NOTE – Enter results into one table, depending on which data analysis method was used).

NOEC/LC50 Data Analysis

Test Date	*Ceriodaphnia* Results (% Effluent)			*Pimephales* Results (% Effluent)			Pass? *
	NOEC Survival	NOEC Reproduction	LC50	NOEC Survival	NOEC Growth	LC50	

***** *A "passing" result is that which is greater than or equal to the TIWC value.*

TST Data Analysis

(NOTE – In lieu of recording information below, the application manager may attach the DEP WET Analysis Spreadsheet).

Test Date	*Ceriodaphnia* Results (Pass/Fail)		*Pimephales* Results (Pass/Fail)	
	Survival	Reproduction	Survival	Growth
7/25/2016	PASS	PASS	PASS	PASS
4/4/2017	PASS	PASS	PASS	PASS
3/20/2018	PASS	PASS	PASS	PASS
4/15/2019	PASS	PASS	PASS	PASS

***** *A "passing" result is that in which the replicate data for the TIWC is not statistically significant from the control condition. This is exhibited when the calculated t value ("T-Test Result") is greater than the critical t value. A "failing" result is exhibited when the calculated t value ("T-Test Result") is less than the critical t value.*

Is there reasonable potential for an excursion above water quality standards based on the results of these tests? (*NOTE – In general, reasonable potential is determined anytime there is at least one test failure in the previous four tests).*

☐ **YES** ☒ **NO**

Comments: None

Evaluation of Test Type, IWC and Dilution Series for Renewed Permit

Acute Partial Mix Factor (PMFa): **0.061** Chronic Partial Mix Factor (PMFc): **0.422**

1. Determine IWC – Acute (IWCa):

(Q_d x 1.547) / ((Q_{7-10} x PMFa) + (Q_d x 1.547))

[(7.7 MGD x 1.547) / ((113.6 cfs x 0.061) + (7.7 MGD x 1.547))] x 100 = **63.25%**

Is IWCa < 1%? ☐ **YES** ☒ **NO (Chronic Tests Required)**

If the discharge is to the tidal portion of the Delaware River, indicate how the type of test was determined:

N/A

Type of Test for Permit Renewal: **Chronic**

2a. Determine Target IWCa (If Acute Tests Required)

TIWCa = IWCa / 0.3 = N/A**%**

2b. Determine Target IWCc (If Chronic Tests Required)

(Q_d x 1.547) / (Q_{7-10} x PMFc) + (Q_d x 1.547)

[(7.7 MGD x 1.547) / ((113.6 cfs x 0.422) + (7.7 MGD x 1.547))] x 100 = 19.9**%**

3. Determine Dilution Series

(NOTE – check Attachment C of WET SOP for dilution series based on TIWCa or TIWCc, whichever applies).

Dilution Series = 100%, 60%, 20%, 10%, and 5%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

Will WET limits be established in the permit? ☐ YES ☒ NO

If WET limits will be established, identify the species and the limit values for the permit (TU).

N/A

If WET limits will not be established, but reasonable potential was determined, indicate the rationale for not establishing WET limits:

N/A

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 November 30, 2021.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	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	Report Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5	1605	2569	XXX	25.0	40.0	50	1/day	24-Hr Composite
TSS	1927	2890	XXX	30.0	45.0	60	1/day	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/day	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/day	Grab
UV Intensity (µw/cm²)	XXX	XXX	XXX	Report	XXX	XXX	1/day	Measured
Ammonia-Nitrogen Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite

Outfall 001, Continued (from Permit Effective Date through November 30, 2021)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia-Nitrogen May 1 - Oct 31	706	XXX	XXX	11.0	XXX	22	1/day	24-Hr Composite
Total Cadmium (ug/L)	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Mercury (ug/L)	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
4,4-DDD (ug/L)	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
4,4-DDT (ug/L)	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
4,4-DDE (ug/L)	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

Compliance Sampling Location: Outfall 001, after Ultraviolet (UV) light disinfection.

Flow, Dissolved Oxygen, UV Intensity, Ammonia-Nitrogen, Total Cadmium, Total Copper, Total Mercury, 4,4-DDD, 4,4-DDT, and 4,4-DDE, are monitor only based on Chapter 92a.61. The limits for pH are technology-based on Chapter 93.7. The limits for $CBOD_5$, Total Suspended Solids, and Fecal Coliforms are technology-based on Chapter 92a.47. Monitoring for influent BOD5 and influent Total Suspended Solids is based on Chapter 92a.61. Monitoring for effluent Total Nitrogen and Total Phosphorus is based on Chapter 92a.61.

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: December 1, 2021 through November 30, 2023.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	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	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5	1605	2569	XXX	25.0	40.0	50	1/day	24-Hr Composite
TSS	1927	2890	XXX	30.0	45.0	60	1/day	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/day	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/day	Grab
UV Intensity (µw/cm²)	XXX	XXX	XXX	Report	XXX	XXX	1/day	Measured
Ammonia-Nitrogen Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite

Outfall 001 , Continued (from December 1, 2021 through November 30, 2023)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia-Nitrogen May 1 - Oct 31	706	XXX	XXX	11.0	XXX	22	1/day	24-Hr Composite
Total Cadmium (ug/L)	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Mercury (ug/L)	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
4,4-DDD (ug/L)	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
4,4-DDT (ug/L)	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
4,4-DDE (ug/L)	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

Compliance Sampling Location: Outfall 001, after Ultraviolet (UV) light disinfection.

Flow, UV Intensity, Ammonia-Nitrogen, Total Cadmium, Total Copper, Total Mercury, 4,4-DDD, 4,4-DDT, and 4,4-DDE, are monitor only based on Chapter 92a.61. The limits for Dissolved Oxygen are technology-based on Chapter 93.7. The limits for pH are technology-based on Chapter 93.7. The limits for $CBOD_5$, Total Suspended Solids, and Fecal Coliforms are technology-based on Chapter 92a.47. Monitoring for influent BOD5 and influent Total Suspended Solids is based on Chapter 92a.61. Monitoring for effluent Total Nitrogen and Total Phosphorus is based on Chapter 92a.61.

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: December 1, 2023 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	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	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	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5	1605	2569	XXX	25.0	40.0	50	1/day	24-Hr Composite
TSS	1927	2890	XXX	30.0	45.0	60	1/day	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/day	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/day	Grab
UV Intensity (µw/cm²)	XXX	XXX	XXX	Report	XXX	XXX	1/day	Measured
Ammonia-Nitrogen Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite

Outfall 001, Continued (from December 1, 2023 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	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia-Nitrogen May 1 - Oct 31	706	XXX	XXX	11.0	XXX	22	1/day	24-Hr Composite
Total Cadmium (ug/L)	0.16	XXX	XXX	2.6	XXX	6.5	1/month	24-Hr Composite
Total Mercury (ug/L)	0.025	XXX	XXX	0.4	XXX	1	1/month	24-Hr Composite
4,4-DDD (ug/L)	0.0005	XXX	XXX	0.008	XXX	0.02	1/month	24-Hr Composite
4,4-DDT (ug/L)	0.0005	XXX	XXX	0.008	XXX	0.02	1/month	24-Hr Composite
4,4-DDE (ug/L)	0.0005	XXX	XXX	0.008	XXX	0.02	1/month	24-Hr Composite

Compliance Sampling Location: Outfall 001, after Ultraviolet (UV) light disinfection.

Flow, UV Intensity, and Ammonia-Nitrogen (Nov 1 - Apr 30) are monitor only based on Chapter 92a.61. The limits for Dissolved Oxygen are technology-based on Chapter 93.7. The limits for pH are technology-based on Chapter 93.7. The limits for $CBOD_5$, Total Suspended Solids, and Fecal Coliforms are technology-based on Chapter 92a.47. Monitoring for influent BOD5 and influent Total Suspended Solids is based on Chapter 92a.61. Monitoring for effluent Total Nitrogen and Total Phosphorus is based on Chapter 92a.61. The limits for Total Cadmium, Total Mercury, 4,4-DDD, 4,4-DDT, and 4,4-DDE are water quality-based on Chapter 16.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0.00
Latitude	41º 11' 35.48"	Longitude	-80º 27' 55.7"
Quad Name	-	Quad Code	-
Wastewater Description:	Stormwater		
Receiving Waters	Bobby Run (WWF)	Stream Code	35940
NHD Com ID	130033642	RMI	-
Drainage Area	-	Yield (cfs/mi^2)	-
Q_{7-10} Flow (cfs)	-	Q_{7-10} Basis	-
Elevation (ft)	-	Slope (ft/ft)	-
Watershed No.	20-A	Chapter 93 Class.	WWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired*		
Cause(s) of Impairment	Metals and Polychlorinated Biphenyls (PCBs)		
Source(s) of Impairment	Source Unknown		
TMDL Status	PCBs - Final (4/9/2001) Metals - Pending	Name	Shenango River

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

Nearest Downstream Public Water Supply Intake	Pennsylvania American Water Company - New Castle		
PWS Waters	Shenango River	Flow at Intake (cfs)	100
PWS RMI	5.1	Distance from Outfall (mi)	18.0

* - This discharge is not expected to be a source of any PCBs, or metals in any substantial quantities.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	0.00
Latitude	41º 11' 33.68"	Longitude	-80º 27' 57.21"
Quad Name	-	Quad Code	-
Wastewater Description:	Stormwater		
Receiving Waters	Bobby Run (WWF)	Stream Code	35940
NHD Com ID	130033642	RMI	-
Drainage Area	-	Yield (cfs/mi^2)	-
Q_{7-10} Flow (cfs)	-	Q_{7-10} Basis	-
Elevation (ft)	-	Slope (ft/ft)	-
Watershed No.	20-A	Chapter 93 Class.	WWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired*		
Cause(s) of Impairment	Metals and Polychlorinated Biphenyls (PCBS)		
Source(s) of Impairment	Source Unknown		
TMDL Status	PCBs - Final (4/9/2001) Metals - Pending	Name	Shenango River

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

Nearest Downstream Public Water Supply Intake	Pennsylvania American Water Company - New Castle		
PWS Waters	Shenango River	Flow at Intake (cfs)	100
PWS RMI	5.1	Distance from Outfall (mi)	18.0

* - This discharge is not expected to be a source of any PCBs, or metals in any substantial quantities.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	0.00
Latitude	41º 11' 33.44"	Longitude	-80º 27' 57.88"
Quad Name	-	Quad Code	-
Wastewater Description:	Stormwater		
Receiving Waters	Bobby Run (WWF)	Stream Code	35940
NHD Com ID	130033642	RMI	-
Drainage Area	-	Yield (cfs/mi^2)	-
Q_{7-10} Flow (cfs)	-	Q_{7-10} Basis	-
Elevation (ft)	-	Slope (ft/ft)	-
Watershed No.	20-A	Chapter 93 Class.	WWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired*		
Cause(s) of Impairment	Metals and Polychlorinated Biphenyls (PCBS)		
Source(s) of Impairment	Source Unknown		
TMDL Status	PCBs - Final (4/9/2001) Metals - Pending	Name	Shenango River

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

Nearest Downstream Public Water Supply Intake	Pennsylvania American Water Company - New Castle		
PWS Waters	Shenango River	Flow at Intake (cfs)	100
PWS RMI	5.1	Distance from Outfall (mi)	18.0

* - This discharge is not expected to be a source of any PCBs, or metals in any substantial quantities.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	005	Design Flow (MGD)	0.00
Latitude	41º 11' 30.81"	Longitude	-80º 28' 0.59"
Quad Name	-	Quad Code	-
Wastewater Description:	Stormwater		
Receiving Waters	Bobby Run (WWF)	Stream Code	35940
NHD Com ID	130033642	RMI	-
Drainage Area	-	Yield (cfs/mi^2)	-
Q_{7-10} Flow (cfs)	-	Q_{7-10} Basis	-
Elevation (ft)	-	Slope (ft/ft)	-
Watershed No.	20-A	Chapter 93 Class.	WWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired*		
Cause(s) of Impairment	Metals and Polychlorinated Biphenyls (PCBS)		
Source(s) of Impairment	Source Unknown		
TMDL Status	PCBs - Final (4/9/2001) Metals - Pending	Name	Shenango River

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

Nearest Downstream Public Water Supply Intake	Pennsylvania American Water Company - New Castle		
PWS Waters	Shenango River	Flow at Intake (cfs)	100
PWS RMI	5.1	Distance from Outfall (mi)	18.0

* - This discharge is not expected to be a source of any PCBs, or metals in any substantial quantities.

D4a - Hermitage Municipal Auth STP