pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0054917**
Facility Type	**Municipal**	APS ID	**1082630**
Major / Minor	**Minor**	Authorization ID	**1429698**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Uwchlan Township Municipal Authority**	Facility Name	**Uwchlan Township Eagleview STP**
Applicant Address	715 N Ship Road Exton, PA 19341-1940	Facility Address	480 Eagleview Boulevard Eagleview Corporate Center Exton, PA 19341-1940
Applicant Contact	Scott Greenly	Facility Contact	Renee Fegan
Applicant Phone	(610) 363-9450	Facility Phone	215-368-3375
Client ID	62675	Site ID	451220
Ch 94 Load Status	Not Overloaded	Municipality	Uwchlan Township
Connection Status	No Limitations	County	Chester
Date Application Received	March 6, 2023	EPA Waived?	No
Date Application Accepted	March 17, 2023	If No, Reason	Christina River Basin TMDL
Purpose of Application	NPDES permit renewal.		

Summary of Review

The PA Department of Environmental Protection (PADEP/Department) received an NPDES permit renewal application from Gannett Fleming on behalf of Uwchlan Township Municipal Authority (Permittee) on March 6, 2023 for permittee's Eagleview STP (facility), located in Uwchlan Township, Chester County. This is a minor sewage facility with design flow of 0.475 MGD that discharges into Shamona Creek (HQ/TSF, MF) in state watershed 3-H. The current permit will expire on August 31, 2023. The terms and conditions of the current permit is administratively extended since the renewal application was not received at least 180 days prior to the expiration date. Renewal NPDES permit applications under Clean Water program are not covered by PADEP's PDG per 021-2100-001.

This fact sheet is developed in accordance with 40 CFR §124.56.

Changes in this renewal: quarterly Total Zinc monitoring, quarterly Total Copper monitoring with schedule for limits, quarterly E-Coli monitoring.

Sludge use and disposal description and location(s): The aerobically digested biosolids are sent DELCORA and Pottstown for further treatment/ultimate disposal via a certified hauler.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Approve	Deny	Signatures	Date
√		Reza H. Chowdhury, E.I.T. / Project Manager	December 12, 2023
X		*Pravin Patel* Pravin C. Patel, P.E. / Environmental Engineer Manager	12/12/2023

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.475
Latitude	40º 3' 45.00"	Longitude	-75º 40' 32.00"
Quad Name	Downingtown	Quad Code	1840
Wastewater Description:	Sewage Effluent		
Receiving Waters	Shamona Creek (HQ-TSF, MF)	Stream Code	00324
NHD Com ID	26089296	RMI	2.8
Drainage Area	0.82 mi^2	Yield (cfs/mi^2)	0.23
Q_{7-10} Flow (cfs)	0.189	Q_{7-10} Basis	Please see below
Elevation (ft)	431.30	Slope (ft/ft)	
Watershed No.	3-H	Chapter 93 Class.	HQ-TSF, MF
Existing Use	**TSF**	Existing Use Qualifier	Ch 93
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	FLOW REGIME MODIFICATION, SILTATION		
Source(s) of Impairment	URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS		
TMDL Status	Final	Name	Christina River Basin

Background/Ambient Data		Data Source
pH (SU)	7.0	Default
Temperature (°C)	20	Default
Hardness (mg/L)	257	Application data
Other:		

Nearest Downstream Public Water Supply Intake	Downingtown Water Authority, Downingtown, Chester County		
PWS Waters	E. Br. Brandywine Creek	Flow at Intake (cfs)	
PWS RMI	9.36	Distance from Outfall (mi)	4.78

Changes Since Last Permit Issuance: None

Other Comments:

Streamflow:

The nearest USGS StreamGage (gage number 01480700) data was analyzed to determine the low flow statistics at the discharge point. USGS's web based watershed delineation tool StreamStats (accessible at https://streamstats.usgs.gov/ss/, accessed on June 15, 2023) was utilized to determine the drainage area at discharge point. The StreamStats report shows the drainage area at the discharge point is 0.82 mi^2. Data from the streamgage shows Q_{7-10}, Q_{1-10}, and Q_{30-10} to be 14.0 cfs, 12.3 cfs, and 17.8 cfs, respectively for the reporting year 1975-2008. The drainage area at this streamgage was found to be 60.6 mi^2. These values were obtained from the latest USGS streamflow report (1).

Q_{7-10} runoff rate (low flow yield): 14 cfs/60.6 mi^2 or 0.23 cfs/mi^2
Q_{7-10} at Outfall 001: 0.23 * 0.82 or 0.189 cfs
Q_{30-10}:Q_{7-10}: 17.8/14 or 1.27
Q_{1-10}:Q_{7-10}: 12.3/14 or 0.88

(1) Stuckey, M.H., Roland, M.A., 2011, Selected streamflow statistics for streamgage locations in and near Pennsylvania: U.S. Geological Survey Scientific Investigations Report 2011-1070, PP 11, PP 23.

PWS Intake:
The nearby downstream PWS intake is Downingtown Water Authority on E. Branch Brandywine Creek in Downingtown, Chester County, which is approximately 4.78 miles downstream of discharge point. Due to the distance, dilution, and effluent limitations, it is expected that the discharge will not adversely impact the PWS intake.

Wastewater Characteristics:
A pH of 7.19 (daily eDMR data, median July- September 2022) and default temperature of 25^{0}C (Default per 391-2000-007) will be used for modeling, if needed. The application indicated the discharge hardness to be 280 mg/l.

Background data:
There is no WQN station near the discharge point. In absence of site-specific data, a default stream temperature of 20^{0}C and stream pH of 7.0 will be used for modeling, if needed. The permittee collected additional sampling which shows stream hardness values to be 322 mg/l, 225 mg/l, and 225 mg/l, the average of which is 257 mg/l.

Christina River Basin TMDL:
Christina River Basin has three EPA approved TMDLs: Nutrients and DO under Low-Flow condition, Nutrients and Low DO under High-Flow conditions, and Bacteria and Sediments. All effluent limits for Nutrients and DO are proposed in the draft permit are consistent with the TMDL for nutrients and DO for low-flow conditions, issued by the EPA in January 2001, and revised on October 2002, April 2006, and March 2012. In the TMDL document, Summary Table 14 included the following Waste Load Allocations (WLAs) based on a discharge flow of 0.475 MGD:

NPDES	FACILITY NAME	FLOW mg/l	$CBOD_5$ mg/l	NH_3-N mg/l	TN mg/l	TP mg/l	DO mg/l	$CBOD_5$ lb/day	NH_3-N lb/day	TN lb/day	TP lb/day	DO lb/day
PA0054917	Uwchlan Eagleview STP	0.475	5.89	0.78	50	0.78	6	23.348	3.092	1,98.075	3.092	23.784

Also, effluent limits for Nutrients and DO are proposed in the draft permit are consistent with the TMDL for Nutrients and Low DO under High-Flow conditions:

Table 2-2. NPDES permit flows and loads for nutrients and CBOD5

NPDES Number	HSPF Subbasin	Flow (mgd)	CBOD5 (mg/L)	NH3-N (mg/L)	TP (mg/L)	CBOD5 (kg/day)	NH3-N (kg/day)	TP (kg/day)
PA0054917	B11	0.4750	5.89	0.78	0.78	10.59	1.40	1.40

Additionally, facility's discharge is listed in the TMDL for Bacteria and Sediments:

Table 2-2. Fecal coliform, *enterococci*, and TSS loads for NPDES facilities

NPDES Number	HSPF Subbasin	Flow (mgd)	TSS (mg/L)	Fecal Coliform (cfu/100mL)	Enterococci (cfu/100mL)	TSS (kg/day)	Fecal Coliform (cfu/day)	Enterococci (cfu/day)
PA0054917	B11	0.4750	20	200	100	35.96	3.596E+09	1.798E+09

Therefore, the current effluent limitations for nutrients, DO, sediments, and bacteria are consistent with all three Christina River Basin TMDLs WLAs. Existing limits will be carried over.

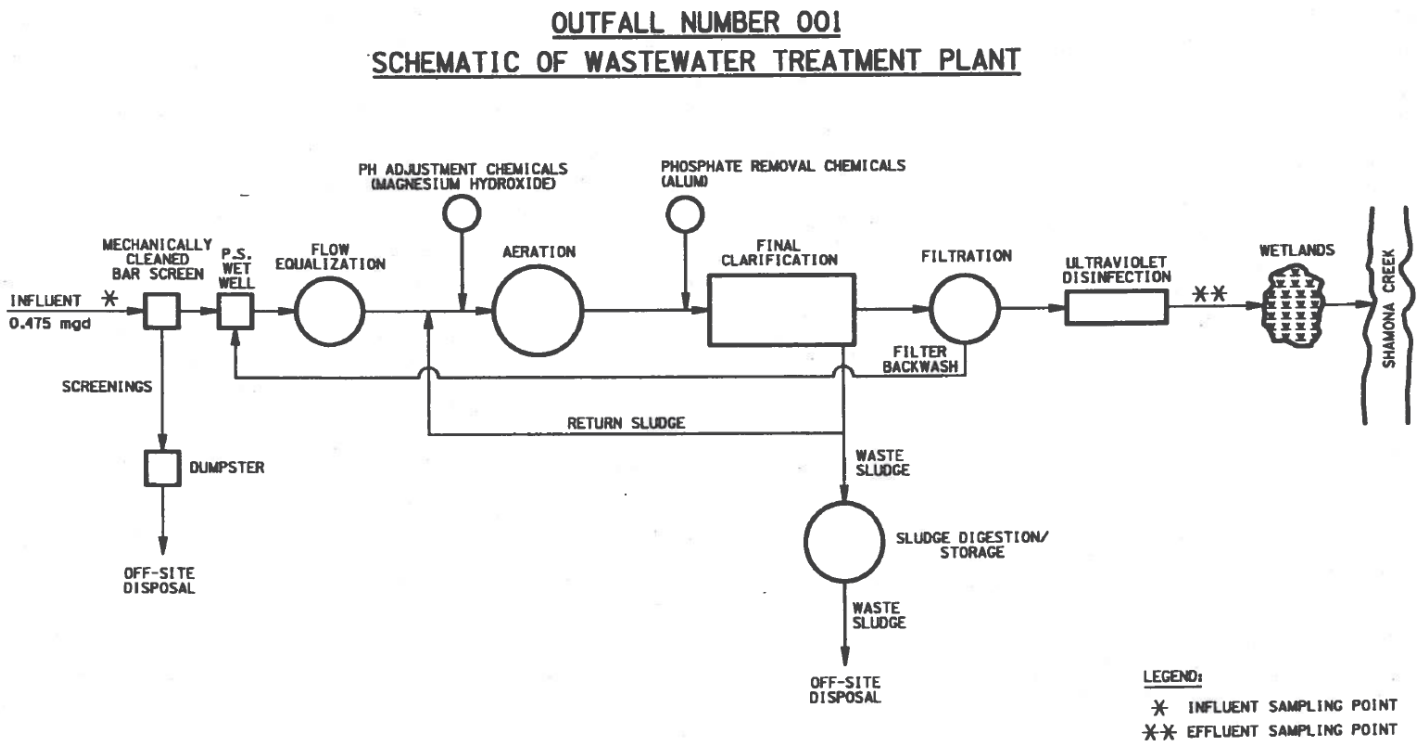
Antidegradation (93.4):
The effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. The receiving streams are designated as High-Quality Trout Stocking (HQ-TSF) and Migratory Fishes (MF). This is a renewal application without any proposal of expansion; therefore, anti-degradation analysis wasn't performed.

Treatment Facility Summary				
Treatment Facility Name: Uwchlan Township Eagleview STP				
WQM Permit No.	**Issuance Date**			
1500405	08/18/2000			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Phosphorus Reduction	Extended Aeration	Ultraviolet	0.475
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.475	990	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: None

Treatment Plant Description

Uwchlan Township Municipal Authority owns and operates a wastewater treatment plant named Uwchlan Township Eagleview WWTP. This is a minor sewage facility with a design flow of 0.475 MGD and organic loading capacity of 990 lbs. BOD_5/day. This is an extended aeration system with UV disinfection. The treated effluent is discharged to Shamona Creek in state watershed 3-H through a wetland. There are 11 discharge standpipes associated with the discharge. A process flow diagram is provided here:



The facility receives flow from the following contributing municipalities:

TRIBUTARY INFORMATION				
		Type of Sewer System		
Municipalities Served	Flow Contribution (%)	Separate (%)	Combined (%)	Population
Uwchlan Township	96	100	---	1,815 + Commercial
Upper Uwchlan Township	4	100	---	Commercial
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There is no significant or categorial industrial or commercial facilities within the WWTP's service area; however, there are several small commercial facilities discharging into the WWTP's collection system.

The facility uses GPAC 2070 for phosphate removal and sodium hydroxide for pH adjustment.

Biosolids Management: The aerobically digested biosolids are sent DELCORA and Pottstown for further treatment/ultimate disposal via a certified hauler.

Summary of Inspection:
April 6, 2023: RTPT conducted. Violation noted from discharge of floating materials, scums, sheen, foam, oil, grease etc. The outfall didn't appear to be operating as designed. Effluent was creating stream channels through the wetland. Some of the standpipes are below grade. Septic solids were present throughout the wetlands but especially prevalent around the standpipes. The receiving stream had some solids present on the substrate.

October 26, 2022: CEI conducted. Violation noted from discharge of floating materials. Large deposits of solids observed around pipes, some pipes were level with ground, number 7 didn't appear to be discharging at all. Observable solids present on substrate of receiving stream in multiple locations.

November 8, 2021: CEI conducted. No violation noted. Effluent in the effluent tank appeared to be clear. Didn't observe any issues in the receiving stream.

October 28, 2020: CEI conducted. No violation noted. Recommended to change location of sand filter backwash return, improve air distribution in the EQ tank, and increase clarifier weir cleanings. Final effluent appeared to be clear in the effluent dosing tank. Minimal amount of floatable were observed in the tank.

April 17, 2020: RTPT conducted. No violation noted.

March 28, 2019: CEI conducted. No violation noted. Significant erosion was observed around some of the outfall structures as well as channeling leading away from these structures through the wetland area.

Compliance History

DMR Data for Outfall 001 (from May 1, 2022 to April 30, 2023)

Parameter	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22
Flow (MGD) Average Monthly	0.179	0.175	0.163	0.173	0.143	0.0917	0.148	0.142	0.137	0.184	0.187	0.189
Flow (MGD) Daily Maximum	0.253	0.209	0.199	0.299	0.243	0.140	0.37	0.305	0.233	0.275	0.275	0.235
pH (S.U.) Instantaneous Minimum	6.78	6.74	6.71	6.39	6.55	6.92	6.97	6.79	6.93	7.0	7.0	6.9
pH (S.U.) IMAX	7.22	7.28	7.22	7.38	7.24	7.75	7.26	7.28	7.37	7.6	7.6	7.6
DO (mg/L) Instantaneous Minimum	6.04	5.06	9.12	8.51	9.22	8.95	8.19	7.52	7.19	7.0	7.0	7.2
CBOD5 (lbs/day) Average Monthly	5.8	14.3	8.8	7.2	3.3	< 2.5	< 5.5	3.5	< 3.4	8.1	< 4.3	< 5.6
CBOD5 (lbs/day) Weekly Average	10	22	18	18	4	5	8	5	8	15	5	8
CBOD5 (mg/L) Average Monthly	4	10	6	5	4	< 3	< 16	3	< 4	7	< 2	< 3
CBOD5 (mg/L) Weekly Average	7	15	12	10	5	6	31	5	8	16	4	5
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	414	443	447	390	259	283	277	468	251	379	493	715
BOD5 (mg/L) Raw Sewage Influent Average Monthly	309	326	319	268	339	323	312	415	286	277	357	428
TSS (lbs/day) Average Monthly	< 5.0	< 39.8	28.0	24.0	15.6	< 7.2	18.9	17.2	8.4	9.3	19.7	7.8
TSS (lbs/day) Raw Sewage Influent Average Monthly	255	226	153	148	94	95	80	139	113	137	476	525
TSS (lbs/day) Weekly Average	9.7	104.2	63.9	65.8	38.0	17.7	35.5	40.3	17.0	24.1	51.5	12.1
TSS (mg/L) Average Monthly	< 4	< 28	20	15	16	< 8	53	13	10	9	12	5
TSS (mg/L) Raw Sewage Influent Average Monthly	188	163	113	101	126	148	99	123	124	95	340	312
TSS (mg/L) Weekly Average	7	71	44	36	31	14	115	23	13	27	33	9

Fecal Coliform (No./100 ml) Geometric Mean	59	< 1700	< 34	2777	96	13	< 75	39	< 16	25	< 10	< 19
Fecal Coliform (No./100 ml) IMAX	5000	20000	400	> 20000	8300	38	900	172	127	73	46	175
UV Intensity (µw/cm²) Daily Minimum	0.08	E	0.1	0.01	0.3	0.01	0.001	0.2	0.5	0.6	0.6	0.6
UV Intensity (µw/cm²) Average Monthly	2.47	2.7	3.8	3.41	4.2	3.87	4.568	4.8	4.3	4	4.1	3.6
Total Nitrogen (lbs/day) Average Monthly	38	55	31	36	22	< 23	26	36	22	45	48	43
Total Nitrogen (mg/L) Average Monthly	28.49	40.15	23.99	24.26	22.57	< 25.82	33.25	31.64	27.22	35	26	27
Ammonia (lbs/day) Average Monthly	0.7	4.4	1.1	< 4.5	< 0.1	< 0.03	< 0.02	< 0.05	< 0.08	0.5	< 1.8	4.1
Ammonia (mg/L) Average Monthly	0.55	3.07	0.76	< 2.52	< 0.21	< 0.05	< 0.03	< 0.04	< 0.09	0.5	< 1.1	2.8
Total Phosphorus (lbs/day) Average Monthly	0.5	1.8	1.0	0.7	0.7	0.1	1.0	0.5	0.8	2.3	0.6	1.3
Total Phosphorus (mg/L) Average Monthly	0.4	1.35	0.76	0.46	0.74	0.24	1.31	0.45	0.87	1.7	0.3	0.8

Compliance History

Effluent Violations for Outfall 001, from: June 1, 2022 To: April 30, 2023

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
DO	03/31/23	Inst Min	5.06	mg/L	6.0	mg/L
CBOD5	07/31/22	Avg Mo	7	mg/L	6	mg/L
CBOD5	10/31/22	Avg Mo	< 16	mg/L	6	mg/L
CBOD5	07/31/22	Wkly Avg	16	mg/L	9	mg/L
CBOD5	10/31/22	Wkly Avg	31	mg/L	9	mg/L
TSS	03/31/23	Avg Mo	< 28	mg/L	20	mg/L
TSS	10/31/22	Avg Mo	53	mg/L	20	mg/L

TSS	06/30/22	Wkly Avg	33	mg/L	30	mg/L
TSS	03/31/23	Wkly Avg	71	mg/L	30	mg/L
TSS	02/28/23	Wkly Avg	44	mg/L	30	mg/L
TSS	12/31/22	Wkly Avg	31	mg/L	30	mg/L
TSS	01/31/23	Wkly Avg	36	mg/L	30	mg/L
TSS	02/28/23	Wkly Avg	44	mg/L	30	mg/L
TSS	10/31/22	Wkly Avg	115	mg/L	30	mg/L
Fecal Coliform	03/31/23	Geo Mean	< 1700	No./100 ml	200	No./100 ml
Fecal Coliform	01/31/23	Geo Mean	2777	No./100 ml	200	No./100 ml
Fecal Coliform	03/31/23	IMAX	20000	No./100 ml	1000	No./100 ml
Fecal Coliform	01/31/23	IMAX	> 20000	No./100 ml	1000	No./100 ml
Fecal Coliform	12/31/22	IMAX	8300	No./100 ml	1000	No./100 ml
Fecal Coliform	04/30/23	IMAX	5000	No./100 ml	1000	No./100 ml
Ammonia	01/31/23	Avg Mo	< 2.52	mg/L	2.4	mg/L
Ammonia	03/31/23	Avg Mo	3.07	mg/L	2.4	mg/L
Ammonia	06/30/22	Avg Mo	< 1.1	mg/L	.8	mg/L
Total Phosphorus	07/31/22	Avg Mo	1.7	mg/L	.8	mg/L
Total Phosphorus	10/31/22	Avg Mo	1.31	mg/L	.8	mg/L
Total Phosphorus	08/31/22	Avg Mo	0.87	mg/L	.8	mg/L

Existing limits for Outfall 001

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 Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - Apr 30	46.8	70	XXX	12	18	24	1/week	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) May 1 - Oct 31	23.4	35	XXX	6	9	12	1/week	24-Hr Composite
Total Suspended Solids	79.2	118.8	XXX	20	30	40	1/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1000 *	1/week	Grab
Ultraviolet light intensity ($\mu w/cm^2$)	XXX	XXX	Report	Report	XXX	XXX	1/day	Measured
Total Nitrogen	198	XXX	XXX	50	XXX	XXX	1/week	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	9.3	XXX	XXX	2.4	XXX	4.8	1/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	3.1	XXX	XXX	0.8	XXX	1.6	1/week	24-Hr Composite
Total Phosphorus Nov 1 - Mar 31	6.2	XXX	XXX	1.6	XXX	3.2	1/week	24-Hr Composite
Total Phosphorus Apr 1 - Oct 31	3.1	XXX	XXX	0.8	XXX	1.6	1/week	24-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .475
Latitude 40º 3' 45.00" **Longitude** -75º 40' 32.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	200 / 100 ml	Geo Mean	DRBC 4.30.4.A	
Fecal Coliform (10/1 – 4/30)	1,000 / 100 ml	IMAX (10% rule)	DRBC 4.30.4.A	
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

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

Water Quality-Based Limitations

Model input data

The following data will be used for modeling, as needed:

- Discharge pH 7.19 (median July-Sep 2022, daily eDMR data)
- Discharge Temperature 25°C (Default data)
- Discharge Hardness 280 mg/l (Application data)
- Stream pH 7.0 (Default data)
- Stream Temperature 20°C (Default data)
- Stream Hardness 257 mg/l (Application data)

The following three nodes were used in modeling:

Node 1: At the outfall 001 on Shamona Creek (00324)
Elevation: 431.3 ft (USGS National Map Advanced Viewer, 06/15/2023)
Drainage Area: 0.82 mi^2 (StreamStat Version 3.0, 06/15/2023)
River Mile Index: 2.8 (PA DEP eMapPA)
Low Flow Yield: 0.23 cfs/mi^2

	Q_{7-10}:	0.189 cfs
	Discharge Flow:	0.475 MGD

Node 2:	At confluence with UNT 00326 to Shamona Creek	
	Elevation:	419.85 ft (USGS USGS National Map Advanced Viewer, 06/15/2023)
	Drainage Area:	1.31 mi^2 (StreamStat Version 3.0, 06/15/2023)
	River Mile Index:	2.51 (PA DEP eMapPA)
	Low Flow Yield:	0.23 cfs/mi^2
	Discharge Flow:	0.0 MGD

WQM 7.0 Model

WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate effluent limits for $CBOD_5$, NH_3-N and DO. The model simulates two basic processes. In the NH_3-N module, the model simulates the mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria. The model was utilized for this permit renewal by using Q_{7-10} and current background water quality levels of the stream.

NH_3-N

WQM 7.0 suggested NH_3-N limit of 0.8 mg/l as monthly average and 1.6 mg/l as IMAX limit during summer to protect water quality standards. These values are the same as existing permitted limits. The current limits for summer and winter season will be carried over.

CBOD5

WQM 7.0 suggests CBOD5 limit of 6.0 mg/l which is the same as existing limit. Existing limit will be carried over.

DO

WQM 7.0 suggests minimum DO of 6.0 mg/l which is the model input and same as existing limit. Existing limit will be carried over.

General Discussion on Toxics Management Spreadsheet (TMS)

Based on the available data, PADEP utilizes Toxics Management Spreadsheet (TMS) to (1) evaluate reasonable potential for toxic pollutants to cause or contribute to an excursion above the water quality standards and (2) develop WQBELs for those such toxic pollutants (i.e., 40 CFR § 122.44(d)(1)(i)). It is noteworthy that some of these pollutants that may be reported as “non-detect”, but still exceeded the criteria, were determined to be candidates for modeling because the method detection levels used to analyze those pollutants were higher than target QLs and/or the most stringent Chapter 93 criteria. The model then recommended the appropriate action for the Pollutants of Concerns based on the following logic:

1. In general, establish limits in the draft permit where the effluent concentration determined in B.1 or B.2 equals or exceeds 50% of the WQBEL (i.e., RP is demonstrated). Use the average monthly, maximum daily and instantaneous maximum (IMAX) limits for the permit as recommended by the TMS (or, if appropriate, use a multiplier of 2 times the average monthly limit for the maximum daily limit and 2.5 times the average monthly limit for IMAX).

2. For non-conservative pollutants, in general, establish monitoring requirements where the effluent concentration determined in B.1 or B.2 is between 25% - 50% of the WQBEL.

3. For conservative pollutants, in general, establish monitoring requirements where the effluent concentration determined in B.1 or B.2 is between 10% - 50% of the WQBEL.

NOTE 4 – If the effluent concentration determined in B.1 or B.2 is “non-detect” at or below the target quantitation limit (TQL) for the pollutant as specified in the TMS and permit application, the pollutant may be eliminated as a candidate for WQBELs or monitoring requirements unless 1) a more sensitive analytical method is available for the pollutant under 40 CFR Part 136 where the quantitation limit for the method is less than the applicable water quality criterion and 2) a detection at the more sensitive method may lead to a determination that an effluent limitation is necessary, considering available dilution at design conditions.

NOTE 5 – If the effluent concentration determined in B.1 or B.2 is a detection below the TQL but above or equal to the applicable water quality criterion, WQBELs or monitoring may be established for the pollutant.

4. Application managers may, on a site- and pollutant-specific basis, deviate from these guidelines where there is specific rationale that is documented in the fact sheet.

Output from the TMS is provided below:

☑ ***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	0.11	0.17	0.028	0.043	0.07	mg/L	0.028	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	mg/L	0.28	AFC	Discharge Conc > 10% WQBEL (no RP)

Each of the pollutants is discussed below:

Total Copper:
The initial TMS model run recommended numeric limits for Total Copper based on two sample results as follows: Concentration-based Average Monthly Limit (AML) of 0.012 mg/l, Maximum Daily Limit (MDL) of 0.018 mg/l, and IMAX of 0.029 mg/l; and mass-based AML of 0.046 lbs./day and MDL of 0.072 lbs./day; based on a model input value of 0.019 mg/l (max of 2 sample results). This is a new pollutant with limits. A pre-draft survey was sent to the permittee, response of which included additional sampling for Total Copper.

The permittee collected 6 (six) additional samples, maximum of which is 0.151 mg/l which was considered as outlier since the influent results show a concentration of 0.106 mg/l (effluent > influent). The next highest value is 0.064 mg/l which was then entered into TMS and ran the report with a revised stream and discharge hardness of 257 mg/l and 280 mg/l, respectively. The TMS suggests limits requirements as 0.028 mg/l AML, 0.043 mg/l as MDL, and 0.07 mg/l as IMAX with corresponding 0.11 lbs./day as AML and 0.17 lbs./day as MDL. These limits will be applied in the permit with a compliance schedule.

Total Zinc:
Similarly, Initial TMS recommended numeric limits for Total Zinc based on two sample results as follows: Concentration-based Average Monthly Limit (AML) of 0.12 mg/l, Maximum Daily Limit (MDL) of 0.15 mg/l, and IMAX of 0.15 mg/l; and mass-based AML of 0.47 lbs./day and MDL of 0.6 lbs./day; based on a model input value of 0.062 mg/l (max of 2 sample results). This is a new pollutant with limits. A pre-draft survey was sent to the permittee, response of which included additional sampling for Total Zinc.

The permittee collected 6 (six) additional samples, maximum of which is 0.047 mg/l which was then entered into the TMS, with a revised stream and discharge hardness of 257 mg/l and 280 mg/l, respectively. The TMS suggests monitoring only for Total Zinc.

Additional Consideration:
Fecal Coliform:
The recent coliform guidance in 25 Pa. code § 92a.47.(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean and an instantaneous maximum not greater than 1,000/100ml and § 92a.47.(a)(5) requires a winter limit of 2,000/100ml as a geometric mean and an instantaneous maximum not greater than 10,000/100ml. Delaware River Basin Commission's (DRBC's) Water Quality Regulations at Section 4.30.4.A requires that during winter season from October through April, the instantaneous maximum concentration of fecal coliform organisms shall not be greater than 1,000 per 100 milliliters in more than 10 percent of the samples tested. Therefore, the summer limit is governed by DEP's regulation while winter limit is governed by DRBC's regulation. These are existing requirements and will be carried over in this renewal.

E. Coli:
Pa Code 25 § 92a. 61 requires monitoring of E. Coli. DEP's SOP titled "Establishing Effluent Limitations for Individual Sewage Permits (BCW-PMT-033, revised March 24, 2021) recommends quarterly E. Coli monitoring for minor sewage dischargers with design flow ≥0.05 and <1.0 MGD. This requirement will be applied from this permit term.

pH:
The TBEL for pH is above 6.0 and below 9.0 S.U. (40 CFR §133.102(c) and Pa Code 25 §§ 95.2(1), 92a.47) which are existing limits and will be carried over.

Total Suspended Solids (TSS):
There is no water quality criterion for TSS. The current limits were based on TMDL and will be carried over.

UV Disinfection:
PADEP's SOP BCW-PMT-033 recommends UV parameter monitoring where UV is used as a method of disinfection, with the same frequency as would be if Chlorine is used for disinfection. The current permit has UV Intensity monitoring in uW/cm^2 and will be carried over.

Flow and Influent BOD_5 and TSS Monitoring Requirement:
The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii). Influent BOD_5 and TSS monitoring requirements are established in the permit per the requirements set in Pa Code 25 Chapter 94.

Monitoring Frequency and Sample Types:
Otherwise specified above, the monitoring frequency and sample type of compliance monitoring for existing parameters are recommended by DEP's SOP and Permit Writers Manual and/or on a case-by-case basis using best professional judgment (BPJ).

Anti-Backsliding
The proposed limits are at least as stringent as current permit; therefore, anti-backsliding isn't applicable. Removing "monitoring only" requirements aren't considered as back-sliding.

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	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5 Nov 1 - Apr 30	46.8	70	XXX	12	18	24	1/week	24-Hr Composite
CBOD5 May 1 - Oct 31	23.4	35	XXX	6	9	12	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	79.2	118.8	XXX	20	30	40	1/week	24-Hr Composite
Fecal Coliform (No./100 ml)	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 Intensity (µw/cm²)	XXX	XXX	Report	Report	XXX	XXX	1/day	Measured
Total Nitrogen	198	XXX	XXX	50	XXX	XXX	1/week	Composite
Ammonia Nov 1 - Apr 30	9.3	XXX	XXX	2.4	XXX	4.8	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	3.1	XXX	XXX	0.8	XXX	1.6	1/week	24-Hr Composite

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

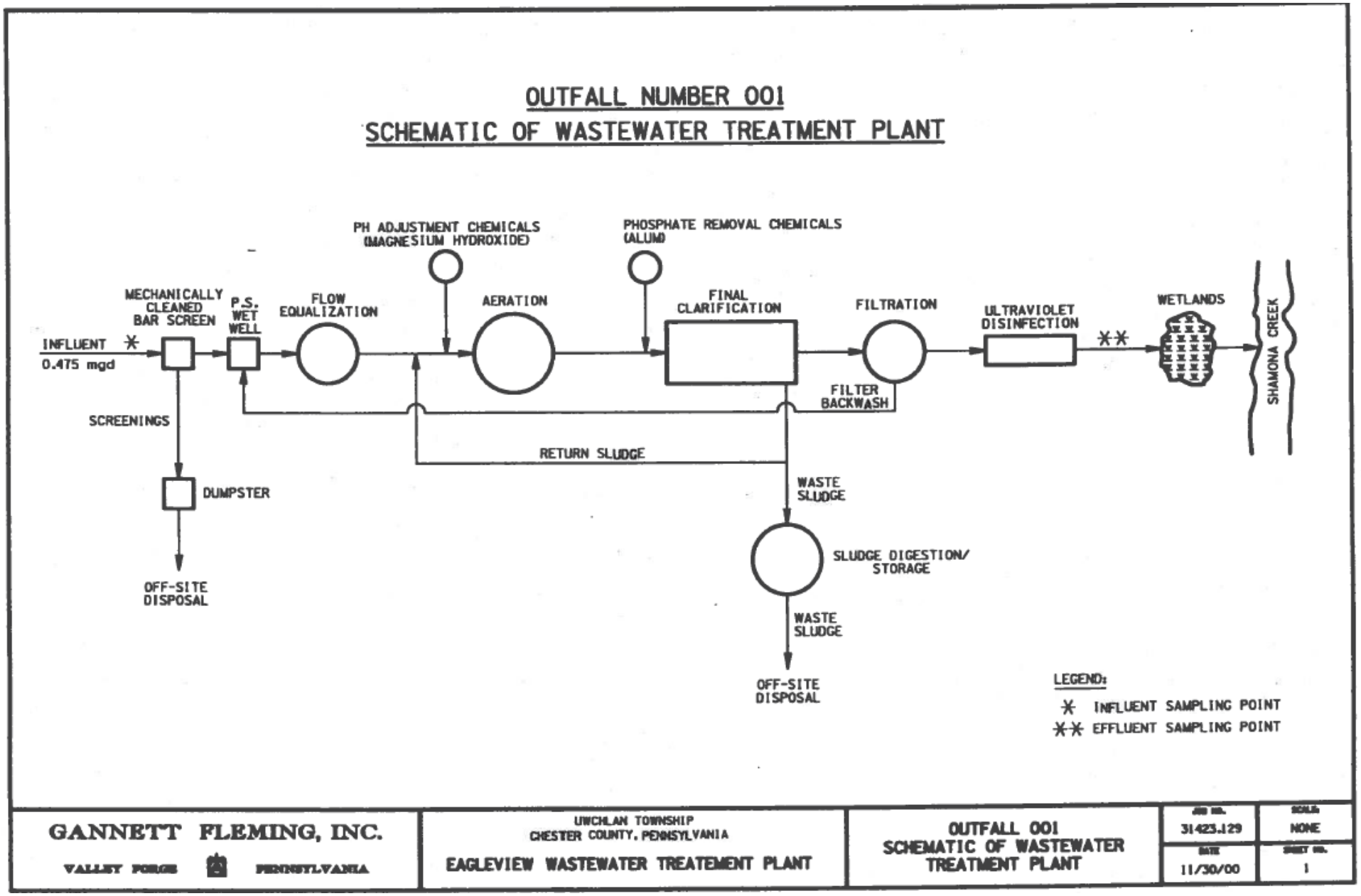
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Phosphorus Nov 1 - Mar 31	6.2	XXX	XXX	1.6	XXX	3.2	1/week	24-Hr Composite
Total Phosphorus Apr 1 - Oct 31	3.1	XXX	XXX	0.8	XXX	1.6	1/week	24-Hr Composite
Total Copper (interim)	XXX	XXX	XXX	Report Avg Qrtly	Report Daily Max	XXX	1/quarter	24-Hr Composite
Total Copper (final)	0.11 Avg Qrtly	0.17 Daily Max	XXX	0.028 Avg Qrtly	0.043 Daily Max	0.07	1/quarter	24-Hr Composite
Total Zinc	XXX	XXX	XXX	Report Avg Qrtly	Report Daily Max	XXX	1/quarter	24-Hr Composite

Compliance Sampling Location: At Outfall 001

Other Comments: None

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:
☒	Other: Christina River Basin TMDL documents

Process flow diagram



StreamStats data at Outfall 001

PA0054917 at Outfall 001

Region ID: PA
Workspace ID: PA20230615134503062000
Clicked Point (Latitude, Longitude): 40.06293, -75.67554
Time: 2023-06-15 09:45:29 -0400

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	2.4076	degrees
DRNAREA	Area that drains to a point on a stream	0.82	square miles
ROCKDEP	Depth to rock	5	feet
URBAN	Percentage of basin with urban development	8.1287	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.82	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	2.4076	degrees	1.7	6.4
ROCKDEP	Depth to Rock	5	feet	4.13	5.21
URBAN	Percent Urban	8.1287	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Permit No. PA0054917

Low-Flow Statistics Flow Report [Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.101	ft^3/s
30 Day 2 Year Low Flow	0.149	ft^3/s
7 Day 10 Year Low Flow	0.036	ft^3/s
30 Day 10 Year Low Flow	0.0562	ft^3/s
90 Day 10 Year Low Flow	0.12	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

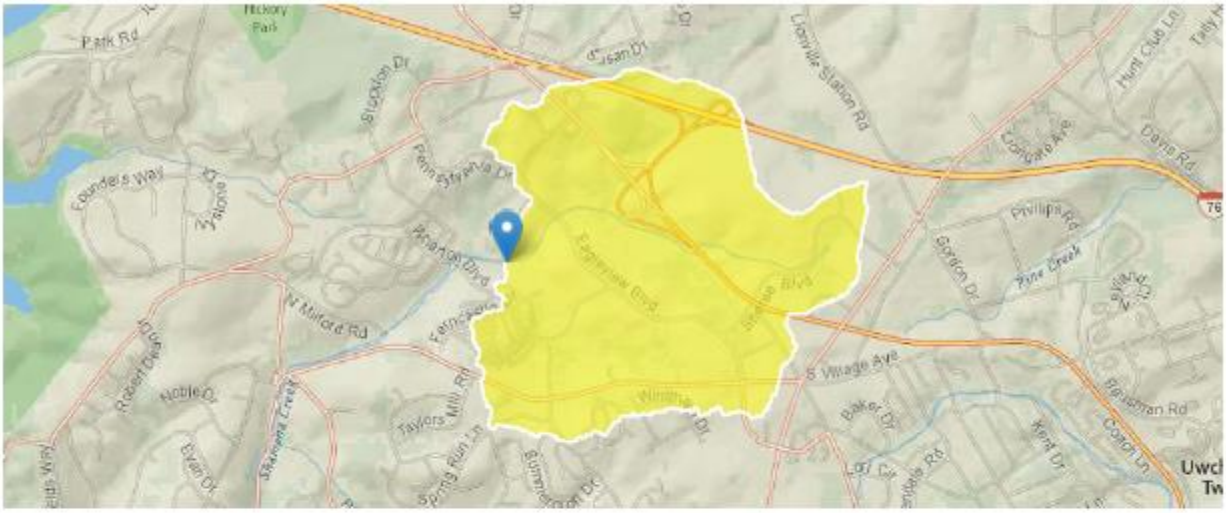
Application Version: 4.15.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Permit No. PA0054917

StreamStats data at node 2

PA0054917 at node 2

Region ID: PA
Workspace ID: PA20230615134926156000
Clicked Point (Latitude, Longitude): 40.06014, -75.68003
Time: 2023-06-15 09:49:46 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	2.6646	degrees
DRNAREA	Area that drains to a point on a stream	1.31	square miles
ROCKDEP	Depth to rock	5	feet
URBAN	Percentage of basin with urban development	5.2787	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.31	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	2.6646	degrees	1.7	6.4
ROCKDEP	Depth to Rock	5	feet	4.13	5.21
URBAN	Percent Urban	5.2787	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Permit No. PA0054917

Low-Flow Statistics Flow Report [Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.174	ft^3/s
30 Day 2 Year Low Flow	0.252	ft^3/s
7 Day 10 Year Low Flow	0.065	ft^3/s
30 Day 10 Year Low Flow	0.0983	ft^3/s
90 Day 10 Year Low Flow	0.199	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Application Version: 4.15.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Permit No. PA0054917

WQM 7.0

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
03H	324	SHAMONA CREEK	2.800	431.30	0.82	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	0.230	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
Eagleview STP	PA0054917	0.4750	0.4750	0.4750	0.000	25.00	7.19

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	6.00	2.00	0.00	1.50
Dissolved Oxygen	6.00	8.24	0.00	0.00
NH3-N	0.80	0.00	0.00	0.70

Permit No. PA0054917

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
03H	324	SHAMONA CREEK	2.510	419.85	1.31	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	0.230	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0054917

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
03H	324	SHAMONA 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												
2.800	0.19	0.00	0.19	.7348	0.00748	.505	8.42	16.67	0.22	0.082	23.98	7.14
Q1-10 Flow												
2.800	0.17	0.00	0.17	.7348	0.00748	NA	NA	NA	0.21	0.083	24.08	7.15
Q30-10 Flow												
2.800	0.24	0.00	0.24	.7348	0.00748	NA	NA	NA	0.22	0.079	23.77	7.14

Permit No. PA0054917

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	0.88	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.27	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

Permit No. PA0054917

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
03H	324	SHAMONA CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.800	0.475	23.979	7.144
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
8.422	0.505	16.669	0.217
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.18	1.373	0.64	0.951
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.458	30.301	Owens	6
Reach Travel Time (days)			
0.082			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.008	5.11	0.63	6.80
0.016	5.05	0.63	7.07
0.024	4.98	0.62	7.28
0.033	4.91	0.62	7.44
0.041	4.85	0.61	7.57
0.049	4.78	0.61	7.67
0.057	4.72	0.60	7.67
0.065	4.65	0.60	7.67
0.073	4.59	0.59	7.67
0.082	4.53	0.59	7.67

Permit No. PA0054917

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
03H	324	SHAMONA 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
2.800	Eagleview STP	6.44	1.6	6.44	1.6	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
2.800	Eagleview STP	1.35	.8	1.35	.8	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)		
2.80	Eagleview STP	6	6	.8	.8	6	6	0	0

Permit No. PA0054917

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
03H	324	SHAMONA 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)
2.800	Eagleview STP	PA0054917	0.475	CBOD5	6		
				NH3-N	0.8	1.6	
				Dissolved Oxygen			6

Permit No. PA0054917

TMS

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: Eagleview STP | NPDES Permit No.: PA0054917 | Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste | Wastewater Description: Treated 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
0.475	280	7.19						

					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											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	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	mg/L		0.064									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	mg/L	<	0.001									
	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	mg/L		0.047									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										
	Carbon Tetrachloride	µg/L	<										

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Group 3	Chlorobenzene	µg/L												
	Chlorodibromomethane	µg/L	<											
	Chloroethane	µg/L	<											
	2-Chloroethyl Vinyl Ether	µg/L	<											
	Chloroform	µg/L	<											
	Dichlorobromomethane	µg/L	<											
	1,1-Dichloroethane	µg/L	<											
	1,2-Dichloroethane	µg/L	<											
	1,1-Dichloroethylene	µg/L	<											
	1,2-Dichloropropane	µg/L	<											
	1,3-Dichloropropylene	µg/L	<											
	1,4-Dioxane	µg/L	<											
	Ethylbenzene	µg/L	<											
	Methyl Bromide	µg/L	<											
	Methyl Chloride	µg/L	<											
	Methylene Chloride	µg/L	<											
	1,1,2,2-Tetrachloroethane	µg/L	<											
	Tetrachloroethylene	µg/L	<											
	Toluene	µg/L	<											
	1,2-trans-Dichloroethylene	µg/L	<											
	1,1,1-Trichloroethane	µg/L	<											
	1,1,2-Trichloroethane	µg/L	<											
	Trichloroethylene	µg/L	<											
	Vinyl Chloride	µg/L	<											
Group 4	2-Chlorophenol	µg/L	<											
	2,4-Dichlorophenol	µg/L	<											
	2,4-Dimethylphenol	µg/L	<											
	4,6-Dinitro-o-Cresol	µg/L	<											
	2,4-Dinitrophenol	µg/L	<											
	2-Nitrophenol	µg/L	<											
	4-Nitrophenol	µg/L	<											
	p-Chloro-m-Cresol	µg/L	<											
	Pentachlorophenol	µg/L	<											
	Phenol	µg/L	<											
	2,4,6-Trichlorophenol	µg/L	<											
Group 5	Acenaphthene	µg/L	<											
	Acenaphthylene	µg/L	<											
	Anthracene	µg/L	<											
	Benzidine	µg/L	<											
	Benzo(a)Anthracene	µg/L	<											
	Benzo(a)Pyrene	µg/L	<											
	3,4-Benzofluoranthene	µg/L	<											
	Benzo(ghi)Perylene	µg/L	<											
	Benzo(k)Fluoranthene	µg/L	<											
	Bis(2-Chloroethoxy)Methane	µg/L	<											
	Bis(2-Chloroethyl)Ether	µg/L	<											
	Bis(2-Chloroisopropyl)Ether	µg/L	<											
	Bis(2-Ethylhexyl)Phthalate	µg/L	<											
	4-Bromophenyl Phenyl Ether	µg/L	<											
	Butyl Benzyl Phthalate	µg/L	<											
	2-Chloronaphthalene	µg/L	<											
	4-Chlorophenyl Phenyl Ether	µg/L	<											
	Chrysene	µg/L	<											
	Dibenzo(a,h)Anthrancene	µg/L	<											
	1,2-Dichlorobenzene	µg/L	<											
	1,3-Dichlorobenzene	µg/L	<											
	1,4-Dichlorobenzene	µg/L	<											
	3,3-Dichlorobenzidine	µg/L	<											
	Diethyl Phthalate	µg/L	<											
	Dimethyl Phthalate	µg/L	<											
	Di-n-Butyl Phthalate	µg/L	<											
	2,4-Dinitrotoluene	µg/L	<											
	2,6-Dinitrotoluene	µg/L	<											
	Di-n-Octyl Phthalate	µg/L	<											

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	1,2-Diphenylhydrazine	µg/L	<											
	Fluoranthene	µg/L	<											
	Fluorene	µg/L	<											
	Hexachlorobenzene	µg/L	<											
	Hexachlorobutadiene	µg/L	<											
	Hexachlorocyclopentadiene	µg/L	<											
	Hexachloroethane	µg/L	<											
	Indeno(1,2,3-cd)Pyrene	µg/L	<											
	Isophorone	µg/L	<											
	Naphthalene	µg/L	<											
	Nitrobenzene	µg/L	<											
	n-Nitrosodimethylamine	µg/L	<											
	n-Nitrosodi-n-Propylamine	µg/L	<											
	n-Nitrosodiphenylamine	µg/L	<											
	Phenanthrene	µg/L	<											
	Pyrene	µg/L	<											
	1,2,4-Trichlorobenzene	µg/L	<											
Group 6	Aldrin	µg/L	<											
	alpha-BHC	µg/L	<											
	beta-BHC	µg/L	<											
	gamma-BHC	µg/L	<											
	delta BHC	µg/L	<											
	Chlordane	µg/L	<											
	4,4-DDT	µg/L	<											
	4,4-DDE	µg/L	<											
	4,4-DDD	µg/L	<											
	Dieldrin	µg/L	<											
	alpha-Endosulfan	µg/L	<											
	beta-Endosulfan	µg/L	<											
	Endosulfan Sulfate	µg/L	<											
	Endrin	µg/L	<											
	Endrin Aldehyde	µg/L	<											
	Heptachlor	µg/L	<											
	Heptachlor Epoxide	µg/L	<											
	PCB-1016	µg/L	<											
	PCB-1221	µg/L	<											
	PCB-1232	µg/L	<											
	PCB-1242	µg/L	<											
	PCB-1248	µg/L	<											
	PCB-1254	µg/L	<											
	PCB-1260	µg/L	<											
	PCBs, Total	µg/L	<											
	Toxaphene	µg/L	<											
	2,3,7,8-TCDD	ng/L	<											
Group 7	Gross Alpha	pCi/L												
	Total Beta	pCi/L	<											
	Radium 226/228	pCi/L	<											
	Total Strontium	µg/L	<											
	Total Uranium	µg/L	<											
	Osmotic Pressure	mOs/kg												

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Eagleview STP, NPDES Permit No. PA0054917, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: Shamona Creek

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	000324	2.8	431.3	0.82			Yes
End of Reach 1	000324	2.51	419.85	1.31			Yes

Q_{7-10}

Location	RMI	LFY (cfs/mi²)*	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	2.8	0.23										257	7		
End of Reach 1	2.51	0.23													

Q_h

Location	RMI	LFY (cfs/mi²)	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	2.8														
End of Reach 1	2.51														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Eagleview STP, NPDES Permit No. PA0054917, Outfall 001

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

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ *AFC* CCT (min): 0.131 PMF: 1 Analysis Hardness (mg/l): 275.3 Analysis pH: 7.14

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	34.895	36.3	45.7	Chem Translator of 0.96 applied
Total Lead	0	0		0	190.685	296	372	Chem Translator of 0.643 applied
Total Zinc	0	0		0	276.380	283	355	Chem Translator of 0.978 applied

☑ *CFC* CCT (min): 0.131 PMF: 1 Analysis Hardness (mg/l): 275.3 Analysis pH: 7.14

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 Copper	0	0		0	21.277	22.2	27.9	Chem Translator of 0.96 applied
Total Lead	0	0		0	7.431	11.5	14.5	Chem Translator of 0.643 applied
Total Zinc	0	0		0	278.641	283	355	Chem Translator of 0.986 applied

☑ *THH* CCT (min): 0.131 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 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): 0.807 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 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

Pollutants	Mass Limits AML (lbs/day)	Mass Limits MDL (lbs/day)	Concentration Limits AML	Concentration Limits MDL	Concentration Limits IMAX	Concentration Limits Units	Governing WQBEL	WQBEL Basis	Comments
Total Copper	0.11	0.17	0.028	0.043	0.07	mg/L	0.028	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	mg/L	0.28	AFC	Discharge Conc > 10% WQBEL (no 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 Lead	N/A	N/A	Discharge Conc < TQL