pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0026816**
Facility Type	**Municipal**	APS ID	**1061739**
Major / Minor	**Major**	Authorization ID	**1393198**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**East Norriton Plymouth Whitpain Joint Sewer Authority**	Facility Name	**East Norriton Plymouth Whitpain Joint Sewer Authority**
Applicant Address	200 Ross Street	Facility Address	200 Ross Street
	Plymouth Meeting, PA 19462-2740		Plymouth Meeting, PA 19462-2740
Applicant Contact	Timothy Boyd	Facility Contact	Glenn Debernardi
Applicant Phone	(610) 279-5759	Facility Phone	(610) 279-5759
Client ID	62265	Site ID	452566
Ch 94 Load Status	Not Overloaded	Municipality	Plymouth Township
Connection Status	No Limitations	County	Montgomery
Date Application Received	April 22, 2022	EPA Waived?	No
Date Application Accepted		If No, Reason	Major Facility, Pretreatment
Purpose of Application	Renewal		

Summary of Review

The applicant requests approval for the renewal of a National Pollutant Discharge Elimination System (NPDES) permit to discharge an average annual flow of 8.67 MGD to Schuylkill River located in Plymouth Township, Montgomery County. The receiving stream, Schuylkill River, is in watershed 3F and is designated for warm water fishes. The nearest downstream water supply intake is for Philadelphia Water Dept. – Queen Lane on the mainstream. The hydraulic design capacity is 11.29 MGD maximum monthly flow. The annual average flows for 2019 through 2021 were 6.59 mgd, 6.14 mgd, and 6.59 mgd, respectively.

Pretreatment consists of screening and grit removal. Wastewater from the main plant wet well flows by gravity to the trickling filter wet well or is pumped to the activated sludge plant. Wastewater to the tricking filter wet well is pumped to primary settling tanks, then to the primary trickling filters, secondary trickling filters, secondary settling tank, and to the chlorine contact tanks. Wastewater to the activated sludge plant is pumped directly from the main wet well to primary clarifiers, aeration tanks, final clarifiers, and the chlorine contact tanks. Disinfection is accomplished using sodium hypochlorite. Wasted sludge is pumped to gravity thickeners.

867 Dry Tons of bio-solids was produced and are hauled off-site to a composting facility for disposal.

Outfall 001 discharges treated effluent and Outfalls 002 discharges site stormwater.

Water quality modeling is performed using Department's WQM. No changes to assumptions, flow, etc., so effluent limits for $CBOD_5$, NH3-N and D.O remain unchanged. Current limit for phosphorus, Total Kjeldahl Nitrogen remain unchanged for this renewal.

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Approve	Deny	Signatures	Date
x		*Vasantha* Vasantha Palakurti / Environmental Engineering Specialist	August 16, 2023
X		*Pravin Patel* Pravin C. Patel, P.E. / Environmental Engineer Manager	08/17/2023

Summary of Review

E.Coli report only requirement has been added in the permit as per the revised SOP for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits SOP No. BCW-PMT-033.
A "Reasonable Potential Analysis" determined Copper, Free Cyanide, Zinc are parameters of concern. WQBEL calculated by Toxic Management Spreadsheet recommended that limits be established for Total Copper, and Report only for Zinc and Free Cyanide.

Free Cyanide has been changed to Quarterly monitoring for this permit. Copper two-tier limits have been proposed in in this renewal.

Polychlorinated Biphenyls (PCBs):

The Schuylkill River is listed as impaired for PCBs. In April 2007, EPA established the "PCB Total Maximum Daily Load for the Schuylkill River" to address the impairment. The Ch. 93 criteria for PCB are 0.014 ppb for aquatic life (chronic) and 0.000064 ppb for non-threshold human health (CRL). The DRBC criterion for the Delaware River, for which the TMDL and wasteload allocations were based, is 0.000044 ppb. Appendix D, Table B-1 lists the PCB wasteload allocations for point source dischargers to the main stem Schuylkill River. The wasteload allocation assigned to this facility is 1.35×10^{-3} grams/day. A requirement is included in Part C of the draft permit to conduct annual sampling (both wet and dry weather) using EPA Method 1668Aand develop a Pollutant Minimization Plan (PMP).

On April 7, 2007, The U.S. EPA, Region III, established a Total Maximum Daily Load (TMDL) for Polychlorinated Biphenyl (PCB) for the Schuylkill River, which was listed on Pennsylvania's 1996 303(d) list of impaired streams as impaired due to the presence of elevated PCB concentrations found in fish tissue. PCBs are a group of synthetic chemicals that consist of 209 individual compounds (knowns as Congeners). The Schuylkill River's PCB TMDL was established using a water-quality criterion of 0.044 ng/l for PCBs.

The existing NPDES permit also contained PCB condition in Part C.V that required development of a PMP within 1 year of permit issuance date and submission of Annual Reports thereafter. Since the sample results are still much higher than criteria, submission of a PMP is still warranted. The existing PCB requirements, i.e., annual dry and wet weather sampling, PMP submission, and annual reporting, will be continued. The permittee shall analyze the samples by EPA method 1668A.

There were no other changes to the facility, wastewater quantities, qualities and receiving stream designation since last permit renewal.

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.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	8.67
Latitude	40Âº 6' 17.36"	Longitude	-75Âº 19' 34.45"
Quad Name	Norristown	Quad Code	08-22-2
Wastewater Description:	Sewage Effluent		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	00833
NHD Com ID	25985560	RMI	22.94
Drainage Area	1770	Yield (cfs/mi^2)	0.125
Q_{7-10} Flow (cfs)	221	Q_{7-10} Basis	See Below
Elevation (ft)	48.2	Slope (ft/ft)	
Watershed No.	3-F	Chapter 93 Class.	WWF, MF
Existing Use	**NA**	Existing Use Qualifier	NA
Exceptions to Use	NA	Exceptions to Criteria	NA
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL
Nearest Downstream Public Water Supply Intake	Philadelphia Water Department – Queen Lane		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	394
PWS RMI	12.6	Distance from Outfall (mi)	~10 mi.

Changes Since Last Permit Issuance: There were no other changes to the facility, wastewater quantities, qualities and receiving stream designation since last permit renewal.

Streamflow:

Drainage area, $Q_{7-10,}$ Elevation used in previous permits has been carried on for more than 20 plus years, therefor for this renewal Drainage area, $Q_{7-10,}$ Elevation are updated based on the latest StreamStats and USGS data.

USGS's web-based GIS application StreamStats (https://streamstats.usgs.gov/ss/) was accessed on August 29, 2022 to collect streamflow data. The drainage area at Outfall 001 was found to be 1,770 mi2.

Data from USGS's StreamGage no. 01473500, located in Schuylkill River at Norristown, PA, shows Q7-10, Q1-10, and Q30-10 to be 220 cfs, 182 cfs, and 247 cfs, respectively for the reporting year 1929-2008. The drainage area at this streamgage was found to be 1,760 mi2. These values were obtained from the latest USGS streamflow report (1).

Q7-10 runoff rate = 220 cfs/1760 mi2 = 0.125 cfs/mi2
Q7-10 = 0.125 cfs/mi2 * 1770 mi2 = 221.25 cfs

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	002	Design Flow (MGD)	0
Latitude	40Âº 6' 11.46"	Longitude	-75Âº 19' 30.13"
Quad Name	Norristown	Quad Code	08-22-2
Wastewater Description:	Stormwater		

Treatment Facility Summary

Treatment Facility Name: East Norriton Plymouth STP

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia And Phosphorus	Extended Aeration	Hypochlorite	8.67

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
11.29	33925	Not Overloaded		Off-site disposal

Changes Since Last Permit Issuance: There were no other changes to the facility, wastewater quantities, qualities and receiving stream designation since last permit renewal.

Industrial Pretreatment:

There are currently no significant industrial users discharging to the system. The Pretreatment Requirements remain in the permit, however, in the event the Authority allows new users to connect. The language included under Headworks Analysis requiring the reevaluation of local limits is revised to reflect that there are no users at this time.

Compliance History

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	5.1	7.4	10.1	6.2	6.4	5.6	4.2	5.1	5.3	5.7	5.2	4.8
Flow (MGD) Daily Maximum	6.2	14.2	18.9	8.6	12.4	10.2	4.7	7.1	9.5	8.1	9.3	5.7
pH (S.U.) Instantaneous Minimum	7.1	6.9	7.0	7.2	7.2	7.1	7.2	7.3	7.3	7.1	7.3	7.1
pH (S.U.) Instantaneous Maximum	7.4	7.3	7.3	7.4	7.6	7.6	7.5	7.5	7.5	7.6	7.5	7.5
DO (mg/L) Instantaneous Minimum	8.1	8.3	8.3	9.2	9.2	8.4	8.4	8.3	7.5	7.1	6.9	7.6
TRC (mg/L) Average Monthly	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.5	0.3	0.3
TRC (mg/L) Instantaneous Maximum	0.7	0.7	0.7	0.6	0.8	0.9	0.9	0.7	1.0	0.9	0.6	0.7
CBOD5 (lbs/day) Average Monthly	473	478	621	502	564	1023	606	437	381	184	323	278
CBOD5 (lbs/day) Weekly Average	572	549	898	577	634	1269	736	524	480	444	397	304
CBOD5 (mg/L) Average Monthly	11	8	7	10	11	21	17	11	9	4	8	7
CBOD5 (mg/L) Weekly Average	12	8	9	12	12	27	21	14	10	8	8	8
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	8340	9286	10305	9031	8676	8805	8333	7748	8033	8252	7964	7481
BOD5 (mg/L) Raw Sewage Influent Average Monthly	197	155	128	175	166	189	238	188	188	177	191	188
TSS (lbs/day) Average Monthly	683	723	958	704	710	990	563	390	482	438	355	381

TSS (lbs/day) Weekly Average	818	943	1581	823	828	1273	718	489	571	590	470	467
TSS (mg/L) Average Monthly	16	12	11	14	13	21	16	9	11	9	8	10
TSS (mg/L) Raw Sewage Influent Average Monthly	233	173	147	205	181	202	238	200	212	230	223	217
TSS (mg/L) Weekly Average	19	12	15	17	16	23	20	12	14	10	9	12
Total Dissolved Solids (mg/L) Average Quarterly	543.0			605.0			425.0			618.0		
Total Dissolved Solids (mg/L) Daily Maximum	543.0			605.0			425.0			618.0		
Fecal Coliform (No./100 ml) Geometric Mean	30	20	71	16	> 41	> 47	< 10	26	> 32	> 38	4	27
Fecal Coliform (No./100 ml) Instantaneous Maximum	727	142	921	435	770	770	31	250	649	> 2420	435	488
Total Nitrogen (lbs/day) Average Monthly	961	967	1028	914	870	987	791	798	879	818	741	894
Total Nitrogen (mg/L) Average Monthly	19.4	17.8	12.8	20.2	19.7	18.2	21.8	16.6	22.5	15.0	21.6	18.8
Ammonia (lbs/day) Average Monthly	159	204	367	450	475	474	415	346	316	55	127	109
Ammonia (mg/L) Average Monthly	3.6	3.3	4.6	8.7	8.8	10.2	11.9	8.3	7.2	1.2	2.8	2.7
Total Phosphorus (lbs/day) Average Monthly	125	126	148	132	127	126	148	132	149	115	125	141
Total Phosphorus (mg/L) Average Monthly	3.09	2.24	1.68	2.67	2.82	2.81	4.14	3.16	3.54	2.52	3.49	3.48
Total Copper (mg/L) Average Quarterly	0.020			0.018			0.009			0.027		
Total Copper (mg/L) Daily Maximum	0.020			0.018			0.016			0.027		
Free Cyanide (mg/L) Average Monthly	0.004	< 0.0060	< 0.0060	< 0.004	< 0.004	0.012	0.008	0.015	0.017	0.005	0.007	0.004

Free Cyanide (mg/L) Daily Maximum	0.004	< 0.0060	< 0.0060	< 0.004	< 0.004	0.012	0.008	0.018	0.017	0.005	0.007	0.004
Total Lead (mg/L) Average Quarterly	< 0.0006			< 0.0006			< 0.0008			< 0.0006		
Total Lead (mg/L) Daily Maximum	< 0.0006			< 0.0006			< 0.001			< 0.0006		
Total Mercury (mg/L) Average Quarterly	< 0.0002			< 0.0002			< 0.0002			< 0.0002		
Total Mercury (mg/L) Daily Maximum	< 0.0002			< 0.0002			< 0.0002			< 0.0002		
Sulfate (mg/L) Average Quarterly	35.6			34.3			34.2			44.8		
Sulfate (mg/L) Daily Maximum	35.6			34.3			34.2			44.8		
Total Zinc (mg/L) Average Quarterly	0.052			0.054			0.038			0.059		
Total Zinc (mg/L) Daily Maximum	0.052			0.054			0.039			0.059		
Chloride (mg/L) Average Quarterly	190			257			161			205		
Chloride (mg/L) Daily Maximum	190			257			161			205		
Bromide (mg/L) Average Quarterly	< 1.00			< 1.00			< 1.00			< 1.0		
Bromide (mg/L) Daily Maximum	< 1.00			< 1.00			< 1.00			< 1.0		
Total Phenolics (mg/L) Average Quarterly	< 0.002			0.002			< 0.002			< 0.002		
Total Phenolics (mg/L) Daily Maximum	< 0.002			0.002			< 0.002			< 0.002		
PCBs (Dry Weather) (pg/L) Daily Maximum							1880					
PCBs (Wet Weather) (pg/L) Daily Maximum							2680					
Chronic WET - Ceriodaphnia Survival (TUc) Daily Maximum							25					
Chronic WET - Ceriodaphnia Reproduction (TUc) Daily Maximum							25					

Chronic WET - Pimephales Survival (TUc) Daily Maximum							25					
Chronic WET - Pimephales Growth (TUc) Daily Maximum							25					

DMR Data for Outfall 002 (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
pH (S.U.) Daily Maximum							7.5					
CBOD5 (mg/L) Daily Maximum							5.2					
COD (mg/L) Daily Maximum							35					
TSS (mg/L) Daily Maximum							140					
Oil and Grease (mg/L) Daily Maximum							< 5					
Fecal Coliform (No./100 ml) Daily Maximum							68700					
Total Phosphorus (mg/L) Daily Maximum							1.50					

Compliance History

Effluent Violations for Outfall 001, from: August 1, 2021 To: June 30, 2022

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TRC	10/31/21	Avg Mo	0.7	mg/L	.5	mg/L
Fecal Coliform	01/31/22	Geo Mean	> 47	No./100 ml	200	No./100 ml
Fecal Coliform	09/30/21	Geo Mean	> 38	No./100 ml	200	No./100 ml

Fecal Coliform	02/28/22	Geo Mean	> 41	No./100 ml	200	No./100 ml
Fecal Coliform	10/31/21	Geo Mean	> 32	No./100 ml	200	No./100 ml
Fecal Coliform	09/30/21	IMAX	> 2420	No./100 ml	1000	No./100 ml

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 8.67
Latitude 40º 6' 18.78" **Longitude** -75º 19' 33.23"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

As part of previous permit renewals, the WQM 7.0 model was used to determine acceptable limits for CBOD5, NH3-N, and DO that would protect the Chapter 93 criteria for DO and NH3-N toxicity. Limits are CBOD5 = 10 mg/l (summer)/20 mg/l (winter), NH3-N = 2.0 mg/l (summer)/4.0 mg/l (winter), and DO = 5 mg/l inst. minimum, and they are carried over from previous permit. For (NO2+NO3)-N, limit from July 1–Oct 31 is 9 mg/l and is carried over from the previous permit. It is based on protection of downstream water supply, where [(NH3-N) + (NO2+NO3)-N] = 11 mg/l. Since NH3-N = 2 mg/l, the limit for (NO2+NO3)-N is 9 mg/l. Monitoring for (NO2+NO3)-N from November 1–June 30 is included in addition to year-round monitoring for Total Kjeldahl Nitrogen (TKN). This is to adequately characterize the effluent in the event that a future Total Maximum Daily Load (TMDL) may include limits on nitrogen to address the nutrient impairment in the Neshaminy Creek watershed. The existing requirements to sample NH3-N, (NO2+NO3)-N, and TKN complies with the recommendation by the SOP "Establishing Effluent Limitations for Individual Sewage Permits" to require sampling for nitrogen in renewed permits.

Phosphorus and Total Nitrogen:
Previous permit limits are carried over in this renewal.

Fecal coliform:
The instantaneous maximum limit in the current permit is "not to exceed 1,000/100 ml in greater than 10% of the samples". For this renewal, the requirement continues to apply from October 1st through April 30th. From May 1st through September 30th, consistent with Ch. 92a.47(a)(4), the limit cannot be exceeded in any sample. The geometric mean of 200/100ml is unchanged, per DRBC and Ch.92a.47(a)(4).

E. Coli:
DEP's SOP titled "Establishing Effluent Limitations for Individual Sewage Permits (BCW-PMT-033, revised March 24, 2021) recommends monthly E. Coli monitoring for all major sewage dischargers. This requirement will be applied from this permit term.

TRC: Limits for TRC are carried over.

Chloroform and Dichlorobromo-methane: limits were established in the previous permit and will be continued for this renewal.

BOD5 and TSS: remain unchanged for this renewal.
TDS: A quarterly monitoring requirement for Total Dissolved Solids is continued in this renewal.

Water Quality-Based Limitations

WQM 7.0:
The following data were used in the attached computer model (WQM 7.0) of the stream:

- Discharge pH 7.6 (Application data)
- Discharge Hardness 211 mg/l (Application data)
- Stream Hardness 123 mg/l (Application data)

The following two nodes were used in modeling:

Node 1: At Outfall 001 on Schuylkill River (00833) at RMI 22.94
Elevation: 55 ft (USGS TNM 2.0 viewer, 05/24/2023)
Drainage Area: 1,770 mi^2 (StreamStat Version 3.0, 05/24/2023)
River Mile Index: 22.94 (PA DEP eMapPA)
Low Flow Yield: 0.125 cfs/mi^2
Discharge Flow: 8.67 MGD

Node 2: At Outfall 001 on Schuylkill River (PA0026794)
Elevation: 37.7 ft (USGS TNM 2.0 viewer, 02/24/2022)
Drainage Area: 1,790 mi^2 (StreamStat Version 3.0, 02/24/2022)
River Mile Index: 19.82 (PA DEP eMapPA)
Low Flow Yield: 0.125 cfs/mi^2
Discharge Flow: 2.3 MGD

The attached TMS model suggested an acute Partial Mixing Factor (PMFa) of 0.084. and Chronic Partiak Mixing Factor (PMF_C) of 0.582%.

The following limitations were determined through water quality modeling (output files attached):

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Copper	2.52	3.92	34.8	54.3	87.0	µg/L	34.8	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Free Cyanide	Report	Report	Report	Report	Report	µg/L	35.5	AFC	Discharge Conc > 25% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	285	AFC	Discharge Conc > 10% WQBEL (no RP)

Toxics:

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)).

Total Zinc: For a permitted flow of 8.67-MGD, the level of detection for Zinc is greater than 10% WQBEL but less than 50%. Therefore “Report only” has been proposed. In the existing permit, Zinc already exists as Report only, therefore no changes are proposed and monitoring only will continue in the renewal as well. The data will be reviewed during the next permit renewal to determine if a limit is needed.

Total Copper: The toxic modeling was run to determine the WQBEL for copper using an in-stream hardness of 123-mg/l and a discharge hardness of 211-mg/l. For a permitted flow of 8.67-MGD, the model calculated WQBEL of 34.8-ug/l. “Report only” has been included for 36 months and the limits are included from the beginning of 37th month.
The final WQBELs of 0.03 mg/l based on the current discharge and facility conditions become effective on the beginning 37th month unless DEP issues an amendment to this permit prior to that date. The permittee shall conduct a TRE in accordance with DEP’s Water Quality Toxics Management Strategy, Appendix C, Permittee Guidance for Conducting a Toxics Reduction Evaluation (TRE) (361-0100-003). See permit Part C.III

Free Cyanide: Limits have been established in the previous renewal. Limits in this permit have been changed to Quarterly monitoring only. See **Anti-Backsliding** below.

Anti-Backsliding

Free Cyanide: Limits from the previous permit has been changed to Quarterly monitoring.

The Cyanide limits were previously established due to the elevated CN levels which were directly related to the Sewage Sludge Incinerator operations. The incineration operations have ceased in December 2017 and the permittee has been monitoring for Free and Total Cyanide since then. Permittee provided with influent and effluent sampling data since December 2017 and results were consistently well below the limits that were established.

Attached at the bottom of the fact sheet are Cyanide sample results from 2017 to 2023

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 0
Latitude 40º 6' 14.00" **Longitude** -75º 19' 28.00"
Wastewater Description: Stormwater

Outfall 002 is a stormwater only outfall. Per Phase II stormwater regulations, major POTWs are required to have a permit for the discharge of stormwater. Therefore, stormwater monitoring requirements are included in Part A and Part C of the permit for this outfall. The existing monitoring requirements will be carried over in this renewal.

Whole Effluent Toxicity (WET)

The permittee submitted four (4) WET Test results during the submission of the renewal application and annually through the eDMR system. All four valid WET test results showed "Pass" for all end points. The dilution series is updated. The TIWCc was calculated to be **9%** to evaluate the test results for a stream flow of 221.25 cfs, discharge flow of 8.67 MGD, and PMFa of 0.084, PMFc of 0.582. The **Dilution Series has been updated in this renewal to 100%, 60%, 30%, 9%, and 4%.**

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: NA

The dilution series used for the tests was: 100%, 60%, 30%, 4%, and 2%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 4.

Summary of Four Most Recent Test Results

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
10/8/2018	Pass	Pass	Pass	Pass
10/28/2019	Pass	Pass	Pass	Pass
11/17/2020	Pass	Pass	Pass	Pass
11/16/2021	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**

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

Acute Partial Mix Factor (PMFa): **0.084** Chronic Partial Mix Factor (PMFc): **0.582**

Partial mix values based on site specific width and depth measurements taken by the authority during 1999 permitting cycle near the outfall.

1. Determine IWC – Acute (IWCa):

$(Q_d \times 1.547) / ((Q_{7\text{-}10} \times PMFa) + (Q_d \times 1.547))$

[(8.67 MGD x 1.547) / ((221.25 cfs x 0.084) + (8.67 MGD x 1.547))] x 100 = **41%**

Is IWCa < 1%? ☐ **YES** ☒ **NO**

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

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

$(Q_d \times 1.547) / (Q_{7\text{-}10} \times PMFc) + (Q_d \times 1.547)$

[(8.67 MGD x 1.547) / ((221.25 cfs x 0.582) + (8.67 MGD x 1.547))] x 100 = **9.4%** = **rounded to 9%**

3. Determine Dilution Series

Dilution series based on TIWCc from WET SOP

Dilution Series = 100%, 60%, 30%, 9%, and 4%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

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

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 End of Interim Period 1.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Copper, Total	XXX	XXX	XXX	Report	Report	XXX	1/month	Grab

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: Start of Final Period through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Copper, Total	XXX	XXX	XXX	0.033	0.052 Daily Max	0.083	1/month	24-Hr Composite

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	Minimum	Average Quarterly	Daily Maximum	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	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5 Avg Mo	XXX	1.2	1/day	Grab
CBOD5 Nov 1 - Apr 30	1807	2892	XXX	25 Avg Mo	40 Wkly Avg	50	1/day	24-Hr Composite
CBOD5 May 1 - Oct 31	1446	2169	XXX	20 Avg Mo	30 Wkly Avg	40	1/day	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report Avg Mo	XXX	XXX	1/day	24-Hr Composite
TSS	2169	3254	XXX	30 Avg Mo	45 Wkly Avg	60	1/day	24-Hr Composite
TSS Raw Sewage Influent	XXX	XXX	XXX	Report Avg Mo	XXX	XXX	1/day	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	1000.0	2000.0	2500	1/quarter	24-Hr Composite
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/day	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
Total Nitrogen	Report	XXX	XXX	Report Avg Mo	XXX	XXX	1/month	24-Hr Composite
Ammonia Nov 1 - Apr 30	1446	XXX	XXX	20.0 Avg Mo	XXX	40	1/day	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	Minimum	Average Quarterly	Daily Maximum	Instant. Maximum		
Ammonia May 1 - Oct 31	867	XXX	XXX	12.0 Avg Mo	XXX	24	1/day	24-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report Avg Mo	XXX	XXX	1/week	24-Hr Composite
Free Cyanide	XXX	XXX	XXX	Report	Report	XXX	1/quarter	24-Hr Composite
Total Lead	XXX	XXX	XXX	Report	Report	XXX	1/quarter	24-Hr Composite
Total Mercury	XXX	XXX	XXX	Report	Report	XXX	1/quarter	24-Hr Composite
Sulfate	XXX	XXX	XXX	Report	Report	XXX	1/quarter	24-Hr Composite
Total Zinc	XXX	XXX	XXX	Report	Report	XXX	1/quarter	24-Hr Composite
Chloride	XXX	XXX	XXX	Report	Report	XXX	1/quarter	24-Hr Composite
Bromide	XXX	XXX	XXX	Report	Report	XXX	1/quarter	24-Hr Composite
Total Phenolics	XXX	XXX	XXX	Report	Report	XXX	1/quarter	24-Hr Composite
PCBs (Dry Weather) (pg/L)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	24-Hr Composite
PCBs (Wet Weather) (pg/L)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	24-Hr Composite
Chronic WET - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	24-Hr Composite
Chronic WET - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	24-Hr Composite
Chronic WET - Pimephales Survival (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	24-Hr Composite
Chronic WET - Pimephales Growth (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	24-Hr Composite

Proposed Effluent Limitations and Monitoring Requirements

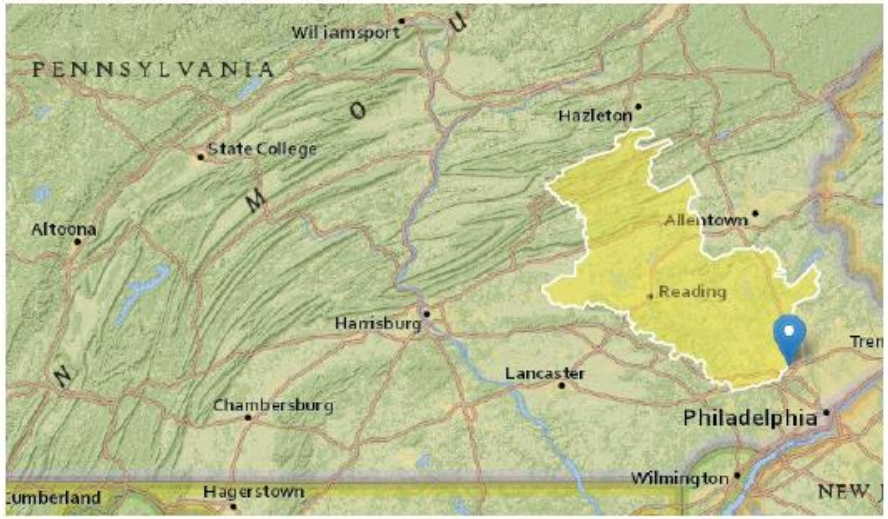
The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Daily Maximum	Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
CBOD5	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
COD	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
TSS	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

StreamStats Report

Region ID: PA
Workspace ID: PA20220829144621952000
Clicked Point (Latitude, Longitude): 40.10391, -75.32553
Time: 2022-08-29 10:46:46 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	5.522	degrees
CARBON	Percentage of area of carbonate rock	13.76	percent
DRNAREA	Area that drains to a point on a stream	1770	square miles
PRECIP	Mean Annual Precipitation	46	inches
ROCKDEP	Depth to rock	4.5	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.51	miles per square mile
URBAN	Percentage of basin with urban development	9.9567	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [48.8 Percent (862 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1770	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	5.522	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.5	feet	4.13	5.21
URBAN	Percent Urban	9.9567	percent	0	89

Low-Flow Statistics Parameters [51.2 Percent (905 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1770	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	46	inches	35	50.4
STRDEN	Stream Density	1.51	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	13.76	percent	0	99

Low-Flow Statistics Disclaimers [48.8 Percent (862 square miles) Low Flow Region 1]

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

Low-Flow Statistics Flow Report [48.8 Percent (862 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	434	ft^3/s
30 Day 2 Year Low Flow	536	ft^3/s
7 Day 10 Year Low Flow	270	ft^3/s
30 Day 10 Year Low Flow	326	ft^3/s
90 Day 10 Year Low Flow	436	ft^3/s

Low-Flow Statistics Disclaimers [51.2 Percent (905 square miles) Low Flow Region 2]

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

Low-Flow Statistics Flow Report [51.2 Percent (905 square miles) Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	661	ft^3/s
30 Day 2 Year Low Flow	777	ft^3/s
7 Day 10 Year Low Flow	444	ft^3/s
30 Day 10 Year Low Flow	520	ft^3/s
90 Day 10 Year Low Flow	632	ft^3/s

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	550	ft^3/s
30 Day 2 Year Low Flow	659	ft^3/s
7 Day 10 Year Low Flow	359	ft^3/s
30 Day 10 Year Low Flow	425	ft^3/s

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: East Norristown - Plymouth - WJSA NPDES Permit No.: PA0026816 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Treated Sewage Effluent

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
8.67	211	7.6						

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc	0 if left blank: Stream Conc	0.5 if left blank: Daily CV	0.5 if left blank: Hourly CV	0 if left blank: Strea m CV	0 if left blank: Fate Coeff	0 if left blank: FOS	1 if left blank: Criteri a Mod	1 if left blank: Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L	<	1210									
	Chloride (PWS)	mg/L	<	573									
	Bromide	mg/L	<	0.3									
	Sulfate (PWS)	mg/L	<	44.8									
	Fluoride (PWS)	mg/L	<										
Group 2	Total Aluminum	µg/L	<	40									
	Total Antimony	µg/L	<	0.8									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L	<	117									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L	<	200									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L	<	0.1									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L	<	0.3									
	Total Copper	µg/L	<	26									
	Free Cyanide	µg/L	<	16									
	Total Cyanide	µg/L		27									
	Dissolved Iron	µg/L		190									
	Total Iron	µg/L		480									
	Total Lead	µg/L		1									
	Total Manganese	µg/L		73									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		4.7									
	Total Phenols (Phenolics) (PWS)	µg/L	<	20									
	Total Selenium	µg/L	<	1									
	Total Silver	µg/L	<	0.3									
	Total Thallium	µg/L	<	0.2									
	Total Zinc	µg/L		61									
	Total Molybdenum	µg/L		2									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L											
	Acrylonitrile	µg/L	<	2									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									
Group 3	Carbon Tetrachloride	µg/L	<	0.5									
	Chlorobenzene	µg/L	<	0.5									
	Chlorodibromomethane	µg/L		1.4									
	Chloroethane	µg/L	<	0.5									
	2-Chloroethyl Vinyl Ether	µg/L	<	0.5									
	Chloroform	µg/L		8.7									
	Dichlorobromomethane	µg/L		4.9									
	1,1-Dichloroethane	µg/L	<	0.5									
	1,2-Dichloroethane	µg/L	<	0.5									
	1,1-Dichloroethylene	µg/L	<	0.5									
	1,2-Dichloropropane	µg/L	<	0.5									
	1,3-Dichloropropylene	µg/L	<	0.5									
	1,4-Dioxane	µg/L	<	6.2									
	Ethylbenzene	µg/L	<	0.5									
	Methyl Bromide	µg/L	<	0.5									
	Methyl Chloride	µg/L	<	0.5									
	Methylene Chloride	µg/L	<	0.5									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5									
	Tetrachloroethylene	µg/L	<	0.5									
	Toluene	µg/L	<	0.5									
	1,2-trans-Dichloroethylene	µg/L	<	0.5									
	1,1,1-Trichloroethane	µg/L	<	0.5									
	1,1,2-Trichloroethane	µg/L	<	0.5									
	Trichloroethylene	µg/L	<	0.5									
	Vinyl Chloride	µg/L	<	0.5									
Group 4	2-Chlorophenol	µg/L	<	10									
	2,4-Dichlorophenol	µg/L	<	10									
	2,4-Dimethylphenol	µg/L	<	10									
	4,6-Dinitro-o-Cresol	µg/L	<	10									
	2,4-Dinitrophenol	µg/L	<	10									
	2-Nitrophenol	µg/L	<	10									
	4-Nitrophenol	µg/L	<	10									
	p-Chloro-m-Cresol	µg/L	<	10									
	Pentachlorophenol	µg/L	<	10									
	Phenol	µg/L	<	10									
	2,4,6-Trichlorophenol	µg/L	<	10									
Group 5	Acenaphthene	µg/L	<	2.5									
	Acenaphthylene	µg/L	<	2.5									
	Anthracene	µg/L	<	2.5									
	Benzidine	µg/L	<	50									
	Benzo(a)Anthracene	µg/L	<	2.5									
	Benzo(a)Pyrene	µg/L	<	2.5									
	3,4-Benzofluoranthene	µg/L	<	2.5									
	Benzo(ghi)Perylene	µg/L	<	2.5									
	Benzo(k)Fluoranthene	µg/L	<	2.5									
	Bis(2-Chloroethoxy)Methane	µg/L	<	5									
	Bis(2-Chloroethyl)Ether	µg/L	<	5									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5									
	4-Bromophenyl Phenyl Ether	µg/L	<	5									
	Butyl Benzyl Phthalate	µg/L	<	5									
	2-Chloronaphthalene	µg/L	<	5									
	4-Chlorophenyl Phenyl Ether	µg/L	<	5									
	Chrysene	µg/L	<	2.5									
	Dibenzo(a,h)Anthrancene	µg/L	<	2.5									
	1,2-Dichlorobenzene	µg/L	<	0.5									
	1,3-Dichlorobenzene	µg/L	<	0.5									
	1,4-Dichlorobenzene	µg/L	<	0.5									
	3,3-Dichlorobenzidine	µg/L	<	5									
	Diethyl Phthalate	µg/L	<	5									
	Dimethyl Phthalate	µg/L	<	5									
	Di-n-Butyl Phthalate	µg/L	<	5									
	2,4-Dinitrotoluene	µg/L	<	5									

	2,6-Dinitrotoluene	µg/L	<	5										
	Di-n-Octyl Phthalate	µg/L		5.6										
	1,2-Diphenylhydrazine	µg/L	<	5										
	Fluoranthene	µg/L	<	2.5										
	Fluorene	µg/L	<	2.5										
	Hexachlorobenzene	µg/L	<	5										
	Hexachlorobutadiene	µg/L	<	0.5										
	Hexachlorocyclopentadiene	µg/L	<	5										
	Hexachloroethane	µg/L	<	5										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2.5										
	Isophorone	µg/L	<	5										
	Naphthalene	µg/L	<	0.5										
	Nitrobenzene	µg/L	<	5										
	n-Nitrosodimethylamine	µg/L	<	5										
	n-Nitrosodi-n-Propylamine	µg/L	<	5										
	n-Nitrosodiphenylamine	µg/L	<	5										
	Phenanthrene	µg/L	<	2.5										
	Pyrene	µg/L	<	2.5										
	1,2,4-Trichlorobenzene	µg/L	<	0.5										
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												

Stream / Surface Water Information

East Norristown - Plymouth - WJSA, NPDES Permit No. PA0026816, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Schuylkill River**

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	000833	22.94	55	1770			Yes
End of Reach 1	000833	19.82	38	1790			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	22.94	0.125										123	7		
End of Reach 1	19.82	0.125													

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	22.94														
End of Reach 1	19.82														

Model Results

East Norristown - Plymouth - WJSA, NPDES Permit No. PA0026816, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ *AFC* CCT (min): 15 PMF: 0.084 Analysis Hardness (mg/l): 159.88 Analysis pH: 7.16

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 Aluminum	0	0		0	750	750	1,789	
Total Antimony	0	0		0	1,100	1,100	2,625	
Total Arsenic	0	0		0	340	340	811	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	50,105	
Total Boron	0	0		0	8,100	8,100	19,326	
Total Cadmium	0	0		0	3.177	3.44	8.2	Chem Translator of 0.924 applied
Total Chromium (III)	0	0		0	836.772	2,648	6,318	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	38.9	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	227	
Total Copper	0	0		0	20.912	21.8	52.0	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	52.5	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	107.221	148	354	Chem Translator of 0.723 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	3.93	Chem Translator of 0.85 applied
Total Nickel	0	0		0	696.434	698	1,665	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	7.210	8.48	20.2	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	155	
Total Zinc	0	0		0	174.396	178	425	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	7.16	

Acrylonitrile	0	0		0	650	650	1,551	
Benzene	0	0		0	640	640	1,527	
Bromoform	0	0		0	1,800	1,800	4,295	
Carbon Tetrachloride	0	0		0	2,800	2,800	6,681	
Chlorobenzene	0	0		0	1,200	1,200	2,863	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	42,947	
Chloroform	0	0		0	1,900	1,900	4,533	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	35,789	
1,1-Dichloroethylene	0	0		0	7,500	7,500	17,895	
1,2-Dichloropropane	0	0		0	11,000	11,000	26,246	
1,3-Dichloropropylene	0	0		0	310	310	740	
Ethylbenzene	0	0		0	2,900	2,900	6,919	
Methyl Bromide	0	0		0	550	550	1,312	
Methyl Chloride	0	0		0	28,000	28,000	66,807	
Methylene Chloride	0	0		0	12,000	12,000	28,632	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	2,386	
Tetrachloroethylene	0	0		0	700	700	1,670	
Toluene	0	0		0	1,700	1,700	4,056	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	16,225	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	7,158	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	8,112	
Trichloroethylene	0	0		0	2,300	2,300	5,488	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,336	
2,4-Dichlorophenol	0	0		0	1,700	1,700	4,056	
2,4-Dimethylphenol	0	0		0	660	660	1,575	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	191	
2,4-Dinitrophenol	0	0		0	660	660	1,575	
2-Nitrophenol	0	0		0	8,000	8,000	19,088	
4-Nitrophenol	0	0		0	2,300	2,300	5,488	
p-Chloro-m-Cresol	0	0		0	160	160	382	
Pentachlorophenol	0	0		0	10.282	10.3	24.5	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	1,098	
Acenaphthene	0	0		0	83	83.0	198	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	716	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.19	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	71,579	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	10,737	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	644	
Butyl Benzyl Phthalate	0	0		0	140	140	334	

2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	1,956	
1,3-Dichlorobenzene	0	0		0	350	350	835	
1,4-Dichlorobenzene	0	0		0	730	730	1,742	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	9,544	
Dimethyl Phthalate	0	0		0	2,500	2,500	5,965	
Di-n-Butyl Phthalate	0	0		0	110	110	262	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	3,818	
2,6-Dinitrotoluene	0	0		0	990	990	2,362	
1,2-Diphenylhydrazine	0	0		0	15	15.0	35.8	
Fluoranthene	0	0		0	200	200	477	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	10	10.0	23.9	
Hexachlorocyclopentadiene	0	0		0	5	5.0	11.9	
Hexachloroethane	0	0		0	60	60.0	143	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	23,860	
Naphthalene	0	0		0	140	140	334	
Nitrobenzene	0	0		0	4,000	4,000	9,544	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	40,561	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	716	
Phenanthrene	0	0		0	5	5.0	11.9	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	310	

☑ *CFC* CCT (min): 720 PMF: 0.582 Analysis Hardness (mg/l): 131.3 Analysis pH: 7.03

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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	2,332	
Total Arsenic	0	0		0	150	150	1,590	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	43,469	
Total Boron	0	0		0	1,600	1,600	16,964	
Total Cadmium	0	0		0	0.297	0.33	3.51	Chem Translator of 0.898 applied
Total Chromium (III)	0	0		0	92.632	108	1,142	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	110	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	201	

Total Copper	0	0		0	11.302	11.8	125	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	55.1	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	26,244	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.381	4.5	47.7	Chem Translator of 0.751 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	9.6	Chem Translator of 0.85 applied
Total Nickel	0	0		0	65.480	65.7	696	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	52.9	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	138	
Total Zinc	0	0		0	148.799	151	1,600	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	31.8	
Acrylonitrile	0	0		0	130	130	1,378	
Benzene	0	0		0	130	130	1,378	
Bromoform	0	0		0	370	370	3,923	
Carbon Tetrachloride	0	0		0	560	560	5,937	
Chlorobenzene	0	0		0	240	240	2,545	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	37,108	
Chloroform	0	0		0	390	390	4,135	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	32,867	
1,1-Dichloroethylene	0	0		0	1,500	1,500	15,903	
1,2-Dichloropropane	0	0		0	2,200	2,200	23,325	
1,3-Dichloropropylene	0	0		0	61	61.0	647	
Ethylbenzene	0	0		0	580	580	6,149	
Methyl Bromide	0	0		0	110	110	1,166	
Methyl Chloride	0	0		0	5,500	5,500	58,312	
Methylene Chloride	0	0		0	2,400	2,400	25,445	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	2,226	
Tetrachloroethylene	0	0		0	140	140	1,484	
Toluene	0	0		0	330	330	3,499	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	14,843	
1,1,1-Trichloroethane	0	0		0	610	610	6,467	
1,1,2-Trichloroethane	0	0		0	680	680	7,210	
Trichloroethylene	0	0		0	450	450	4,771	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	1,166	
2,4-Dichlorophenol	0	0		0	340	340	3,605	
2,4-Dimethylphenol	0	0		0	130	130	1,378	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	170	
2,4-Dinitrophenol	0	0		0	130	130	1,378	
2-Nitrophenol	0	0		0	1,600	1,600	16,964	

4-Nitrophenol	0	0		0	470	470	4,983	
p-Chloro-m-Cresol	0	0		0	500	500	5,301	
Pentachlorophenol	0	0		0	7.888	7.89	83.6	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	965	
Acenaphthene	0	0		0	17	17.0	180	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	626	
Benzo(a)Anthracene	0	0		0	0.1	0.1	1.06	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	63,613	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	9,648	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	573	
Butyl Benzyl Phthalate	0	0		0	35	35.0	371	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	1,696	
1,3-Dichlorobenzene	0	0		0	69	69.0	732	
1,4-Dichlorobenzene	0	0		0	150	150	1,590	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	8,482	
Dimethyl Phthalate	0	0		0	500	500	5,301	
Di-n-Butyl Phthalate	0	0		0	21	21.0	223	
2,4-Dinitrotoluene	0	0		0	320	320	3,393	
2,6-Dinitrotoluene	0	0		0	200	200	2,120	
1,2-Diphenylhydrazine	0	0		0	3	3.0	31.8	
Fluoranthene	0	0		0	40	40.0	424	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	2	2.0	21.2	
Hexachlorocyclopentadiene	0	0		0	1	1.0	10.6	
Hexachloroethane	0	0		0	12	12.0	127	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	22,265	
Naphthalene	0	0		0	43	43.0	456	
Nitrobenzene	0	0		0	810	810	8,588	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	36,048	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	626	
Phenanthrene	0	0		0	1	1.0	10.6	
Pyrene	0	0		0	N/A	N/A	N/A	

1,2,4-Trichlorobenzene	0	0		0	26	26.0	276	

☑ *THH* CCT (min): 720 PMF: 0.582 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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	59.4	
Total Arsenic	0	0		0	10	10.0	106	
Total Barium	0	0		0	2,400	2,400	25,445	
Total Boron	0	0		0	3,100	3,100	32,867	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	4	4.0	42.4	
Dissolved Iron	0	0		0	300	300	3,181	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	10,602	
Total Mercury	0	0		0	0.050	0.05	0.53	
Total Nickel	0	0		0	610	610	6,467	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	2.54	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	31.8	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	1,060	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	60.4	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	350	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	

1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	68	68.0	721	
Methyl Bromide	0	0		0	100	100.0	1,060	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	604	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	1,060	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	106,022	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	30	30.0	318	
2,4-Dichlorophenol	0	0		0	10	10.0	106	
2,4-Dimethylphenol	0	0		0	100	100.0	1,060	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	21.2	
2,4-Dinitrophenol	0	0		0	10	10.0	106	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	42,409	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	742	
Anthracene	0	0		0	300	300	3,181	
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	2,120	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	1.06	
2-Chloronaphthalene	0	0		0	800	800	8,482	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	1,000	1,000	10,602	
1,3-Dichlorobenzene	0	0		0	7	7.0	74.2	
1,4-Dichlorobenzene	0	0		0	300	300	3,181	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	6,361	
Dimethyl Phthalate	0	0		0	2,000	2,000	21,204	

Benzidine	0	0		0	0.0001	0.0001	0.005	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.054	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.005	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.054	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.54	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	1.62	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	17.2	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	6.46	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.005	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	2.69	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	2.69	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	2.69	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	1.62	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.004	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.54	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	5.39	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.054	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.038	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.27	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	178	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

Pollutants	Mass Limits		Concentration Limits				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			
Total Copper	2.41	3.76	33.3	52.0	83.3	µg/L	33.3	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Free Cyanide	Report	Report	Report	Report	Report	µg/L	33.6	AFC	Discharge Conc > 25% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	273	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 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
Total Aluminum	1,147	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	25,445	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	12,387	µg/L	Discharge Conc < TQL
Total Cadmium	3.51	µg/L	Discharge Conc < TQL
Total Chromium (III)	1,142	µg/L	Discharge Conc < TQL
Hexavalent Chromium	24.9	µg/L	Discharge Conc < TQL
Total Cobalt	145	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	3,181	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	26,244	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	47.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	10,602	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.53	µg/L	Discharge Conc < TQL
Total Nickel	696	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	52.9	µg/L	Discharge Conc < TQL
Total Silver	13.0	µg/L	Discharge Conc < TQL
Total Thallium	2.54	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	4.59	µg/L	Discharge Conc < TQL
Acrylonitrile	3.23	µg/L	Discharge Conc < TQL
Benzene	31.2	µg/L	Discharge Conc < TQL

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.04
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: East Norriton

Permit No.: PA0026816

Replicate No.	Test Completion Date 11/16/2021 Control	TIWC	Test Completion Date 11/17/2020 Control	TIWC
1	1	1	1	1
2	1	1	1	1
3	1	1	1	1
4	1	1	1	1
5	1	1	1	1
6	1	1	1	1
7	1	1	1	0
8	1	1	1	1
9	1	1	1	1
10	1	1	1	1
11				
12				
13				
14				
15				
Mean	1.000	1.000	1.000	0.900
Std Dev.	0.000	0.000	0.000	0.316
# Replicates	10	10	10	10
T-Test Result				
Deg. of Freedom				
Critical T Value				
Pass or Fail	PASS		PASS	

Replicate No.	Test Completion Date 10/28/2019 Control	TIWC	Test Completion Date 10/8/2018 Control	TIWC
1	1	1	1	1
2	1	1	1	1
3	1	1	1	1
4	1	1	1	1
5	1	1	1	1
6	1	1	1	1
7	1	1	1	1
8	1	1	1	1
9	1	1	1	1
10	1	1	1	1
11				
12				
13				
14				
15				
Mean	1.000	1.000	1.000	1.000
Std Dev.	0.000	0.000	0.000	0.000
# Replicates	10	10	10	10
T-Test Result				
Deg. of Freedom				
Critical T Value				
Pass or Fail	PASS		PASS	

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.04
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: East Norriton

Permit No.: PA0026816

Replicate No.	Test Completion Date 11/16/2021 Control	TIWC	Test Completion Date 11/17/2020 Control	TIWC
1	40	44	14	21
2	31	41	34	37
3	31	45	39	30
4	35	32	42	38
5	37	32	28	33
6	32	34	38	40
7	30	28	35	18
8	28	28	32	36
9	29	34	38	30
10	33	30	36	40
11				
12				
13				
14				
15				
Mean	32.600	34.800	33.600	32.300
Std Dev.	3.748	6.321	7.919	7.675
# Replicates	10	10	10	10
T-Test Result	4.7312		2.3136	
Deg. of Freedom	14		16	
Critical T Value	0.8681		0.8647	
Pass or Fail	PASS		PASS	

Replicate No.	Test Completion Date 10/28/2019 Control	TIWC	Test Completion Date 10/8/2018 Control	TIWC
1	28	31	26	23
2	30	34	16	25
3	30	30	25	23
4	30	28	31	30
5	16	28	16	30
6	18	20	18	26
7	18	14	26	27
8	26	22	28	31
9	22	28	26	21
10	34	40	25	28
11				
12				
13				
14				
15				
Mean	25.200	27.500	23.700	26.400
Std Dev.	6.268	7.352	5.187	3.406
# Replicates	10	10	10	10
T-Test Result	3.1164		5.2753	
Deg. of Freedom	16		17	
Critical T Value	0.8647		0.8633	
Pass or Fail	PASS		PASS	

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.04
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: East Norriton

Permit No.: PA0026816

Replicate No.	Test Completion Date 11/16/2021 Control	TIWC
1	0.327	0.381
2	0.326	0.375
3	0.372	0.339
4	0.324	0.359
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.337	0.364
Std Dev.	0.023	0.019
# Replicates	4	4
T-Test Result	8.6350	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Replicate No.	Test Completion Date 11/17/2020 Control	TIWC
1	0.391	0.379
2	0.398	0.382
3	0.413	0.409
4	0.401	0.373
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.401	0.386
Std Dev.	0.009	0.016
# Replicates	4	4
T-Test Result	9.8098	
Deg. of Freedom	4	
Critical T Value	0.7407	
Pass or Fail	PASS	

Replicate No.	Test Completion Date 10/29/2019 Control	TIWC
1	0.466	0.333
2	0.402	0.335
3	0.535	0.454
4	0.453	0.448
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.464	0.393
Std Dev.	0.055	0.068
# Replicates	4	4
T-Test Result	1.1250	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Replicate No.	Test Completion Date 10/9/2018 Control	TIWC
1	0.388	0.452
2	0.502	0.338
3	0.454	0.429
4	0.489	0.419
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.458	0.410
Std Dev.	0.051	0.050
# Replicates	4	4
T-Test Result	2.1002	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.04
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: East Norriton

Permit No.: PA0026816

Replicate No.	Test Completion Date 11/16/2021 Control	TIWC
1	10	10
2	10	10
3	10	10
4	10	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	9.750
Std Dev.	0.000	0.500
# Replicates	4	4
T-Test Result	7.6643	
Deg. of Freedom	3	
Critical T Value	0.7649	
Pass or Fail	PASS	

Replicate No.	Test Completion Date 11/17/2020 Control	TIWC
1	9	10
2	10	9
3	10	10
4	10	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.500
Std Dev.	0.500	0.577
# Replicates	4	4
T-Test Result	5.3848	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Replicate No.	Test Completion Date 10/29/2019 Control	TIWC
1	10	9
2	9	7
3	10	10
4	9	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.500	8.750
Std Dev.	0.577	1.258
# Replicates	4	4
T-Test Result	2.4225	
Deg. of Freedom	4	
Critical T Value	0.7407	
Pass or Fail	PASS	

Replicate No.	Test Completion Date 10/8/2018 Control	TIWC
1	10	10
2	10	9
3	10	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	9.750
Std Dev.	0.000	0.500
# Replicates	4	4
T-Test Result	7.6643	
Deg. of Freedom	3	
Critical T Value	0.7649	
Pass or Fail	PASS	

WET Summary and Evaluation

Facility Name	East Norriton
Permit No.	PA0053180
Design Flow (MGD)	8.67
Q_{7-10} Flow (cfs)	344.5
PMF_a	1
PMF_c	1

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/16/21	11/17/20	10/28/19	10/8/18
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/16/21	11/17/20	10/28/19	10/8/18
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/16/21	11/17/20	10/29/19	10/9/18
Pimephales	Growth	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/16/21	11/17/20	10/29/19	10/8/18
Pimephales	Survival	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**
TIWC	**4** % Effluent
Dilution Series	**2, 4, 30, 60, 100** % Effluent
Permit Limit	**None**
Permit Limit Species	

East Norriton ★ Plymouth ★ Whitpain
Joint Sewer Authority

200 Ross Street
Plymouth Meeting, Pennsylvania 19462

(610) 279-5759
Fax (610) 279-8033

July 26, 2023

Ms. Vasantha Palakurti, Environmental Engineering Specialist
PA Department of Environmental Protection
2 East Main Street
Norristown, PA 19401

RE: Free Cyanide (CN) Testing
NPDES Permit PA #0026816 Renewal

Dear Ms. Palakurti:

This letter is in response to your request for additional information regarding our NPDES Permit renewal as it relates to Free Cyanide (CN) testing.

The attached highlighted data shows the elevated CN levels were directly related to the Sewage Sludge Incinerator (SSI) Operations. The other non-highlighted data results were from samples taken while the incinerator was not in operation for that particular month.

The current CN levels continue to be consistently far below the CN limits in our NPDES permit.

In addition, I am attaching copies of previous email correspondence with PA DEP regarding the removal of CN limits through a permit amendment. Due to the cost, we decided to wait for our permit renewal and have the CN limits removed at that time. We are now requesting that CN testing be removed from our NPDES Permit.

Please note that Free and Total CN quarterly testing for influent, effluent and sludge will continue as required by our MIPP. The test results will be available to PA DEP in our annual MIPP report.

Protecting our environment since 1959

If SSI operations are resumed, which we do not intend to do for the foreseeable future, it can be added back into the permit as a condition of a new Air Quality Permit. It would also be a process change that, per Section III.C of our NPDES permit, would require DEP notification.

Very truly yours,

Timothy A. Boyd, P.E.
Executive Director

Location: Influent

Influent Goal	JAN mg/L	FEB mg/L	MAR mg/L	APR mg/L	MAY mg/L
Cyanide, Free		<0.001	<0.001	0.001	0.006	<0.001
Cyanide, Total	0.0209	<0.010	<0.010	<0.010	<0.010	<0.010

Location: Effluent

Effluent Goal	JAN mg/L	FEB mg/L	MAR mg/L	APR mg/L	MAY mg/L
Cyanide, Free	0.064	0.006	0.008	0.008	0.001	0.004
Cyanide, Total	0.133	0.011	<0.010	<0.010	<0.010	<0.010

2022

Location: Influent

Influent Goal	JAN mg/L	FEB mg/L	MAR mg/L	APR mg/L	MAY mg/L	JUN mg/L	JUL mg/L	AUG mg/L	SEP mg/L	OCT mg/L	NOV mg/L	DEC mg/L
Cyanide, Free		<0.004	<0.004	<0.004	<0.0050	<0.010	<0.001	<0.001	<0.001	0.014	<0.001	0.001	<0.001
Cyanide, Total	0.0209	<0.004	<0.004	<0.004	<0.01	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010

Location: Effluent

Effluent Goal	JAN mg/L	FEB mg/L	MAR mg/L	APR mg/L	MAY mg/L	JUN mg/L	JUL mg/L	AUG mg/L	SEP mg/L	OCT mg/L	NOV mg/L	DEC mg/L
Cyanide, Free	0.064	0.012	<0.004	<0.004	<0.0050	<0.0060	0.004	0.001	0.008	0.001	0.004	0.010	0.010
Cyanide, Total	0.133	0.018	0.008	0.016	<0.01	0.013	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010

2021

Location: Influent

Influent Goal	JAN mg/L	FEB mg/L	MAR mg/L	APR mg/L	MAY mg/L	JUN mg/L	JUL mg/L	AUG mg/L	SEP mg/L	OCT mg/L	NOV mg/L	DEC mg/L
Cyanide, Free		<0.004	<0.004	0.006	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Cyanide, Total	0.0209	<0.004	<0.004	0.013	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004

Location: Effluent

Effluent Goal	JAN mg/L	FEB mg/L	MAR mg/L	APR mg/L	MAY mg/L	JUN mg/L	JUL mg/L	AUG mg/L	SEP mg/L	OCT mg/L	NOV mg/L	DEC mg/L
Cyanide, Free	0.064	0.010	0.012	0.01	0.007	0.008	0.004	0.004	0.007	0.005	0.017	0.015	0.008
Cyanide, Total	0.133	0.011	0.018	0.010	0.010	0.008	0.006	0.006	0.005	0.012	0.019	0.023	0.008

2020

Location: Influent

Influent Goal	JAN mg/L	FEB mg/L	MAR mg/L	APR mg/L	MAY mg/L	JUN mg/L	JUL mg/L	AUG mg/L	SEP mg/L	OCT mg/L	NOV mg/L	DEC mg/L
Cyanide, Free		<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Cyanide, Total	0.0209	<0.004	<0.004	<0.004	<0.004	0.007	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004

Location: Effluent

Effluent Goal	JAN mg/L	FEB mg/L	MAR mg/L	APR mg/L	MAY mg/L	JUN mg/L	JUL mg/L	AUG mg/L	SEP mg/L	OCT mg/L	NOV mg/L	DEC mg/L
Cyanide, Free	0.064	0.005	0.007	0.011	<0.004	0.006	0.004	<0.004	0.007	<0.004	<0.004	<0.004	0.010
Cyanide, Total	0.133	0.005	0.004	0.006	<0.004	0.008	0.007	0.006	0.007	0.006	<0.004	<0.004	0.008

2019

Location: Influent

Influent Goal	JAN mg/L	FEB mg/L	MAR mg/L	APR mg/L	MAY mg/L	JUN mg/L	JUL mg/L	AUG mg/L	SEP mg/L	OCT mg/L	NOV mg/L	DEC mg/L
Cyanide, Free		<.004	<.004	0.008	<.004	<.004	<.004	<.004	<.004	<.004	<.004	<.004	<.004
Cyanide, Total	0.0209	<.004	0.017	0.008	0.006	<.004	<.004	<.004	<.004	<.004	<.004	<.004	0.007

Location: Effluent

Effluent Goal	JAN mg/L	FEB mg/L	MAR mg/L	APR mg/L	MAY mg/L	JUN mg/L	JUL mg/L	AUG mg/L	SEP mg/L	OCT mg/L	NOV mg/L	DEC mg/L
Cyanide, Free	0.064	<.004	<.004	0.011	0.007	0.013	<.004	0.005	<.004	<.004	0.008	0.007	<.004
Cyanide, Total	0.133	<.004	0.014	0.011	0.012	0.006	<.004	0.006	<.004	0.006	0.013	0.009	0.005

2018

Location: Influent

Influent Goal	JAN mg/L	FEB mg/L	MAR mg/L	APR mg/L	MAY mg/L	JUN mg/L	JUL mg/L	AUG mg/L	SEP mg/L	OCT mg/L	NOV mg/L	DEC mg/L
Cyanide, Free		0.008	<.004	<.004	0.01	<.004	<.004	<.004	<.004	0.006	<.004	<.004
Cyanide, Total	0.0209	0.007	<.004	<.004	0.007	<.004	0.007	<.004	<.004	<.004	0.006	<.004	<.004

Location: Effluent

Effluent Goal	JAN mg/L	FEB mg/L	MAR mg/L	APR mg/L	MAY mg/L	JUN mg/L	JUL mg/L	AUG mg/L	SEP mg/L	OCT mg/L	NOV mg/L	DEC mg/L
Cyanide, Free	0.064	<.004	<.004	<.004	0.017	<.004	0.005	<.004	<.004	0.008	0.009	<.004
Cyanide, Total	0.133	<.004	<.004	<.004	0.012	<.004	0.007	<.004	<.004	0.007	0.011	<.004

2017

Location: Influent

Influent Goal	11th JAN mg/L	8th FEB mg/L	8th MAR mg/L	5th APR mg/L	10th MAY mg/L	14th JUN mg/L	12th JUL mg/L	9th AUG mg/L	6th SEP mg/L	11th OCT mg/L	15th NOV mg/L	5th DEC mg/L
Cyanide, Free		0.005	<.004	0.006	0.006	<.004	<.004	0.007	0.008	0.007	<.004	<.004	0.007
Cyanide, Total	0.0209	0.006	<.004	0.007	0.008	<.004	<.004	0.006	<.004	<.004	<.004	<.004	0.005

Location: Effluent

Effluent Goal	JAN mg/L	FEB mg/L	MAR mg/L	APR mg/L	MAY mg/L	JUN mg/L	JUL mg/L	AUG mg/L	SEP mg/L	OCT mg/L	NOV mg/L	DEC mg/L
Cyanide, Free	0.067	0.005	<.004	0.153	0.007	<.004	<.004	0.007	0.008	0.014	0.360	0.370	<.004
Cyanide, Total	0.133	0.005	<.004	0.241	0.008	<.004	0.004	0.005	<.004	0.009	0.420	0.340	<.004