pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0038415**
Facility Type	**Municipal**	APS ID	**275687**
Major / Minor	**Major**	Authorization ID	**1318957**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**East Pennsboro Township**	Facility Name	**East Pennsboro Township STP**
Applicant Address	98 S Enola Drive	Facility Address	21 Dulles Drive E
	Enola, PA 17025-2704		Camp Hill, PA 17011-1108
Applicant Contact	John Pietropaoli	Facility Contact	Andrew Kirkessner
Applicant Phone	(717) 732-0711	Facility Phone	(717) 732-0711
Client ID	85946	Site ID	251354
Ch 94 Load Status	Not Overloaded	Municipality	East Pennsboro Township
Connection Status	No Limitations	County	Cumberland
Date Application Received	July 1, 2020	EPA Waived?	No
Date Application Accepted	July 2, 2020	If No, Reason	Major Facility, Significant CB Discharge
Purpose of Application	NPDES Renewal.		

Summary of Review

On behalf of East Pennsboro Township (East Pennsboro), GHD consulting firm has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of the NPDES permit. The permit was last reissued on December 16, 2015 and became effective on January 1, 2016. The permit expired on December 31, 2020 but the terms and conditions of the permit have been extended since that time. A file review is available for any records associated with this facility or this permit at PA DEP SCRO 909 Elmerton Avenue, Harrisburg, PA 17110.

Based on the review, it is recommended that the permit be drafted.

Sludge use and disposal description and location(s): Sludge is processed onsite and then land applied under PAG083515.

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
X		*Jinsu Kim* Jinsu Kim / Environmental Engineering Specialist	August 16, 2021
X		Daniel W. Martin Daniel W. Martin, P.E. / Environmental Engineer Manager	August 23, 2021

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	4.4
Latitude	40° 16’ 18.00”	Longitude	76° 55’ 8.00”
Quad Name	Harrisburg West	Quad Code	1630
Wastewater Description:	Sewage Effluent		
Receiving Waters	Conodoguinet Creek	Stream Code	10194
NHD Com ID	56402893	RMI	0.34
Drainage Area	506	Yield (cfs/mi^2)	0.1492
Q_{7-10} Flow (cfs)	76.3	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-B	Chapter 93 Class.	WWF, MF
Existing Use	WWF, MF	Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Organic Enrichment		
Source(s) of Impairment	Source Unknown		
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	Steelton Municipal Waterworks		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	23,198
PWS RMI	68.38	Distance from Outfall (mi)	4.45

Drainage Area
The discharge is to Conodoguinet Creek at RM 0.34. A drainage area upstream of this discharge point is estimated to be 506 sq.mi. according to USGS StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
USGS StreamStats produced a Q7-10 flow of 76.3 cfs. This is slightly different from the Q7-10 flow obtained during the last permit renewal which was 68.49 cfs.

Conodoguinet Creek
Conodoguinet Creek is designated under 25 Pa Code §93.9o as a warm water and migratory fishes surface water. No special protection waters are impacted by this discharge. DEP’s latest integrated water quality report finalized in 2020 indicates that Conodoguinet Creek at this discharge point is impaired for organic enrichment as a result of unknown sources. It is listed as impaired in 2018 under Category 5 of impairments. All impaired waters listed in this category require development of a Total Maximum Daily Load (TMDL). At this time, no TMDL has been developed to address this impairment for Conodoguinet Creek.

Public Water Supply Intake
The fact sheet developed for the last permit renewal indicates that the nearest downstream public water supply intake is Steelton Municipal Waterworks located on Susquehanna River (on the east bank of the river), approximately 4.45 miles from the discharge. Given the location of this intake, the discharge is not expected to affect the water supply.

Treatment Facility Summary				
Treatment Facility Name: East Pennsboro STP				
WQM Permit No.	**Issuance Date**			
2172401 09-1	April 23/2010			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Total Nitrogen Reduction	Activated Sludge	Gas Chlorine	4.4
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
6.0	7340	Not Overloaded	Digester/Dewatering	Land Applied

East Pennsboro owns and operates a sanitary wastewater treatment plant located at 21 East Dulles Drive, Camp Hill PA 17011. This facility serves the areas of East Pennsboro Township (78%), Hampden Township (4%) and Wormleysburg Borough (18%). All sewer systems are 100% separated. The facility utilizes an activated sludge treatment process consisting of screening, grit/grease removal, primary settling tanks (7), aeration tanks (3), final clarifiers (3), chlorine contact tanks (2), and outfall structure. The facility is rated for 4.4 MGD (annual average design flow) and 6.0 MGD (hydraulic design capacity) with an organic design capacity of 7,340 lbs BOD/day.

Chlorine liquified gas is used for disinfection, polymer and Alum are used for coagulant and phosphorous removal, respectively.

Sludge is processed on-site using a digester and centrifuge. Solids (Class B biosolids) from this facility are then land applied to local farms under PAG083515. A list of farms accepted biosolids from this facility in 2019 was included in the renewal application.

The application indicates that there are no industrial/commercial users contributing wastewater to the sewer system. East Pennsboro also utilizes five (5) stormwater outfalls receiving stormwater drained from the site.

Compliance History	
Summary of DMRs:	A summary of past 12-month data is presented on the next page.
Summary of Inspections:	2/17/2021: Mike Benham, DEP Water Quality Specialist, conducted a routine inspection. No violation was noted at the time of inspection; yet, a number of recommendations associated with stormwater requirements were noted. 1/19/2021: Mike Benham conducted a Chesapeake Bay nutrient monitoring inspection. An error was discovered during the inspection as the permittee incorrectly reported annual net mass loads. A follow-up inspection was conducted on 1/20/2021 and noted that all issues were resolved. 4/24/2019: Mike Benham conducted a routine inspection. No violation was identified at the time of inspection.
Other Comments:	Since the last permit reissuance, there were three (3) effluent violation events reported by East Pennsboro; fecal coliform (2017), WETT limits (2019), and fecal coliform (2021). There are no open violations associated with this facility or permittee.

Effluent Data

DMR Data for Outfall 001 (from February 1, 2020 to January 31, 2021)

Parameter	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20
Flow (MGD) Average Monthly	2.297	3.047	1.908	1.923	1.697	1.913	1.67	2.118	2.819	2.822	3.003	2.768
Flow (MGD) Daily Maximum	3.911	10.224	3.471	3.695	2.955	3.732	2.117	3.632	9.554	9.015	7.049	5.293
pH (S.U.) Minimum	7.01	7.08	7.28	7.21	7.23	7.21	7.17	7.23	7.11	7.05	7.04	6.82
pH (S.U.) Instantaneous Maximum	7.6	7.74	7.93	8.1	7.94	7.92	7.98	7.89	7.81	7.60	7.82	7.66
DO (mg/L) Minimum	8.23	7.93	7.84	7.55	7.22	7.32	7.25	7.43	7.79	8.04	8.07	8.03
TRC (mg/L) Average Monthly	0.36	0.39	0.45	0.4	0.37	0.34	0.31	0.28	0.31	0.31	0.25	0.34
TRC (mg/L) Instantaneous Maximum	0.66	0.77	0.87	0.9	0.47	0.55	0.48	0.43	0.53	0.49	0.55	0.60
CBOD5 (lbs/day) Average Monthly	88	< 77	< 38	< 44	< 39	52	< 43	< 42	< 60	< 68	< 86	< 56
CBOD5 (lbs/day) Weekly Average	148	176	52	60	51	68	48	46	110	< 148	81	72
CBOD5 (mg/L) Average Monthly	4	< 3.1	< 2.4	< 2.7	< 3	3.4	< 3.2	< 2.6	< 2.6	< 3	< 3.3	< 2.6
CBOD5 (mg/L) Weekly Average	5.4	4.9	3.1	3.3	4.1	4.5	3.8	2.8	3	3.5	4.3	3.4
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	3743	3926	3270	2788	2992	2588	2281	3293	2895	3333	3634	3250
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	4837	4691	3742	3565	4143	3736	3324	4941	3480	4636	4432	4565
BOD5 (mg/L) Raw Sewage Influent Average Monthly	162	163	191	183	209	157	157	167	134	148	136	143
TSS (lbs/day) Average Monthly	139	107	< 38	< 28	< 15	< 29	< 23	< 27	< 47	40	105	< 55
TSS (lbs/day) Raw Sewage Influent Average Monthly	3756	3017	3179	2491	2631	2890	2798	3252	3497	3106	3616	3097

Parameter	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20
TSS (lbs/day) Raw Sewage Influent Daily Maximum	5040	4656	5274	3482	3358	3847	3944	4143	4729	4280	6972	3754
TSS (lbs/day) Weekly Average	326	279	84	29	< 20	48	32	33	< 67	336	48	75
TSS (mg/L) Average Monthly	6	4	< 2	< 2	< 1	< 2	< 2	< 2	< 2	2	3	< 3
TSS (mg/L) Raw Sewage Influent Average Monthly	163	122	185	161	180	181	194	170	161	137	132	136
TSS (mg/L) Weekly Average	10	8	5	2	< 2	3	3	2	3	6	3	4
Fecal Coliform (CFU/100 ml) Geometric Mean	51	< 82	34	14	17	37	14	< 10	9	< 5	12	7
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	750	340	590	36	38	3000	72	32	24	59	71	32
Nitrate-Nitrite (mg/L) Average Monthly	3.2	4.9	5.8	6.3	4.1	4.2	3.5	3.1	4.8	7.5	6.2	8.1
Nitrate-Nitrite (lbs) Total Monthly	2057	3690	2777	3135	1630	1974	1476	1494	3339	5152	5419	5077
Total Nitrogen (mg/L) Average Monthly	5.9	7.3	6.9	7.4	5.1	5.4	4.8	4.3	5.9	8.7	7.4	9.3
Total Nitrogen (lbs) Effluent Net Total Monthly	3894	5881	3293	3728	2011	2567	2010	2084	4014	6002	6485	5779
Total Nitrogen (lbs) Total Monthly	3894	5881	3293	3728	2011	2567	2010	2084	4014	6002	6485	5779
Total Nitrogen (lbs) Effluent Net Total Annual					50690							
Total Nitrogen (lbs) Total Annual					< 51340							
Ammonia (lbs/day) Average Monthly	32	< 48	< 2	< 6	< 1	< 2	< 2	< 4	< 5	< 3	< 3	< 14
Ammonia (mg/L) Average Monthly	1.389	< 1.363	< 0.135	< 0.402	< 0.1	< 0.13	< 0.124	< 0.229	< 0.258	< 0.113	< 0.123	< 0.314
Ammonia (lbs) Total Monthly	997	< 1499	< 66	< 193	< 40	< 61	< 52	< 110	< 143	< 77	< 102	< 176
Ammonia (lbs) Total Annual					< 1587							

Parameter	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20
TKN (mg/L) Average Monthly	2.6	2.4	1.1	1.2	1.0	1.3	1.3	1.2	1.1	1.2	1.2	1.2
TKN (lbs) Total Monthly	1837	2191	516	593	380	594	534	590	674	851	1066	702
Total Phosphorus (lbs/day) Average Monthly	13	19	11	13	10	15	22	19	< 17	25	12	8
Total Phosphorus (mg/L) Average Monthly	0.7	0.84	0.68	0.79	0.72	1.0	1.6	1.17	< 1.01	1.05	0.45	0.4
Total Phosphorus (lbs) Effluent Net Total Monthly	400	599	317	394	289	470	675	563	< 538	736	382	230
Total Phosphorus (lbs) Total Monthly	400	599	317	394	289	470	675	563	< 538	736	382	230
Total Phosphorus (lbs) Effluent Net Total Annual					5289							
Total Phosphorus (lbs) Total Annual					< 5289							
Total Copper (lbs/day) Average Monthly	0.1	0.1	0.1	0.1	0.1	0.1	0.09	0.1	< 0.09	0.1	0.1	0.09
Total Copper (mg/L) Average Monthly	0.0054	0.0051	0.0061	0.0066	0.0072	0.0068	0.0065	0.006	< 0.0045	0.0046	0.0036	0.0041
Total Zinc (lbs/day) Average Monthly	1	0.9	0.9	1	1.0	0.8	0.7	0.7	0.8	1	1	1
Total Zinc (mg/L) Average Monthly	0.049	0.047	0.056	0.063	0.064	0.051	0.052	0.044	0.04	0.044	0.044	0.046
Acute WET - Ceriodaphnia Survival (TUa) Daily Maximum		GG			GG			GG			1.0	

Existing Effluent Limits and Monitoring Requirements

Tables below summarize effluent limits and monitoring requirements specified in the current permit:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	917	1,467 Wkly Avg	XXX	25	40	50	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Suspended Solids	1,100	1,651 Wkly Avg	XXX	30	45	60	2/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/week	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/week	Grab
Ammonia-Nitrogen May 1 - Oct 31	293	XXX	XXX	8.0	XXX	16	2/week	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	770	XXX	XXX	21	XXX	Report	2/week	24-Hr Composite
Total Phosphorus	61	XXX	XXX	2.0	XXX	4.0	2/week	24-Hr Composite
Total Copper	1.9	XXX	XXX	0.05	XXX	0.12	1/week	24-Hr Composite
Total Zinc	15	XXX	XXX	0.42	XXX	1.05	1/week	24-Hr Composite
Acute Toxicity - Ceriodaphnia Survival (TUa)	XXX	XXX	XXX	XXX	1.0 Daily Max	XXX	See Permit	See Permit

Existing Effluent Limits and Monitoring Requirements (continued)

Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report		Report		2/week	24-Hr Composite
Kjeldahl---N	Report			Report		2/week	24-Hr Composite
Nitrate-Nitrite as N	Report			Report		2/week	24-Hr Composite
Total Nitrogen	Report	Report		Report		1/month	Calculation
Total Phosphorus	Report	Report		Report		2/week	24-Hr Composite
Net Total Nitrogen	Report	72,206				1/month	Calculation
Net Total Phosphorus	Report	9,589				1/month	Calculation

Development of Effluent Limitations and Monitoring Requirements

Outfall No. 001 **Design Flow (MGD)** 4.4
Latitude 40º 16' 18.00" **Longitude** -76º 55' 8.00"
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)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen (DO)
WQM 7.0 is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's guidance no. 391-2000-007 provides the technical methods contained in WQM 7.0 for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. DEP recently updated this model (ver. 1.1) to include the new ammonia criteria that has been approved by US EPA as part of the 2017 Triennial Review. The model output indicates that all existing effluent limits for these pollutants are still appropriate. No changes are therefore recommended.

Total Residual Chlorine (TRC)
Since chlorine gas is used for disinfection, TRC effluent levels must be regulated under 25 Pa Code §92a.48(b)(2). DEP's TRC_CALC worksheet has been utilized to see if an WQBEL is needed. The worksheet still recommends a BAT average monthly effluent limit of 0.5 mg/L and BPJ IMAX limit of 1.6 mg/L. No changes are therefore recommended.

Toxic Pollutants
DEP utilizes a Toxics Management Spreadsheet (last modified on March 2021 ver. 1.3) to facilitate calculations necessary for completing a reasonable potential analysis and determining WQBELs for toxic pollutants. The worksheet combines the functionality of DEP's Toxics Screening Analysis worksheet and PENTOXSD. The worksheet output recommends a routine monitoring requirement for Total Aluminum. For existing toxics pollutants of concern; Total Copper and Total Zinc, the worksheet recommends more stringent WQBELs. A review of the previous modeling efforts revealed that discharge/stream hardness inputs as well as acute/chronic fish criteria partial mixing factor inputs (PMF) were different from the inputs entered for this permit renewal. For this permit renewal, discharge/stream hardness values are obtained from the renewal application. A source is unknown for those PMFs (0.2 and 1.0) from the last permit renewal; therefore, it was not considered for this permit renewal. Based on a review of past DMR data, East Pennsboro is able to meet the WQBELs recommended by this Toxics Management Spreadsheet. Therefore, these WQBELs will be written in the permit in accordance with 40 CFR §122.44(d)(1)(iii).

Bis(2-Ethylhexyl)Phthalate (DEHP) was detected in effluent according to the analytical results provided in the application and DEP's Toxics Management Spreadsheet recommends a WQBEL for DEHP. Historically, DEP often noticed detectable levels of DEHP as facilities do not utilize a DEHP-free tubing or/and utilize a plastic sample container to collect samples.

DEHP is found in plastic products and all EPA analytical methods for DEHP require glassware to be used to collect and analyze samples. East Pennsboro confirmed that a DEHP free tubing was not utilized for the sampling; as a result, DEP requested for additional ten (10) samples to be collected using a DEHP free tubing and glass sample containers. DEHP was not detected in all ten (10) results (< 2.8 µg/L). Surprisingly, DEHP was consistently detected in influent as shown below:

Sample Date	4/12/2021	4/19/2021	4/26/2021	6/21/2021	6/28/2021	7/6/2021
Concentration, µg/L	4.2*	< 15*	8.1*	5.8	7.2	5.7

*plastic jug was used to collect samples

It is unclear as to why DEHP was detected in influent but not in effluent when the facility does not utilize any type of treatment to remove DEHP. However, certain studies show that a biodegradation of DEHP could potentially occur during a secondary treatment process, particularly through an activated sludge treatment process. This biodegradation can be varied significantly based on the wastewater volume, detention time, etc. It is still questionable whether DEHP is somehow removed throughout the treatment process utilized at this facility. Regardless, no permit requirement is recommended for DEHP for this permit renewal as no reasonable potential in effluent has been determined.

Whole Effluent Toxicity Testing
East Pennsboro is required under 40 CFR §122.21(h)(5)(ii)(A) to conduct WETT and submit the results to DEP. See WETT section of this fact sheet for more details on the results submitted by East Pennsboro.

Best Professional Judgment (BPJ) Limitations

Dissolved Oxygen
The existing minimum DO effluent limit is the current warm water fishery water quality criterion for DO listed in 25 Pa Code §93.7(a). It is recommended that this limit be maintained in the permit to ensure the protection of water quality standards. This approach is consistent with DEP's current Standard Operating Procedure (SOP) no. BPNPSM-PMT-033 and has been applied to other point source dischargers throughout the state.

Total Phosphorus
The existing permit contains average monthly and instantaneous maximum (IMAX) effluent limits of 2.0 mg/L and 4.0 mg/L, respectively. Historically a TP effluent limit of 2.0 mg/L was established in the permit when DEP generally determines that the facility is expected to contribute 0.25% or more of the total point source phosphorus loading at the point of impact (page 17 of DEP's technical guidance no. 391-2000-018). DEP previously documented that the discharge contributes more than 0.25% and phosphorus controls were therefore needed. There is no reason to relax or remove these effluent limits; therefore, continuation of existing effluent limits is still appropriate in accordance with 40 CFR §122.44(l)(1).

Additional Considerations

Flow Monitoring
The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii).

Influent BOD & TSS Monitoring
As a result of negotiation with EPA, the existing influent monitoring reporting requirement for TSS and BOD5 will be maintained in the draft permit. This requirement has been consistently assigned to all municipal wastewater treatment facilities.

Total Dissolved Solids (TDS)
TDS and its associated solids including Bromide, Chloride, and Sulfate have become statewide pollutants of concern. The requirement to monitor these pollutants must be considered under the criteria specified in 25 Pa. Code § 95.10 and the following January 23, 2014 DEP Central Office Directive:

For point source discharges and upon issuance or reissuance of an individual NPDES permit:

-Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.

- Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.

-Where the concentration of 1,4-dioxane (CAS 123-91-1) in a discharge exceeds 10 µg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for 1,4-dioxane. Discharges of 0.1 MGD or less should monitor and report for 1,4-dioxane if the concentration of 1,4-dioxane in the discharge exceeds 100 µg/L.

East Pennsboro reported maximum concentrations of 618 mg/L for TDS, < 0.03 mg/L for bromide, and < 0.32 mg/L for 1,4-dioxane. Accordingly, the requirement to monitor for these pollutants is not necessary.

Stormwater Requirements
Stormwater discharges from any POTWs (SIC Code 4952) described in 40 CFR § 122.26(b)(14)(ix) require coverage under an NPDES permit. As mentioned on page 3 of this fact sheet, there are currently five (5) stormwater outfalls collecting stormwater drained from the property. These outfalls are as follows:

Outfall No.	Receiving Stream	Area Drained (ft^2)	Latitude	Longitude	Description
002	Conodoguinet Creek	58,800	40˚ 16' 23"	76˚ 55' 16"	Pavement, grass
003	Conodoguinet Creek	79,200	40˚ 16' 20"	76˚ 55' 14"	Grass, biosolids area
004	Conodoguinet Creek	64,900	40˚ 16' 17"	76˚ 55' 10"	Pavement, grass
005	Conodoguinet Creek	43,000	40˚ 16' 14"	76˚ 55' 11"	Pavement, grass
006	Conodoguinet Creek	11,800	40˚ 16' 25"	76˚ 55' 17"	Pavement, grass

DEP's standard Part C stormwater requirements and site-specific best management practices (BMPs) will be included in the permit as this is a standard approach for major sewage facilities over 1.0 MGD.

Mass Loading Limitations
All effluent mass loading limits will be based on the formula: design flow x concentration limit x conversion factor of 8.34.

Chesapeake Bay TMDL
On March 30, 2012, DEP finalized Pennsylvania's Chesapeake Watershed Implementation Plan Phase 2 (i.e., Phase 2 WIP) to address U.S EPA's expectations for the Chesapeake Bay TMDL. The Chesapeake Bay TMDL identifies the necessary pollution reductions from major sources of nitrogen, phosphorus and sediment across the Bay jurisdictions and sets pollution limits necessary to meet water quality standards. The Phase 2 WIP is an update to the Pennsylvania's Chesapeake Bay TMDL Strategy (2004) and the Chesapeake WIP Phase I (2011). In August 2019, DEP finalized Phase 3 Chesapeake Bay Watershed Implementation Plan to provide the plans in place by 2025 to further achieve the nutrient and sediment reduction targets. The more details on the TMDL are available at www.dep.pa.gov.

As part of the Phase 3 WIP process, a Supplement to the Phase 3 WIP was developed, providing an update on TMDL implementation for point sources and a discussion of adjustments to the permitting strategy as a result of implementation experience. According to this document, East Pennsboro Township WWTP is a Phase 1 significant discharger located within the Chesapeake Bay watershed. The following Cap Loads specified in the current Supplement to the Phase 3 WIP will be included in the draft permit:

NPDES Permit No.	Phase	Facility	Latest Permit Issuance Date	Permit Expiration Date	Cap Load Compliance Start Date	TN Cap Load (lbs/yr)	TN Offsets Included in Cap Load (lbs/yr)	TP Cap Load (lbs/yr)	TN Delivery Ratio	TP Delivery Ratio
PA0038415	1	East Pennsboro Township	12/16/2015	12/30/2020	10/1/2012	72,206	-	9,589	0.951	0.436

East Pennsboro is currently, according to the last permit renewal, authorized to use 650 lbs/year as Total Nitrogen Offsets toward compliance with the above-referenced Total Nitrogen Cap Loads. These offsets were calculated based on the 25lbs/year per on-lot sewage disposal systems (in EDUs) and the reported 26 on-lot sewage disposal systems that have

been connected to the sewer system after January 1, 2003. These offsets will continue to be allowed and will be specified in the permit.

Class A Wild Trout Fishery

A Class A Wild Trout stream is not impacted by this discharge.

Anti-backsliding Requirements

Unless stated otherwise in this fact sheet, all permit requirements proposed in this fact sheet are at least as stringent as those specified in the existing permit.

Whole Effluent Toxicity (WET)

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

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

The dilution series used for the tests was: 100%, 60%, 30%, 9%, and 4%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 100%.

Summary of Four Most Recent Test Results

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

NOEC/LC50 Data Analysis

Test Date	*Ceriodaphnia* Results (% Effluent)			*Pimephales* Results (% Effluent)			Pass? *
	NOEC Survival	NOEC Reproduction	LC50	NOEC Survival	NOEC Growth	LC50	
8/2/2019***	100			100			Yes
7/9/2019**	30			30			No
9/8/2018**	100			100			Yes
5/20/2017**	100			100			Yes
10/14/2016	100			100			Yes
7/15/2016	100			100			Yes
4/22/2016	100			100			Yes
1/9/2016	100			100			Yes

***** *A "passing" result is that which is greater than or equal to the TIWC value.*
*** As there were no endpoint failures occur in initial four (4) quarterly tests, East Pennsboro have reduced the monitoring frequency to annually. This approach is consistent with Part C.III.B.2 of the current permit renewal.*
**** As a test failure is determined, East Pennsboro conducted a re-test within 45 days as required by Part C.III.B.3 of the current permit renewal.*

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

☐ **YES** ☒ **NO**

Comments: Although a test failure is determined for the WET testing conducted on July 9, 2019, a passing result was determined for all endpoints in a re-test conducted on August 2, 2019. This retest will replace the original test; and therefore, all four (4) recent tests show no endpoint failures. As a result, no reasonable potential has been determined and the existing limit will be removed from the permit in accordance with 40 CFR §122.44(d)(iv). Two (2) separate Whole Effluent Toxicity Analysis worksheets have been developed; one for passing results, one for failure results and are attached to this fact sheet.

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

Acute Partial Mix Factor (PMFa): **0.134** Chronic Partial Mix Factor (PMFc): **0.926**

1. Determine IWC – Acute (IWCa):

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

[(4.4 MGD x 1.547) / ((76.3 cfs x 0.134) + (4.4 MGD x 1.547))] x 100 = **40%**

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

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

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

TIWCa = IWCa / 0.3 = **%**

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

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

[(4.4 MGD x 1.547) / ((76.3 cfs x 0.926) + (4.4 MGD x 1.547))] x 100 = **8.7% = 9%**

3. Determine Dilution Series

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

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

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

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

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

N/A

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

N/A

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	917	1467	XXX	25	40	50	2/week	24-Hr Composite
TSS	1100	1651	XXX	30	45	60	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Ammonia Nov 1 - Apr 30	770	XXX	XXX	21	XXX	XXX	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	293	XXX	XXX	8.0	XXX	16	2/week	24-Hr Composite
Total Phosphorus	61	XXX	XXX	2.0	XXX	4	2/week	24-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Copper	1.48	2.31 Daily Max	XXX	0.04	0.06	0.10	1/week	24-Hr Composite
Total Zinc	12	18.6 Daily Max	XXX	0.32	0.50	0.81	1/week	24-Hr Composite
Total Aluminum	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite

Proposed Effluent Limitations and Monitoring Requirements (continued)

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

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date

Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	2/week	24-Hr Composite
Kjeldahl---N	Report	XXX	XXX	Report	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	24-Hr Composite
Net Total Nitrogen	XXX	72,206	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	XXX	9,589	XXX	XXX	XXX	1/month	Calculation

The permittee is authorized to use 650 lbs/year as Total Nitrogen (TN) Offsets toward compliance with the Annual Net TN mass load limitations (Cap Loads), in accordance with Part C of this permit. These Offsets may be applied throughout the Compliance Year or during the Truing Period. The application of offsets must be reported to DEP as described in Part C. The Offsets are authorized for the following pollutant load reduction activities:

- Connection of 26 on-lot sewage disposal systems to the public sewer system after January 1, 2003, in which 25 lbs/year of TN offsets are granted per connection.

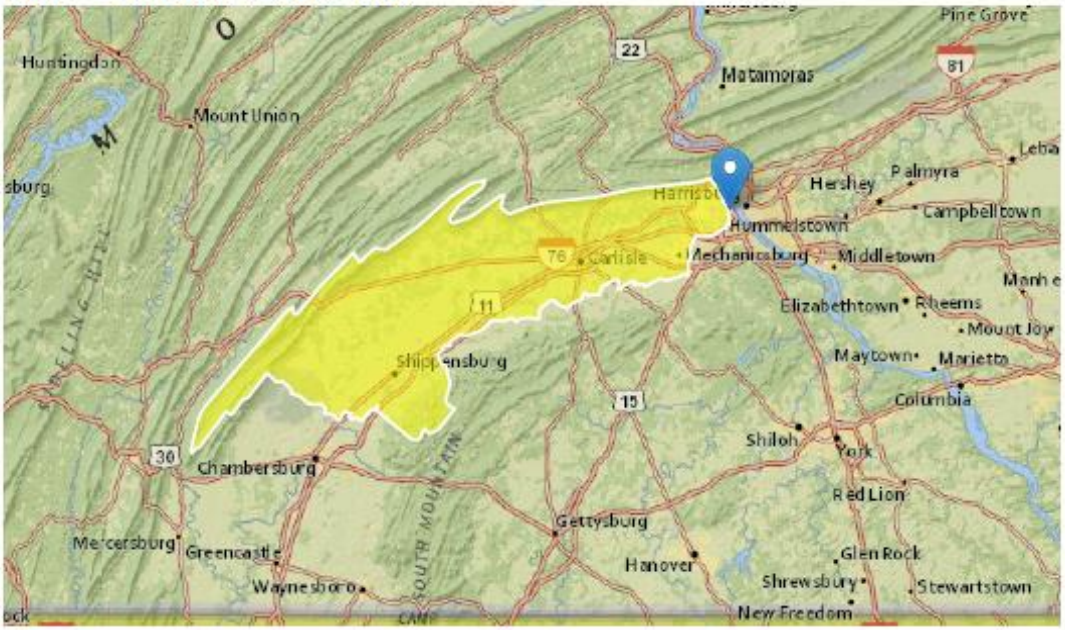
Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical 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:

Attachments

1. StreamStats

StreamStats Report

Region ID: PA
Workspace ID: PA20210317153045642000
Clicked Point (Latitude, Longitude): 40.27163, -76.91889
Time: 2021-03-17 11:31:05 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	506	square miles
PRECIP	Mean Annual Precipitation	39	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.63	miles per square mile
ROCKDEP	Depth to rock	4.6	feet
CARBON	Percentage of area of carbonate rock	39.05	percent

Low-Flow Statistics Parameters[Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	506	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	1.63	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.6	feet	3.32	5.65
CARBON	Percent Carbonate	39.05	percent	0	99

Low-Flow Statistics Flow Report[Low Flow Region 2]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

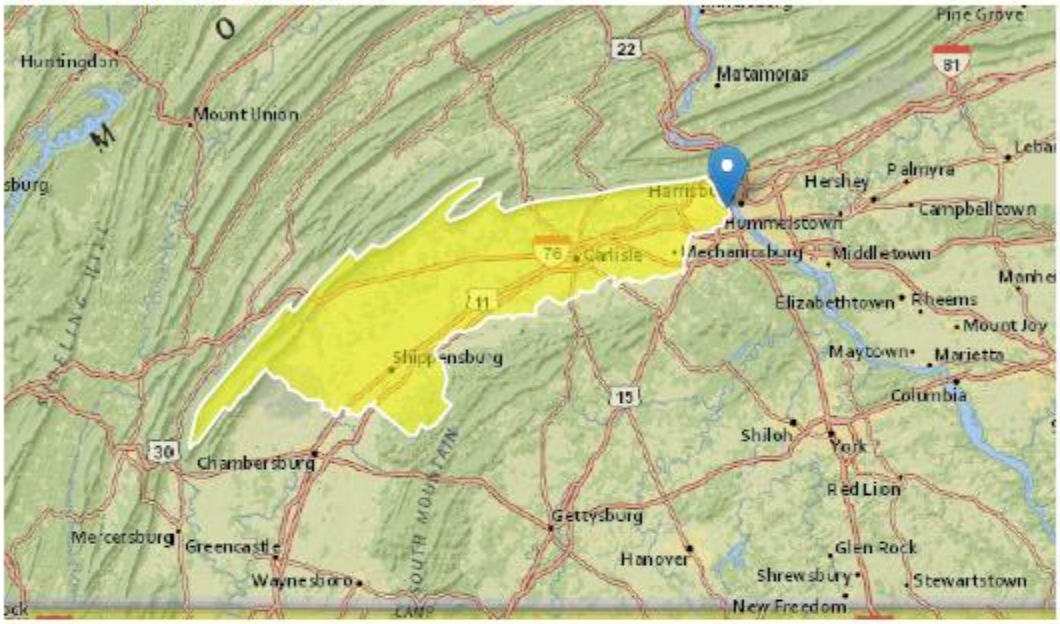
Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	115	ft^3/s	38	38
30 Day 2 Year Low Flow	136	ft^3/s	33	33
7 Day 10 Year Low Flow	76.3	ft^3/s	51	51
30 Day 10 Year Low Flow	90.3	ft^3/s	46	46
90 Day 10 Year Low Flow	111	ft^3/s	36	36

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/)

StreamStats Report

Region ID: PA
Workspace ID: PA20210317161520053000
Clicked Point (Latitude, Longitude): 40.27155, -76.91408
Time: 2021-03-17 12:15:38 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	506	square miles
PRECIP	Mean Annual Precipitation	39	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.63	miles per square mile
ROCKDEP	Depth to rock	4.6	feet
CARBON	Percentage of area of carbonate rock	39.02	percent

Low-Flow Statistics Parameters[Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	506	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	1.63	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.6	feet	3.32	5.65
CARBON	Percent Carbonate	39.02	percent	0	99

Low-Flow Statistics Flow Report[Low Flow Region 2]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	115	ft^3/s	38	38
30 Day 2 Year Low Flow	136	ft^3/s	33	33
7 Day 10 Year Low Flow	76.3	ft^3/s	51	51
30 Day 10 Year Low Flow	90.3	ft^3/s	46	46
90 Day 10 Year Low Flow	111	ft^3/s	36	36

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/)

2. WQM 7.0 ver. 1.1

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
07B	10194	CONODOGUINET CREEK	**0.340**	299.40	506.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	76.30	0.000	0.000	0.0	0.00	0.00	25.00	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
East Pennsboro	PA0036415	4.4000	4.4000	4.4000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	8.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07B	10194	CONODOGUINET CREEK	0.000	298.00	507.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	77.00	0.000	0.000	0.0	0.00	0.00	25.00	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	0.00	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

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	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07B	10194	CONODOGUINET CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
0.340	76.30	0.00	76.30	6.8068	0.00078	1.084	151.47	139.68	0.51	0.041	25.00	7.00
Q1-10 Flow												
0.340	48.83	0.00	48.83	6.8068	0.00078	NA	NA	NA	0.40	0.051	25.00	7.00
Q30-10 Flow												
0.340	103.77	0.00	103.77	6.8068	0.00078	NA	NA	NA	0.59	0.035	25.00	7.00

Friday, March 26, 2021 Version 1.1 Page 1 of 1

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07B	10134	CONODOGUINET CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.340	4.400	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
151.467	1.084	139.683	0.506
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.88	0.776	0.66	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.977	2.072	Tsivoglou	5
Reach Travel Time (days)			
0.041			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.004	3.87	0.65	7.54
0.008	3.85	0.65	7.54
0.012	3.84	0.65	7.54
0.016	3.82	0.64	7.54
0.021	3.81	0.64	7.54
0.025	3.79	0.64	7.54
0.029	3.78	0.64	7.54
0.033	3.76	0.63	7.54
0.037	3.75	0.63	7.54
0.041	3.73	0.63	7.54

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07B	10194	CONODOGUINET CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.340	East Pennsboro	11.07	16	11.07	16	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.340	East Pennsboro	1.37	8	1.37	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)		
0.34	East Pennsboro	25	25	8	8	5	5	0	0

Friday, March 26, 2021 Version 1.1 Page 1 of 1

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07B	10194	CONODOGUINET CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
0.340	East Pennsboro	PA0038415	4.400	CBOD5	25		
				NH3-N	8	16	
				Dissolved Oxygen			5

3. TRC_CALC

TRC_CALC

	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	76.3	= Q stream (cfs)		0.5	= CV Daily	
5	4.4	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)			=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc =	3.595	1.3.2.iii	WLA cfc = 3.497
12	PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc=	1.340	5.1d	LTA_cfc = 2.033
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT =	1.231		
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ	
18			INST MAX LIMIT (mg/l) =	1.635		

WLA afc	(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...
	...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...
	...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)

Page 1

4. Toxics Management Spreadsheet

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **East Pennsboro Township WWTP** NPDES Permit No.: **PA0038415** Outfall No.: **001**

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

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
4.4	197	7						

					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		618									
	Chloride (PWS)	mg/L		220									
	Bromide	mg/L	<	0.03									
	Sulfate (PWS)	mg/L		50.8									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		439									
	Total Antimony	µg/L	<	0.67									
	Total Arsenic	µg/L	<	0.5									
	Total Barium	µg/L		32									
	Total Beryllium	µg/L	<	0.1									
	Total Boron	µg/L		140									
	Total Cadmium	µg/L	<	0.16									
	Total Chromium (III)	µg/L	<	0.63									
	Hexavalent Chromium	µg/L	<	0.05									
	Total Cobalt	µg/L	<	0.83									
	Total Copper	µg/L		50									
	Free Cyanide	µg/L		5									
	Total Cyanide	µg/L		9.7									
	Dissolved Iron	µg/L	<	20									
	Total Iron	µg/L	<	21									
	Total Lead	µg/L	<	0.33									
	Total Manganese	µg/L		32									
	Total Mercury	µg/L		0.0013									
	Total Nickel	µg/L	<	1.2									
	Total Phenols (Phenolics) (PWS)	µg/L	<	2									
	Total Selenium	µg/L	<	0.66									
	Total Silver	µg/L	<	0.33									
	Total Thallium	µg/L	<	0.5									
	Total Zinc	µg/L		420									
	Total Molybdenum	µg/L	<	2.8									
	Acrolein	µg/L	<	1.3									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	2									
	Benzene	µg/L	<	0.12									
	Bromoform	µg/L	<	0.37									

Group 3	Carbon Tetrachloride	µg/L	<	0.23										
	Chlorobenzene	µg/L		0.25										
	Chlorodibromomethane	µg/L	<	0.25										
	Chloroethane	µg/L	<	0.47										
	2-Chloroethyl Vinyl Ether	µg/L	<	3.1										
	Chloroform	µg/L		2.2										
	Dichlorobromomethane	µg/L		0.77										
	1,1-Dichloroethane	µg/L	<	0.05										
	1,2-Dichloroethane	µg/L	<	0.12										
	1,1-Dichloroethylene	µg/L	<	0.13										
	1,2-Dichloropropane	µg/L	<	0.26										
	1,3-Dichloropropylene	µg/L	<	0.47										
	1,4-Dioxane	µg/L	<	0.32										
	Ethylbenzene	µg/L	<	0.2										
	Methyl Bromide	µg/L	<	0.46										
	Methyl Chloride	µg/L	<	0.33										
	Methylene Chloride	µg/L	<	0.14										
	1,1,2,2-Tetrachloroethane	µg/L	<	0.38										
	Tetrachloroethylene	µg/L	<	0.27										
	Toluene	µg/L	<	0.24										
	1,2-trans-Dichloroethylene	µg/L	<	0.08										
	1,1,1-Trichloroethane	µg/L	<	0.12										
	1,1,2-Trichloroethane	µg/L	<	0.13										
	Trichloroethylene	µg/L	<	0.29										
	Vinyl Chloride	µg/L	<	0.33										
Group 4	2-Chlorophenol	µg/L	<	0.36										
	2,4-Dichlorophenol	µg/L	<	0.41										
	2,4-Dimethylphenol	µg/L	<	0.44										
	4,6-Dinitro-o-Cresol	µg/L	<	1.2										
	2,4-Dinitrophenol	µg/L	<	2.6										
	2-Nitrophenol	µg/L	<	0.36										
	4-Nitrophenol	µg/L	<	1.3										
	p-Chloro-m-Cresol	µg/L	<	0.36										
	Pentachlorophenol	µg/L	<	1.6										
	Phenol	µg/L	<	0.24										
	2,4,6-Trichlorophenol	µg/L	<	0.44										
Group 5	Acenaphthene	µg/L	<	0.37										
	Acenaphthylene	µg/L	<	0.36										
	Anthracene	µg/L	<	0.37										
	Benzidine	µg/L	<	2.3										
	Benzo(a)Anthracene	µg/L	<	0.38										
	Benzo(a)Pyrene	µg/L	<	0.33										
	3,4-Benzofluoranthene	µg/L	<	0.37										
	Benzo(ghi)Perylene	µg/L	<	0.39										
	Benzo(k)Fluoranthene	µg/L	<	0.36										
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.41										
	Bis(2-Chloroethyl)Ether	µg/L	<	0.35										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.41										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	2.8										
	4-Bromophenyl Phenyl Ether	µg/L	<	0.42										
	Butyl Benzyl Phthalate	µg/L	<	0.54										
	2-Chloronaphthalene	µg/L	<	0.37										
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.37										
	Chrysene	µg/L	<	0.39										
	Dibenzo(a,h)Anthrancene	µg/L	<	0.4										
	1,2-Dichlorobenzene	µg/L	<	0.37										
	1,3-Dichlorobenzene	µg/L	<	0.43										
	1,4-Dichlorobenzene	µg/L	<	0.43										
	3,3-Dichlorobenzidine	µg/L	<	0.98										
	Diethyl Phthalate	µg/L	<	0.52										
	Dimethyl Phthalate	µg/L	<	0.39										
	Di-n-Butyl Phthalate	µg/L	<	0.53										
	2,4-Dinitrotoluene	µg/L	<	0.42										

	2,6-Dinitrotoluene	µg/L	<	1.1										
	Di-n-Octyl Phthalate	µg/L	<	0.82										
	1,2-Diphenylhydrazine	µg/L	<	0.35										
	Fluoranthene	µg/L	<	0.4										
	Fluorene	µg/L	<	0.35										
	Hexachlorobenzene	µg/L	<	0.4										
	Hexachlorobutadiene	µg/L	<	0.45										
	Hexachlorocyclopentadiene	µg/L	<	0.68										
	Hexachloroethane	µg/L	<	0.34										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.37										
	Isophorone	µg/L	<	0.4										
	Naphthalene	µg/L	<	0.37										
	Nitrobenzene	µg/L	<	0.48										
	n-Nitrosodimethylamine	µg/L	<	1										
	n-Nitrosodi-n-Propylamine	µg/L	<	0.39										
	n-Nitrosodiphenylamine	µg/L	<	0.45										
	Phenanthrene	µg/L	<	0.36										
	Pyrene	µg/L	<	0.39										
	1,2,4-Trichlorobenzene	µg/L	<	0.39										
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												

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

East Pennsboro Township WWTP, NPDES Permit No. PA0038415, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Conodoguinet Creek**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	010194	0.34	299.4	506			Yes
End of Reach 1	010194	0	298	507			Yes

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

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	0.34	0.1	76.3									180	7		
End of Reach 1	0	0.1	77												

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	0.34														
End of Reach 1	0														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

East Pennsboro Township WWTP, NPDES Permit No. PA0038415, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.134 Analysis Hardness (mg/l): 186.81 Analysis pH: 7.00

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	1,873	
Total Antimony	0	0		0	1,100	1,100	2,747	
Total Arsenic	0	0		0	340	340	849	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	52,446	
Total Boron	0	0		0	8,100	8,100	20,229	
Total Cadmium	0	0		0	3.696	4.03	10.1	Chem Translator of 0.918 applied
Total Chromium (III)	0	0		0	950.530	3,008	7,512	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	40.7	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	237	
Total Copper	0	0		0	24.215	25.2	63.0	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	54.9	
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	126.613	181	452	Chem Translator of 0.7 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	4.11	Chem Translator of 0.85 applied
Total Nickel	0	0		0	794.444	796	1,988	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	9.424	11.1	27.7	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	162	
Total Zinc	0	0		0	198.979	203	508	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	7.49	

Acrylonitrile	0	0		0	650	650	1,623	
Benzene	0	0		0	640	640	1,598	
Bromoform	0	0		0	1,800	1,800	4,495	
Carbon Tetrachloride	0	0		0	2,800	2,800	6,993	
Chlorobenzene	0	0		0	1,200	1,200	2,997	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	44,953	
Chloroform	0	0		0	1,900	1,900	4,745	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	37,461	
1,1-Dichloroethylene	0	0		0	7,500	7,500	18,731	
1,2-Dichloropropane	0	0		0	11,000	11,000	27,472	
1,3-Dichloropropylene	0	0		0	310	310	774	
Ethylbenzene	0	0		0	2,900	2,900	7,242	
Methyl Bromide	0	0		0	550	550	1,374	
Methyl Chloride	0	0		0	28,000	28,000	69,928	
Methylene Chloride	0	0		0	12,000	12,000	29,969	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	2,497	
Tetrachloroethylene	0	0		0	700	700	1,748	
Toluene	0	0		0	1,700	1,700	4,246	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	16,982	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	7,492	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	8,491	
Trichloroethylene	0	0		0	2,300	2,300	5,744	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,399	
2,4-Dichlorophenol	0	0		0	1,700	1,700	4,246	
2,4-Dimethylphenol	0	0		0	660	660	1,648	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	200	
2,4-Dinitrophenol	0	0		0	660	660	1,648	
2-Nitrophenol	0	0		0	8,000	8,000	19,979	
4-Nitrophenol	0	0		0	2,300	2,300	5,744	
p-Chloro-m-Cresol	0	0		0	160	160	400	
Pentachlorophenol	0	0		0	8.723	8.72	21.8	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	1,149	
Acenaphthene	0	0		0	83	83.0	207	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	749	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.25	
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	74,922	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	11,238	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	674	
Butyl Benzyl Phthalate	0	0		0	140	140	350	

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	2,048	
1,3-Dichlorobenzene	0	0		0	350	350	874	
1,4-Dichlorobenzene	0	0		0	730	730	1,823	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	9,990	
Dimethyl Phthalate	0	0		0	2,500	2,500	6,244	
Di-n-Butyl Phthalate	0	0		0	110	110	275	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	3,996	
2,6-Dinitrotoluene	0	0		0	990	990	2,472	
1,2-Diphenylhydrazine	0	0		0	15	15.0	37.5	
Fluoranthene	0	0		0	200	200	499	
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	25.0	
Hexachlorocyclopentadiene	0	0		0	5	5.0	12.5	
Hexachloroethane	0	0		0	60	60.0	150	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	24,974	
Naphthalene	0	0		0	140	140	350	
Nitrobenzene	0	0		0	4,000	4,000	9,990	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	42,456	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	749	
Phenanthrene	0	0		0	5	5.0	12.5	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	325	

☑ *CFC* CCT (min): 720 PMF: 0.926 Analysis Hardness (mg/l): 181.49 Analysis pH: 7.00

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	2,502	
Total Arsenic	0	0		0	150	150	1,706	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	46,635	
Total Boron	0	0		0	1,600	1,600	18,199	
Total Cadmium	0	0		0	0.372	0.42	4.79	Chem Translator of 0.884 applied
Total Chromium (III)	0	0		0	120.757	140	1,597	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	118	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	216	
Total Copper	0	0		0	14.904	15.5	177	Chem Translator of 0.96 applied

Free Cyanide	0	0		0	5.2	5.2	59.1	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	18,314	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	4.785	6.79	77.3	Chem Translator of 0.704 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	10.3	Chem Translator of 0.85 applied
Total Nickel	0	0		0	86.111	86.4	982	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	56.7	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	148	
Total Zinc	0	0		0	195.762	199	2,258	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	34.1	
Acrylonitrile	0	0		0	130	130	1,479	
Benzene	0	0		0	130	130	1,479	
Bromoform	0	0		0	370	370	4,209	
Carbon Tetrachloride	0	0		0	560	560	6,370	
Chlorobenzene	0	0		0	240	240	2,730	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	39,810	
Chloroform	0	0		0	390	390	4,436	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	35,261	
1,1-Dichloroethylene	0	0		0	1,500	1,500	17,062	
1,2-Dichloropropane	0	0		0	2,200	2,200	25,024	
1,3-Dichloropropylene	0	0		0	61	61.0	694	
Ethylbenzene	0	0		0	580	580	6,597	
Methyl Bromide	0	0		0	110	110	1,251	
Methyl Chloride	0	0		0	5,500	5,500	62,559	
Methylene Chloride	0	0		0	2,400	2,400	27,298	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	2,389	
Tetrachloroethylene	0	0		0	140	140	1,592	
Toluene	0	0		0	330	330	3,754	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	15,924	
1,1,1-Trichloroethane	0	0		0	610	610	6,938	
1,1,2-Trichloroethane	0	0		0	680	680	7,735	
Trichloroethylene	0	0		0	450	450	5,118	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	1,251	
2,4-Dichlorophenol	0	0		0	340	340	3,867	
2,4-Dimethylphenol	0	0		0	130	130	1,479	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	182	
2,4-Dinitrophenol	0	0		0	130	130	1,479	
2-Nitrophenol	0	0		0	1,600	1,600	18,199	
4-Nitrophenol	0	0		0	470	470	5,346	

p-Chloro-m-Cresol	0	0		0	500	500	5,687	
Pentachlorophenol	0	0		0	6.693	6.69	76.1	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	1,035	
Acenaphthene	0	0		0	17	17.0	193	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	671	
Benzo(a)Anthracene	0	0		0	0.1	0.1	1.14	
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	68,246	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	10,351	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	614	
Butyl Benzyl Phthalate	0	0		0	35	35.0	398	
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	1,820	
1,3-Dichlorobenzene	0	0		0	69	69.0	785	
1,4-Dichlorobenzene	0	0		0	150	150	1,706	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	9,099	
Dimethyl Phthalate	0	0		0	500	500	5,687	
Di-n-Butyl Phthalate	0	0		0	21	21.0	239	
2,4-Dinitrotoluene	0	0		0	320	320	3,640	
2,6-Dinitrotoluene	0	0		0	200	200	2,275	
1,2-Diphenylhydrazine	0	0		0	3	3.0	34.1	
Fluoranthene	0	0		0	40	40.0	455	
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	22.7	
Hexachlorocyclopentadiene	0	0		0	1	1.0	11.4	
Hexachloroethane	0	0		0	12	12.0	136	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	23,886	
Naphthalene	0	0		0	43	43.0	489	
Nitrobenzene	0	0		0	810	810	9,213	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	38,673	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	671	
Phenanthrene	0	0		0	1	1.0	11.4	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	296	

☑ ***THH*** CCT (min): 720 PMF: 0.926 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	63.7	
Total Arsenic	0	0		0	10	10.0	114	
Total Barium	0	0		0	2,400	2,400	27,298	
Total Boron	0	0		0	3,100	3,100	35,261	
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	45.5	
Dissolved Iron	0	0		0	300	300	3,412	
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	11,374	
Total Mercury	0	0		0	0.050	0.05	0.57	
Total Nickel	0	0		0	610	610	6,938	
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	2.73	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	34.1	
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	1,137	
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	N/A	N/A	N/A	
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	375	
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	773	

Methyl Bromide	0	0		0	100	100.0	1,137	
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	648	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	1,137	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	113,744	
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	341	
2,4-Dichlorophenol	0	0		0	10	10.0	114	
2,4-Dimethylphenol	0	0		0	100	100.0	1,137	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	22.7	
2,4-Dinitrophenol	0	0		0	10	10.0	114	
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	45,497	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	796	
Anthracene	0	0		0	300	300	3,412	
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	2,275	
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	1.14	
2-Chloronaphthalene	0	0		0	800	800	9,099	
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	11,374	
1,3-Dichlorobenzene	0	0		0	7	7.0	79.6	
1,4-Dichlorobenzene	0	0		0	300	300	3,412	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	6,825	
Dimethyl Phthalate	0	0		0	2,000	2,000	22,749	
Di-n-Butyl Phthalate	0	0		0	20	20.0	227	
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	

2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	20	20.0	227	
Fluorene	0	0		0	50	50.0	569	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	4	4.0	45.5	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	34	34.0	387	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	114	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	227	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.8	

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

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
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	N/A	N/A	N/A	
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	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	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	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	2.95	
Benzene	0	0		0	0.58	0.58	28.6	
Bromoform	0	0		0	7	7.0	345	
Carbon Tetrachloride	0	0		0	0.4	0.4	19.7	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	39.4	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	281	
Dichlorobromomethane	0	0		0	0.95	0.95	46.8	
1,2-Dichloroethane	0	0		0	9.9	9.9	487	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	44.3	
1,3-Dichloropropylene	0	0		0	0.27	0.27	13.3	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	985	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	9.85	
Tetrachloroethylene	0	0		0	10	10.0	492	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.55	0.55	27.1	
Trichloroethylene	0	0		0	0.6	0.6	29.5	
Vinyl Chloride	0	0		0	0.02	0.02	0.98	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
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	0.030	0.03	1.48	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	73.9	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.0001	0.0001	0.005	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.049	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.005	

3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.049	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.49	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	1.48	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	15.8	
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	5.91	
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	2.46	
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	2.46	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	2.46	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	1.48	
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	0.49	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	4.92	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.049	
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	0.034	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.25	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	162	
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

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	Report	Report	Report	Report	Report	µg/L	1,201	AFC	Discharge Conc > 10% WQBEL (no RP)

Total Copper	1.48	2.31	40.4	63.0	101	µg/L	40.4	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	12.0	18.6	326	508	814	µg/L	326	AFC	Discharge Conc ≥ 50% WQBEL (RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	27,298	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	12,966	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	4.79	µg/L	Discharge Conc < TQL
Total Chromium (III)	1,597	µg/L	Discharge Conc < TQL
Hexavalent Chromium	26.1	µg/L	Discharge Conc < TQL
Total Cobalt	152	µg/L	Discharge Conc < TQL
Free Cyanide	35.2	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	3,412	µg/L	Discharge Conc < TQL
Total Iron	18,314	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	77.3	µg/L	Discharge Conc < TQL
Total Manganese	11,374	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.57	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	982	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	56.7	µg/L	Discharge Conc < TQL
Total Silver	17.7	µg/L	Discharge Conc < TQL
Total Thallium	2.73	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	4.8	µg/L	Discharge Conc < TQL
Acrylonitrile	2.95	µg/L	Discharge Conc < TQL
Benzene	28.6	µg/L	Discharge Conc < TQL
Bromoform	345	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	19.7	µg/L	Discharge Conc < TQL
Chlorobenzene	1,137	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	39.4	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	28,813	µg/L	Discharge Conc < TQL

Chloroform	281	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	46.8	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	487	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	375	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	44.3	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	13.3	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	773	µg/L	Discharge Conc < TQL
Methyl Bromide	880	µg/L	Discharge Conc < TQL
Methyl Chloride	44,821	µg/L	Discharge Conc < TQL
Methylene Chloride	985	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	9.85	µg/L	Discharge Conc < TQL
Tetrachloroethylene	492	µg/L	Discharge Conc < TQL
Toluene	648	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	1,137	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	4,802	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	27.1	µg/L	Discharge Conc < TQL
Trichloroethylene	29.5	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.98	µg/L	Discharge Conc < TQL
2-Chlorophenol	341	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	114	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	1,056	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	22.7	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	114	µg/L	Discharge Conc < TQL
2-Nitrophenol	12,806	µg/L	Discharge Conc < TQL
4-Nitrophenol	3,682	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	256	µg/L	Discharge Conc < TQL
Pentachlorophenol	1.48	µg/L	Discharge Conc < TQL
Phenol	45,497	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	73.9	µg/L	Discharge Conc < TQL
Acenaphthene	133	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	3,412	µg/L	Discharge Conc < TQL
Benzidine	0.005	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.049	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.005	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.049	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.49	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	1.48	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	2,275	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	15.8	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	432	µg/L	Discharge Conc < TQL

Butyl Benzyl Phthalate	1.14	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	9,099	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	5.91	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.005	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	1,313	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	79.6	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	1,169	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	2.46	µg/L	Discharge Conc < TQL
Diethyl Phthalate	6,403	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	4,002	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	176	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	2.46	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	2.46	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	1.48	µg/L	Discharge Conc < TQL
Fluoranthene	227	µg/L	Discharge Conc < TQL
Fluorene	569	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.004	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.49	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	8.0	µg/L	Discharge Conc < TQL
Hexachloroethane	4.92	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.049	µg/L	Discharge Conc < TQL
Isophorone	387	µg/L	Discharge Conc < TQL
Naphthalene	224	µg/L	Discharge Conc < TQL
Nitrobenzene	114	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.034	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.25	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	162	µg/L	Discharge Conc < TQL
Phenanthrene	8.0	µg/L	Discharge Conc < TQL
Pyrene	227	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.8	µg/L	Discharge Conc < TQL

5. WET Analysis Spreadsheet (with retest)

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Acute
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	1
No. Per Replicate	5
TST b value	0.8
TST alpha value	0.1

Facility Name: East Pennsboro Township WWTP

Permit No.: PA0038415

Test Completion Date: 8/2/2019		
Replicate No.	Control	TIWC
1	5	5
2	5	5
3	5	5
4	5	5
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	5.000	5.000
Std Dev.	0.000	0.000
# Replicates	4	4
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Test Completion Date: 9/8/2018		
Replicate No.	Control	TIWC
1	5	5
2	5	5
3	5	5
4	5	5
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	5.000	5.000
Std Dev.	0.000	0.000
# Replicates	4	4
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Test Completion Date: 5/20/2017		
Replicate No.	Control	TIWC
1	5	5
2	5	5
3	5	5
4	5	5
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	5.000	5.000
Std Dev.	0.000	0.000
# Replicates	4	4
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Test Completion Date: 10/14/2016		
Replicate No.	Control	TIWC
1	5	5
2	5	5
3	5	5
4	5	5
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	5.000	5.000
Std Dev.	0.000	0.000
# Replicates	4	4
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Acute
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	1
No. Per Replicate	10
TST b value	0.8
TST alpha value	0.1

Facility Name: East Pennsboro Township WWTP

Permit No.: PA0038415

Replicate No.	Test Completion Date: 8/2/2019 Control	TIWC
1	10	10
2	10	10
3	10	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	10.000
Std Dev.	0.000	0.000
# Replicates	4	4
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

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

Replicate No.	Test Completion Date: 5/20/2017 Control	TIWC
1	10	10
2	10	10
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	10.000
Std Dev.	0.000	0.000
# Replicates	2	2
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 10/14/2016 Control	TIWC
1	10	10
2	10	10
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	10.000
Std Dev.	0.000	0.000
# Replicates	2	2
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

WET Summary and Evaluation

Facility Name	East Pennsboro Township WWTP
Permit No.	PA0038415
Design Flow (MGD)	4.4
Q_{7-10} Flow (cfs)	76.3
PMF_a	0.134
PMF_c	0.926

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/2/19	9/8/18	5/20/17	10/14/16
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/2/19	9/8/18	5/20/17	10/14/16
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**				

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**				

Reasonable Potential? NO

Permit Recommendations

Test Type	Chronic
TIWC	9 % Effluent
Dilution Series	4, 9, 30, 60, 100 % Effluent
Permit Limit	None
Permit Limit Species	

6. WET Analysis Spreadsheet (with original test)

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Acute
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	1
No. Per Replicate	5
TST b value	0.8
TST alpha value	0.1

Facility Name: East Pennsboro Township WWTP

Permit No.: PA0038415

Replicate No.	Test Completion Date 7/19/2019 Control	TIWC
1	5	0
2	5	0
3	5	2
4	5	0
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	5.000	0.500
Std Dev.	0.000	1.000
# Replicates	4	4
T-Test Result	-5.2871	
Deg. of Freedom	3	
Critical T Value	1.6377	
Pass or Fail	FAIL	

Replicate No.	Test Completion Date 9/6/2018 Control	TIWC
1	5	5
2	5	5
3	5	5
4	5	5
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	5.000	5.000
Std Dev.	0.000	0.000
# Replicates	4	4
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Replicate No.	Test Completion Date 5/20/2017 Control	TIWC
1	5	5
2	5	5
3	5	5
4	5	5
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	5.000	5.000
Std Dev.	0.000	0.000
# Replicates	4	4
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Replicate No.	Test Completion Date 10/14/2016 Control	TIWC
1	5	5
2	5	5
3	5	5
4	5	5
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	5.000	5.000
Std Dev.	0.000	0.000
# Replicates	4	4
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Acute
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	1
No. Per Replicate	10
TST b value	0.8
TST alpha value	0.1

Facility Name: East Pennsboro Township WWTP

Permit No.: PA0038415

Replicate No.	Test Completion Date: 7/19/2019 Control	TIWC
1	10	9
2	10	10
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	9.500
Std Dev.	0.000	0.707
# Replicates	2	2
T-Test Result	2.4657	
Deg. of Freedom	1	
Critical T Value	3.0777	
Pass or Fail	FAIL	

Replicate No.	Test Completion Date: 9/8/2016 Control	TIWC
1	10	10
2	10	10
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	10.000
Std Dev.	0.000	0.000
# Replicates	2	2
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 5/20/2017 Control	TIWC
1	10	10
2	10	10
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	10.000
Std Dev.	0.000	0.000
# Replicates	2	2
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 10/14/2016 Control	TIWC
1	10	10
2	10	10
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	10.000
Std Dev.	0.000	0.000
# Replicates	2	2
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

WET Summary and Evaluation

Facility Name	East Pennsboro Township WWTP
Permit No.	PA0038415
Design Flow (MGD)	4.4
Q_{7-10} Flow (cfs)	76.3
PMF_a	0.134
PMF_c	0.926

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	7/19/19	9/8/18	5/20/17	10/14/16
Ceriodaphnia	Survival	FAIL	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	7/19/19	9/8/18	5/20/17	10/14/16
Pimephales	Survival	FAIL	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**				

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**				

Reasonable Potential? YES

Permit Recommendations

Test Type	**Acute**
TIWC	**100** % Effluent
Dilution Series	**25, 50, 70, 90, 100** % Effluent
Permit Limit	**1.0** TUa
Permit Limit Species	**Ceridaphnia dubia, Pimephales promelas**