pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0026085**
Facility Type	**Municipal**	APS ID	**957773**
Major / Minor	**Major**	Authorization ID	**1211198**

Applicant and Facility Information

Applicant Name	**Upper Merion Sanitary and Stormwater Authority**	Facility Name	**U Merion-Matsunk WPCC**
Applicant Address	175 W Valley Forge Road	Facility Address	600 Mccoys Lane
	King of Prussia, PA 19406-1851		Swedeland, PA 19406
Applicant Contact	Sally Slook	Facility Contact	Robert Mckernan
Applicant Phone		Facility Phone	(610) 275-0688
Client ID	72994	Site ID	449536
Ch 94 Load Status	Not Overloaded	Municipality	Upper Merion Township
Connection Status	No Limitations	County	Montgomery
Date Application Received	December 20, 2017	EPA Waived?	No
Date Application Accepted		If No, Reason	Major Sewage, Pretreatment
Purpose of Application	Permit Renewal.		

Summary of Review

The PA Department of Environmental Protection (PADEP/Department) received an NPDES permit renewal application for Matsunk WPCC (facility) from Upper Merion Municipal Utility Authority (new name is Upper Merion Sanitary and Stormwater Authority, UMSSA) on December 20, 2017. The draft permit was published in the PA Bulletin on September 8, 2018. The permit was redrafted and republished in the Bulletin on October 27, 2018. A final decision on the renewal was not made. Since it was more than 6 months the permit last drafted and there may be regulations/guidance/policy changed since then, a redraft of the permit is warranted. The facility is in Upper Merion Township, Montgomery County. This is a major facility wit design flow of 5.5 MGD. The treated effluent discharges through Outfall 002 into a culvert to Schuylkill River, WWF/MF, at RMI 22.26. The existing permit expired on June 30, 2018. The terms and conditions were automatically extended since the renewal application was received at least 180 days prior to permit expiration date. Renewal NPDES permit applications under Clean Water program are not covered by PADEP's PDG per 021-2100-001.

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

Changes in the permit: TDS limit; mass limits revised for CBOD5, TSS, and Ammonia; Total Copper limits; DO limit changed; TN monitoring; and Dry and Wet Weather PCB sampling.

Public Participation

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

Approve	Deny	Signatures	Date
√		Reza H. Chowdhury, E.I.T. / Project Manager	January 5, 2021
X		*Pravin Patel* Pravin C. Patel, P.E. / Environmental Engineer Manager	01/07/2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	5.5
Latitude	40º 5' 38"	Longitude	-75º 19' 42"
Quad Name	Norristown	Quad Code	1843
Wastewater Description:	Sewage Effluent		
Receiving Waters	Schuylkill River* (WWF, MF)	Stream Code	00833
NHD Com ID	133228925	RMI	22.26
Drainage Area	1770 mi^2	Yield (cfs/mi^2)	0.153
Q_{7-10} Flow (cfs)	271	Q_{7-10} Basis	Please see below
Elevation (ft)	42.85	Slope (ft/ft)	
Watershed No.	3-F	Chapter 93 Class.	WWF, MF
Existing Use	**WWF/MF**	Existing Use Qualifier	
Exceptions to Use	None	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	PCB		
Source(s) of Impairment			
TMDL Status	**Finalized on 04/07/2007**	Name	**Schuylkill River PCB TMDL**

Background/Ambient Data		Data Source
pH (SU)	7.0	Default per 391-2000-013
Temperature (°C)	25	Default per 391-2000-013 for WWF
Hardness (mg/L)	212.67	Application Data
Other:		

Nearest Downstream Public Water Supply Intake		City of Philadelphia Queen Lane	
PWS Waters	Schuylkill River	Flow at Intake (cfs)	
PWS RMI	12.59	Distance from Outfall (mi)	≈ 9.67 miles

* The facility discharges directly into Frog Run (Pa Stream Code 00942) at RMI 0.4 mi. However, since Frog Run is essentially a culvert between the point of discharge and the Schuylkill River, the point of first use has been determined to be the Schuylkill River.

Changes Since Last Permit Issuance: None

Other Comments:

Streamflow:

Streamflow will be correlated with the USGS's web-based GIS application (https://streamstats.usgs.gov/ss/) accessed on October 22, 2020. Q_{7-10} and Q_{30-10} values at Outfall 002 were found to be 271 cfs and 326 cfs respectively. The drainage area at Outfall 002 was found to be 1770 mi^2 from StreamStats.

Q_{7-10} runoff rate = 271 cfs/ 1770 mi^2 = 0.153 cfs/mi^2
Q_{30-10}/Q_{7-10} = 326 cfs/271 cfs = 1.2
Default Q_{1-10}: Q_{7-10} of 0.64 from 391-2000-007 will be used in modeling, if needed.

DEP's SOP (BPMPSM-PMT-033, revised Oct 1, 2020) section II.B.4 states that where a facility is eligible for technology based limits of $CBOD_5$ exceeding 25 mg/l, application managers will evaluate a WQBEL for $CBOD_5$ as follows:

a. Model the discharge using Toxics Management Spreadsheet (TMS)

b. Multiply the acute partial mix factor by the Q_{7-10} of the receiving waters
c. Run the WQM 7.0 model using the adjusted Q_{7-10} and apply the WQBEL in the permit, if less than the technology-based limits
d. Establish the average monthly concentration limit for TSS at the same concentration as for $CBOD_5$ using BPJ, if the $CBOD_5$ limit is a WQBEL

The attached TMS model suggested a PMFa of 6.5%. A partial mixing factor, according to DEP's technical guidance (391-2000-011), is used to describe the factional portion of the stream that mixes with the discharge at the criteria compliance times. The partial mix factor is a value between 0 and 1; 1 presenting complete mixing and less than 1 represents there is incomplete mixing between the discharge and the stream. Therefore, the revised Q_{7-10} will be **271 * 0.065 or 17.62 cfs**.

PWS Intake:
The nearest downstream public water supply is City of Philadelphia at Queen Lane intake, on Schuylkill River at RMI 12.59. Its approximately 9.67 miles downstream of Outfall 002.

Wastewater Characteristics:
A median pH of 7.0 from daily DMR during dry months July through September for the year 2020 and a default temperature of 20^0C (per 391-2000-013) will be used for modeling, if needed. The application data indicated an average Total Hardness of 210 mg/l out of 3 samples.

Background data:
There is currently no nearby StreamGage or WQN stations from Outfall 002. In absence of site-specific temperature data, a default temperature of 25°C and default pH of 7.0 (per 391-2000-013, WWF) will be used in modeling, if needed. The application data indicated stream hardness of 212.67 mg/l.

303d Listed Streams:
Schuylkill River is impaired for Fish Consumption and Aquatic Life due to PCB but supporting Potable Water Use. A TMDL has been finalized by EPA on 04/07/2007 for PCB.

Schuylkill River PCB TMDL:
During the previous permit cycle, the permittee collected one wet weather and one dry weather sample and analyzed for PCBs using Method 1668A. The results were: 10,673 pg/l (WW 04/08/2014); 1,404 pg/l (DW 05/2014)

The PCB results indicate that there are PCB concentrations that are above natural background and statewide surface water criteria levels. Based on the concentration of PCBs and volume of wastewater, this facility is considered a less significant source of PCBs.

The facility is required to develop and implement a PCB PMP (Pollution Minimization Plan). PCB sampling using Analytical Method 1668A is required to provide a baseline PCB level and to show progress towards achieving the instream PCB criteria of 64 pg/l. Guidelines developed by DRBC for the Delaware River TMDL recommends 1/year dry and wet weather sampling using method 1668A for POTWs influenced by wet weather. The facility is also required to submit annual PMP reports.

Antidegradation (93.4):
The effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. The receiving streams are designated as Warm Water Fishes (WWF) and Migratory Fishes (MF.) No High Quality stream or Exceptional Value water is impacted by this discharge, therefore, no Antidegradation Analysis is performed for the discharge.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	003	Design Flow (MGD)	0
Latitude	40º 5' 41"	Longitude	-75º 19' 43"
Quad Name	Norristown	Quad Code	1843
Wastewater Description:	Stormwater		

Changes Since Last Permit Issuance: None
Other Comments:

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.

Treatment Facility Summary

Treatment Facility Name: Matsunk STP

WQM Permit No.	Issuance Date
4620403	08/06/2020
4620402	08/19/2020
4619409	02/30/2020
4609407 A-1	08/15/2013
4612405	08/27/2012
4609407	01/19/2010
WQG02460821	11/10/2008

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Trickling Filter With Settling	Gas Chlorine	5.5

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
6.88	11400	Not Overloaded		

Changes Since Last Permit Issuance: None

Treatment Plant Description

Matsunk WPCC is a 5.5 MGD Major Sewer Facility (MASF2) located in Upper Merion Township, Montgomery County which discharges treated sewage through outfall 002 into a culvert to Schuylkill River in watershed 3-F. This is a trickling filter, alternative to secondary treatment facility and chlorine disinfection system. The treatment train consists of influent screening and grit removal, off-line flow equalization, primary clarifier, secondary biological treatment through oxidation towers and RBCs for advanced organic and ammonia treatment, secondary clarifier, and disinfection by sodium hypochlorite. The effluent is dechlorinated using sodium bisulfite.

The facility receives flows mostly from Upper Merion Township and small contributions from few other townships as listed in the next page.

Municipalities served	Flow contribution (%)	Type of Sewer System	
		Separate (%)	Combined (%)
Upper Merion Township	±95	100	0
Tredyffrin Township	4.0	100	0
Radnor Township	<0.5	100	0
West Conshohocken Township	<0.5	100	0

Per the renewal application, there is no significant or categorical industrial facility that discharges into the collection system.

Per PADEP's most recent inspection on September 29, 2020, the treatment train consists of the following treatment units:

- Three primary clarifiers
- Four trickling filters

- Twenty Rotating Biological Contactors
- Four secondary clarifiers
- Two chlorine contact tanks
- One grit removal
- One influent screen
- Two sludge thickeners

Sodium Hypochlorite is used at a maximum rate of 33.3 GPH and Sodium Bisulfite is used at maximum rate of 2.1 GPH.

Pre-treatment Program implementation:
Facilities greater than 5.0 MGD or less than 5.0 MGD with categorical and significant industrial users are required to develop or implement an EPA administered pre-treatment program. The facility is implementing an approved pretreatment program for which most recent local limits were approved by EPA in March 2017. The Part C of the permit will require continuation of the pre-treatment program implementation.

Biosolids Management:
Sludge is handled through gravity thickener units prior to being dewatered by a rotary press that was installed in April 2014. The dewatered cake is stabilized with lime prior to being hauled to one of two Waste Management owned landfills. The landfills are Tullytown, PA Resource Recovery Facility and GROWS North landfill in Morrisville, PA.

Summary of Inspections:

09/29/2020: RTPT conducted. No violation noted. Secondary clarifier #4 was repaired. Final effluent looked very good. No sign of matting or ponding on the trickling filters.

04/20/2020: RTPT conducted. No violation noted. The cause of overflow was due to residents flushing wipes. Final effluent looked great.

12/19/2019: CEI conducted. No violation identified. A new sludge press was installed. Overall, the treatment plant seemed to be operating well. Final effluent looked clear and receiving stream looked good as well.

05/14/2019: RTPT conducted. No violation identified.

01/17/2019: CEI conducted. No violation noted. Effluent looked clear and the receiving stream looked good as well. Overall, the treatment plant seemed operating well.

08/01/2018: CEI conducted. No violation noted. Effluent looked clear and the receiving stream looked good as well. Overall, the treatment plant seemed operating well.

05/18/2017: CEI conducted. No violation noted. Effluent looked clear and the receiving stream looked good as well. Overall, the treatment plant seemed operating well.

09/29/2016: CEI conducted. No violation noted. Effluent looked clear and the receiving stream looked good as well. Overall, the treatment plant seemed operating well.

Compliance History

DMR Data for Outfall 002 (from October 1, 2019 to September 30, 2020)

Parameter	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19
Flow (MGD) Average Monthly	2.748	3.408	3.023	2.969	3.125	3.412	2.963	3.226	2.872	2.916	2.471	2.601
Flow (MGD) Daily Maximum	3.102	7.68	3.403	4.074	3.909	5.552	4.259	3.9	5.118	4.218	3.161	3.581
pH (S.U.) Minimum	6.8	6.7	6.5	6.7	6.6	6.2	6.4	6.6	6.5	6.5	6.6	6.8
pH (S.U.) Maximum	8.0	7.3	7.1	7.2	7.7	7.5	7.3	7.4	7.4	7.4	7.5	7.7
DO (mg/L) Minimum	8.6	8.1	8.4	8.7	9.1	9.7	10.0	10.2	10.0	10.0	9.2	8.4
TRC (mg/L) Average Monthly	< 0.1	< 0.3	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2
TRC (mg/L) Instantaneous Maximum	0.41	0.91	0.32	0.85	0.47	0.84	0.97	0.53	0.57	0.68	0.85	0.52
CBOD5 (lbs/day) Average Monthly	< 61	< 76	< 65	< 70	< 91	142	< 129	128	< 117	134	< 89	< 72
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly	3358	3817	2850	3322	3863	4663	4592	4073	4240	5071	3653	4362
CBOD5 (lbs/day) Weekly Average	< 70	< 104	< 90	< 77	< 124	171	158	152	160	170	102	93
CBOD5 (mg/L) Average Monthly	< 3	< 3	< 3	< 3	< 3	5	< 5	5	< 5	5	< 4	< 3
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	152	135	115	134	149	163	186	154	177	210	177	201
CBOD5 (mg/L) Weekly Average	< 3.1	< 3.3	< 4	< 2.9	< 4.4	5.8	5.8	5.9	6.5	6.1	4.9	3.8
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	3898	5525	4431	3682	4145	6926	6849	5523	4479	6136	5370	251
BOD5 (mg/L) Raw Sewage Influent Average Monthly	175	216	168	155	161	212	273	198	190	229	260	5326
TSS (lbs/day) Average Monthly	173	256	187	230	255	305	327	322	287	223	186	131

TSS (lbs/day) Raw Sewage Influent Average Monthly	3786	4667	3760	3697	3994	4415	4157	4153	4199	3990	4248	189
TSS (lbs/day) Weekly Average	202	369	228	267	287	355	388	361	329	287	203	203
TSS (mg/L) Average Monthly	8	9	8	9	10	11	13	12	12	9	9	6
TSS (mg/L) Raw Sewage Influent Average Monthly	165	159	149	149	155	153	169	156	175	164	206	4125
TSS (mg/L) Weekly Average	9	10	9	11	11	12	15	13	15	10	10	8
Fecal Coliform (CFU/100 ml) Geometric Mean	< 10	< 9	< 6	< 5	< 6	< 8	< 11	< 25	< 10	< 8	< 17	< 27
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	82	290	320	40	192	39	125	161	74	80	68	500
Ammonia (lbs/day) Average Monthly	< 2	< 3	< 3	< 5	< 3	< 5	< 17	< 9	< 12	< 7	< 5	< 5
Ammonia (mg/L) Average Monthly	< 0.1	< 0.11	< 0.11	< 0.19	< 0.11	< 0.16	< 0.71	< 0.35	< 0.51	< 0.27	< 0.26	< 0.24
Total Phosphorus (lbs/day) Average Monthly	82	89	116	76	93	89	68	76	88	45	67	75
Total Phosphorus (mg/L) Average Monthly	3.98	3.61	3.9	3.3	3.29	3.36	3.02	3.18	3.8	1.96	3.22	3.42

No DMR data is available for Outfall 003.

Compliance History: No eDMR violation was noted in last 12 months.

Existing Effluent Limitations and Monitoring Requirements

The table below summarizes effluent limitations and monitoring requirements specified in the existing final NPDES (amended) permit that was in effect between July 1, 2014 to June 30, 2018.

For Outfall 002:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum 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	Recorded
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.2	1/day	Grab
CBOD5 Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
CBOD5 May 1 - Oct 31	1,033	1,549	XXX	18	27	36	1/day	24-Hr Composite
CBOD5 Nov 1 - Apr 30	1,434	2,180	XXX	25	38	50	1/day	24-Hr Composite
BOD5 Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
Total Suspended Solids	1,721	2,582	XXX	30	45	60	1/day	24-Hr Composite
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/day	Grab
Ammonia-Nitrogen May 1 - Oct 31	344	XXX	XXX	6.0	XXX	12.0	1/day	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	1,033	XXX	XXX	18.0	XXX	36.0	1/day	24-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

For Outfall 003:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly		Minimum	Annual Average		Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
CBOD5	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Chemical Oxygen Demand	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Dissolved Iron	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 5.5
Latitude 40º 5' 38" **Longitude** -75º 19' 42"
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)
	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
Total Suspended Solids	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Fecal Coliform	200 / 100 ml	Geo Mean	DRBC	92a.47(a)(5)
Fecal Coliform	1,000 / 100 ml	IMAX	DRBC	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: These standards apply, subject to Water Quality Analysis and BPJ where applicable.

Water Quality-Based Limitations

Water Quality-Based Limitations

WQM 7.0:

WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate effluent limits for $CBOD_5$, NH_3-N and DO. The model simulates two basic processes. In the NH_3-N module, the model simulates the mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria. Since WQM 7.0 assumes immediate and complete mix between the discharge and stream flow, Q_{7-10} was adjusted, as shown on page 3, to examine allowable wasteload allocations under appropriate mixing conditions. The model was utilized for this permit renewal by using adjusted Q_{7-10} and historic background water quality levels of the river. In addition, due to proximity, several other upstream and downstream dischargers are included in the multiple discharge scenario. The following data were used in the attached computer model of the stream:

- Discharge pH 7.0 (median Jul-Sep, 2020, DMR data)
- Discharge Temperature 20°C (Default per 391-2000-013)
- Discharge Hardness 210 mg/l (Application data)
- Stream pH 7.0 (Default per 391-2000-013)
- Stream Temperature 25°C (Default per 391-2000-013, WWF)
- Stream Hardness 212.67 mg/l (Application data)

The following nodes were considered in modeling:

Node 1: Norristown STP (PA0027421) Outfall 001 at Schuylkill River (00833)
Elevation: 49 ft (USGS National Map viewer, 11/13/2019)
Drainage Area: 1766 mi^2 (StreamStat Version 3.0, 11/13/2019)
River Mile Index: 23.4 (PA DEP eMapPA)

	Low Flow Yield:	0.125 cfs/mi^2
	Discharge Flow:	9.75 MGD
Node 2:	ENPWJSA STP (PA0026816) Outfall 001 at Schuylkill River (00833)	
	Elevation:	48 ft (USGS National Map viewer, 11/13/2019)
	Drainage Area:	1766.1 mi^2 (StreamStat Version 3.0, 11/13/2019)
	River Mile Index:	22.94 (PA DEP eMapPA)
	Low Flow Yield:	0.125 cfs/mi^2
	Discharge Flow:	8.1 MGD
Node 3:	Bridgeport WWTP Outfall 001 at Schuylkill River (00833)	
	Elevation:	43.79 ft (USGS National Map viewer, 11/13/2019)
	Drainage Area:	1769.9 mi^2 (StreamStat Version 3.0, 11/13/2019)
	River Mile Index:	22.79 (PA DEP eMapPA)
	Low Flow Yield:	0.125 cfs/mi^2
	Discharge Flow:	0.9 MGD
Node 4:	Matsunk STP Outfall 001 at Schuylkill River (00833)	
	Elevation:	42.85 ft (USGS National Map viewer, 10/22/2020)
	Drainage Area:	1770.0 mi^2 (StreamStat Version 3.0, 10/22/2020)
	River Mile Index:	22.26 (PA DEP eMapPA)
	Low Flow Yield:	0.125 cfs/mi^2
	Discharge Flow:	5.5 MGD
Node 5:	At the Plymouth Dam on Schuylkill River (00833)	
	Elevation:	39.59 ft (USGS National Map viewer, 11/13/2019)
	Drainage Area:	1770.1 mi^2 (StreamStat Version 3.0, 11/13/2019)
	River Mile Index:	21.22 (PA DEP eMapPA)
	Low Flow Yield:	0.125 cfs/mi^2
	Discharge Flow:	0.0 MGD

Ammonia (NH_3-N), Carbonaceous Biochemical Oxygen Demand (CBOD5), & Dissolved Oxygen (DO):
WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate effluent limits for $CBOD_5$, NH_3-N and DO. The model simulates two basic processes. In the NH_3-N module, the model simulates the mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria. The model was utilized for this permit renewal by using $Q_{7\text{-}10}$ and current background water quality levels of the stream.

NH_3-N:
WQM 7.0 suggested NH_3-N limit of 6.0 mg/l as monthly average and 12.0 mg/l as IMAX limit during summer to protect water quality standards. These values are the same as existing permitted limits. Recent DMR data show that the plant is meeting the permit limits. The average monthly mass loading is calculated to be 275 lbs./day. The existing winter season limits of 18.0 mg/l as average monthly and 36.0 mg/l as IMAX limit will be carried over in this renewal. Winter average monthly mass limit was calculated as 825 lbs./day. It should be noted that in previous permit, the summer and winter mass limits were 344 lbs./day and 1033 lbs./day, respectively. That values were calculated using hydraulic design flow (maximum monthly flow) of 6.88 MGD. DEP's SOP suggests the mass limits be calculated using Average Annual Flow, which is 5.5 MGD for Matsunk. This flow value will be used in all mass based limits calculations.

$CBOD_5$:
The WQM 7.0 model suggests a monthly average $CBOD_5$ limit of 18 mg/l. The average monthly and average weekly mass loadings were calculated as 825.66 lbs/day and 1238.49 lbs/day respectively. These values are rounded down to 825 lbs/day and 1235 lbs/day, respectively (362-0400-001). The current permit has seasonal limit for $CBOD_5$ which will be carried over in this renewal. Seasonal limit for $CBOD_5$ is allowed in PADEP's guidance (391-2000-003). The mass limit for winter season is calculated to be 1146.75 lbs./day as monthly average and 1743.06 lbs./day as weekly average which are rounded down to 1145 lbs./day and 1740 lbs./day, respectively (362-0400-001). Minimum monitoring frequency will remain the same as 1/day, 24-hr composite sampling.

Dissolved Oxygen (DO):
The existing permit has a minimum DO of 4.0 mg/l. Per Pa Code 25 Ch.93.7, a minimum DO of 5.0 is required for WWF. This is also supported by WQM 7.0 output.

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

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

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

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

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

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

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

☑ ***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 Dissolved Solids (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Chloride (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Bromide	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Sulfate (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Total Copper	2.05	2.71	44.7	59.1	112	µg/L	44.7	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	451	AFC	Discharge Conc > 10% WQBEL (no RP)
1,4-Dioxane	Report	Report	Report	Report	Report	µg/L	N/A	N/A	Special Monitoring Applies
Benzo(a)Anthracene	0.014	0.022	0.3	0.47	0.76	µg/L	0.3	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(a)Pyrene	0.014	0.022	0.3	0.47	0.76	µg/L	0.3	CRL	Discharge Conc ≥ 50% WQBEL (RP)
3,4-Benzofluoranthene	0.014	0.022	0.3	0.47	0.76	µg/L	0.3	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(k)Fluoranthene	0.014	0.022	0.3	0.47	0.76	µg/L	0.3	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Chrysene	0.014	0.022	0.3	0.47	0.76	µg/L	0.3	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Dibenzo(a,h)Anthrancene	0.014	0.022	0.3	0.47	0.76	µg/L	0.3	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Indeno(1,2,3-cd)Pyrene	0.003	0.004	0.059	0.091	0.15	µg/L	0.059	THH	Discharge Conc ≥ 50% WQBEL (RP)
Phenanthrene	0.45	0.71	9.88	15.4	24.7	µg/L	9.88	AFC	Discharge Conc ≥ 50% WQBEL (RP)

Each of the parameters are discussed below:

TDS and its constituents:
TMS suggests monitoring for TDS and its constituents if there is PWS concern. The nearest downstream PWS is approximately 10 miles for which this discharge apparently poses no threat. The facility has an approved DRBC docket (D-1987-013 CP-3) issued on September 13, 2018. The Docket requires TDS limit of 1,000 mg/l quarterly. Therefore, a TDS limit of 1,000 mg/l with quarterly monitoring will be placed in the permit.

Total Copper: The application provided three sample results for Total Copper. On PADEP's request, US EPA provided additional 28 sample results from pretreatment effluent data for the reporting period between 2013-2019. All data were plugged into PADEP's TOXCONC to determine AMEC and daily CoV values. TOXCONC calculated an AMEC of 52.0268 ug/l and CoV of 0.2714. These values were utilized in TMS. As shown in above table, TMS suggests AML of 44.7 ug/l, MDL of 59.1 ug/l, IMAX of 112 ug/l, mass AML of 2.05 lbs./day, and mass MDL of 2.71 lbs./day. Since this is a new parameter, PADEP provided the permittee with a Pre-Draft survey. The permittee returned the pre-draft survey which indicated that the permittee is not aware of the pollutant and haven't conducted any studies regarding the control or treatment of the pollutant. Therefore, PADEP will provide a compliance schedule of four years from permit effective date to collect data and an option to develop a site-specific Water Quality Criterion (WQC) for copper using the Biotic Ligand Model (BLM). Monitoring only requirement will be added during the compliance period. Based on the final study report, the permit may be amended or numeric limitations will be imposed in the permit after the compliance period is over.

1,4-Dioxane: TMS suggests monitoring for 1,4-Dioxane. This is a pollutant of concern if there is nearby downstream PWS intake. The nearest downstream PWS is approximately 10 miles from Outfall 002. Therefore, it is believed that the discharge for this facility won't affect the PWS intake and a monitoring is not warranted.

Semi-volatiles:
TMS suggested monitoring for all eight semi-volatiles as listed above. However, the QL (5 ug/l) used by the lab is higher than PADEP's TQL (2.5 ug/l) and all three results for each semi-volatiles came as non-detect. Therefore, it is still unclear if they are actually a pollutant of concern or not. Per the response on pre-draft survey, the permittee agreed to provide four additional test results for each of the semi-volatiles using PADEP's TQL. The sampling will be 24-hr composite, 1 week apart. PADEP received retest results on January 4, 2021 and TMS was again utilized. TMS determined that no limits or monitoring is needed for any of the semi-volatiles.

The updated TMS output table is provided below:

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Dissolved Solids (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Chloride (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Bromide	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Sulfate (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Total Copper	2.05	2.71	44.7	59.1	112	µg/L	44.7	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	451	AFC	Discharge Conc > 10% WQBEL (no RP)
1,4-Dioxane	Report	Report	Report	Report	Report	µg/L	N/A	N/A	Special Monitoring Applies

Whole Effluent Toxicity Testing (WETT):
The permittee provided four WETT sample results with the application dated March 2017, April 2016, May 2015, and October 2014. The tests in 2014, 2015, and 2016 were conducted by QC laboratories or Eurofins QC, Inc. The Department has determined that WET tests analyzed by QC Laboratories or Eurofins QC prior to February 2017 are unreliable and are considered invalid due to technical issues. As a result, the application didn't include four valid WET tests required to perform a reasonable potential analysis. However, the permittee provided annual WETT results for the year 2018 and 2019 that added to three valid tests. 2020 WET test results were received on January 4, 2021. PADEP utilized the WETT Analysis Spreadsheet to determine RP and update the dilution series. The updated TIWCc was

calculated to be 6% to evaluate the test results for a stream flow of 271 cfs, discharge flow of 5.5 MGD, and PMFc of 0.453. The WET tests are discussed in detail on pages 15-16 of this report.

Additional Considerations

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

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

Total Suspended Solids (TSS):
There is no water quality criterion for TSS. The existing limits of 30 mg/L average monthly, 45 mg/l average weekly, and 60 mg/L instantaneous maximum will remain in the permit based on the minimum level of effluent quality attainable by secondary treatment, 25 Pa. Code § 92a.47 and 40CFR 133.102(b). The mass based average monthly and weekly average limits are calculated to be 1376.1 lbs./day and 2064.15 lbs./day respectively, which are rounded down to 1375 lbs./day and 2060 lbs./day, respectively (362-0400-001).

Total Residual Chlorine (TRC):
The attached computer printout utilizes the equation and calculations as presented in the Department's 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID#391-2000-015) for developing chlorine limitations. The attached printout indicates that a water quality limit of 0.5 mg/l would be needed to prevent toxicity concerns at the discharge point for Outfall 002. The Instantaneous Maximum (IMAX) limit is 1.6 mg/l. The existing permit has AML limit of 0.5 mg/l and IMAX limit of 1.2 mg/l. The IMAX is a little more stringent and will be carried over due to anti-backsliding policy. DMR data from October 2019 to September 2020 indicates that the plant is discharging below the existing limits. The minimum monitoring frequency is 1/day.

Flow and Influent BOD_5, $CBOD_5$, and TSS Monitoring Requirement:
The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii). Influent BOD_5 and TSS monitoring requirements are established in the permit per the requirements set in Pa Code 25 Chapter 94. To show compliance with percentage removal efficiency of $CBOD_5$, reporting for influent $CBOD_5$ will remain in the permit.

Best Professional Judgement (BPJ):
Total Phosphorus:
Existing monthly monitoring requirement will be carried over in this renewal.

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

Total Nitrogen:
PADEP's SOP BCW-PMT-033 suggests monitoring requirement, at a minimum, for facilities with design flow greater than 2,000 GPD. This requirement is applied for all facilities meeting the flow criteria.

Anti-Backsliding
The proposed limits are at least as stringent as are in existing permit, unless otherwise stated; therefore, anti-backsliding is not applicable.

Development of Effluent Limitations

Outfall No. 003 **Design Flow (MGD)** 0
Latitude 40º 5' 39.00" **Longitude** -75º 19' 43.00"
Wastewater Description: Stormwater

Outfall 003 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)

For Outfall 002, ☐ **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%, 2%, and 1%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 2%.

Summary of Four Most Recent Test Results

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

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
4/4/2017	Pass	Pass	Pass	Pass
11/6/2018	Pass	Pass	Pass	Pass
11/5/2019	Pass	Pass	Pass	Pass
12/08/2020	Pass	Pass	Pass	Pass

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

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

☐ **YES** ☒ **NO**

Comments: None

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

Acute Partial Mix Factor (PMFa): **0.065** Chronic Partial Mix Factor (PMFc): **0.453**

1. Determine IWC – Acute (IWCa):

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

[(5.5 MGD x 1.547) / ((271 cfs x 0.065) + (5.5 MGD x 1.547))] x 100 = **32.57%**

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

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

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

[(5.5 MGD x 1.547) / ((271 cfs x 0.453) + (5.5 MGD x 1.547))] x 100 = **6.48%**

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%, 6%, and 3%.

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 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	Weekly Average	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.2	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - Apr 30	1145	1740	XXX	25.0	38.0 Wkly Avg	50	1/day	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) May 1 - Oct 31	825	1235	XXX	18.0	27.0 Wkly Avg	36	1/day	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
Total Copper (interim)	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite
Total Copper (final)	2.05	2.71 Daily Max	XXX	0.045	0.059 Daily Max	0.112	1/week	24-Hr Composite
Total Suspended Solids	1375	2060	XXX	30.0	45.0 Wkly Avg	60	1/day	24-Hr Composite
Total Dissolved Solids	Report Avg Qrtly	XXX	XXX	1,000 Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite

Outfall 002, 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 Monthly	Daily Maximum	Instant. Maximum		
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000*	1/day	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/day	Grab
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	825	XXX	XXX	18.0	XXX	36	1/day	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	275	XXX	XXX	6.0	XXX	12	1/day	24-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
PCBs Dry Weather Analysis (pg/L)	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
PCBs Wet Weather Analysis (pg/L)	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
Toxicity, Chronic - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
Toxicity, Chronic - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
Toxicity, Chronic - Pimephales Survival (TUc)	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
Toxicity, Chronic - Pimephales Growth (TUc)	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite

Compliance Sampling Location: At Outfall 002
* Shall not exceed in more than 10% of samples. See Part C.I. Other Requirement No. H of the permit.

Other Comments:

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 003, 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	Annual Average	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
TKN	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Dissolved Iron	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

Compliance Sampling Location: At Outfall 003

Other Comments:

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	TMS (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Toxics Screening Analysis 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:

Permit No. PA0026085

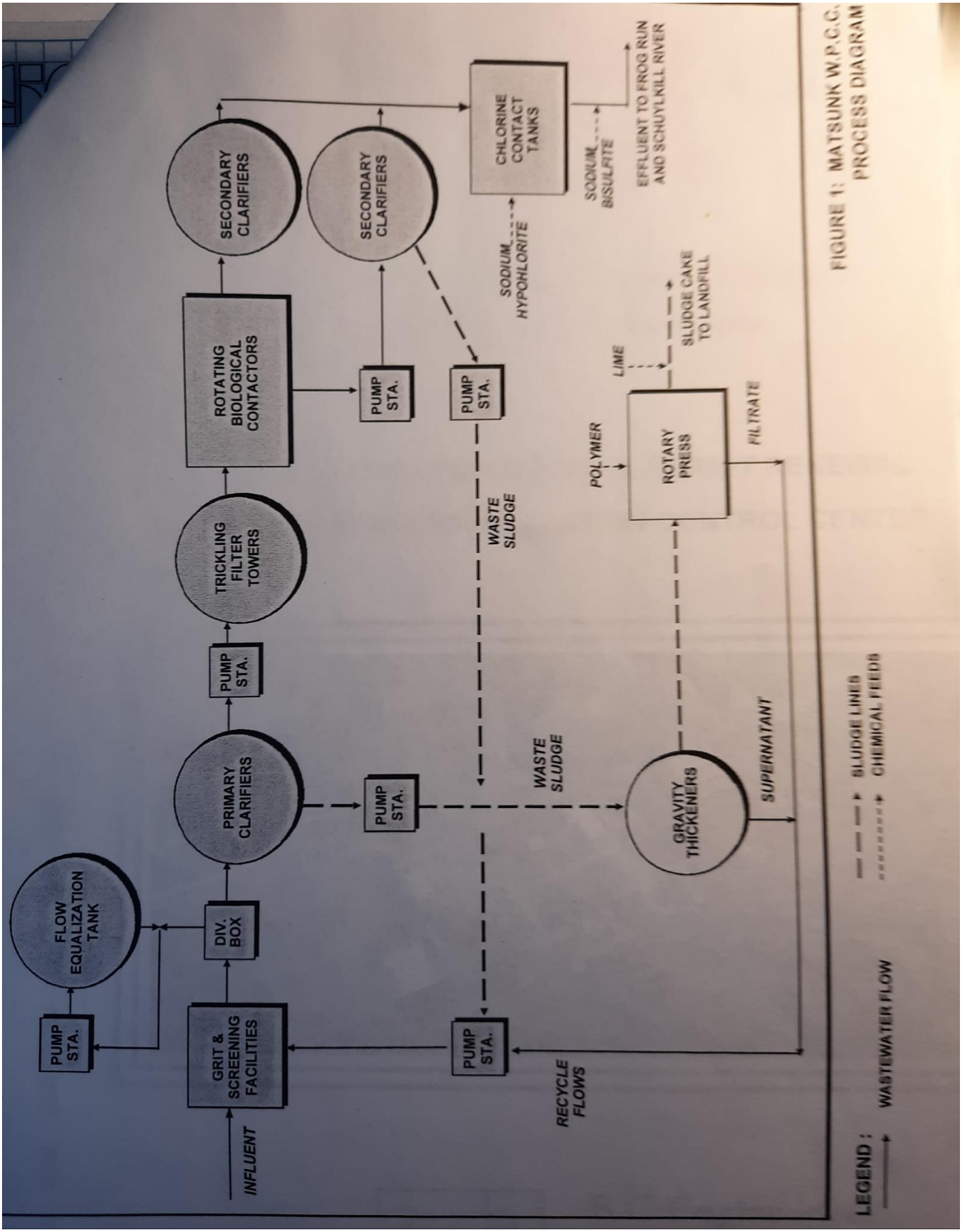

FIGURE 1: MATSUNK W.P.C.C. PROCESS DIAGRAM

TRC_CALC

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

271	= Q stream (cfs)	0.5	= CV Daily
5.5	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 10.179	1.3.2.iii	WLA cfc = 9.917
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 3.793	5.1d	LTA_cfc = 5.765

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		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)

Permit No. PA0026085

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
03F	833	SCHUYLKILL RIVER	23.400	49.00	1766.00	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	0.125	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Norristown STP	PA0027421	9.7500	9.7500	9.7500	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	20.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	10.00	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
03F	833	SCHUYLKILL RIVER	22.940	48.00	1766.10	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	0.125	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
ENPWJSA	PA0026816	8.1000	8.1000	8.1000	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	20.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	12.00	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
03F	833	SCHUYLKILL RIVER	22.790	43.79	1769.90	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	0.125	11.72	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.50	20.00	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
Bridgeport STP	PA0020397	0.9000	0.9000	0.9000	0.000	20.00	7.30

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	20.00	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
03F	833	SCHUYLKILL RIVER	22.260	42.85	1770.00	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	0.153	17.62	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Matsunk WPCC	PA0026085	5.5000	5.5000	5.5000	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	18.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	6.00	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
03F	833	SCHUYLKILL RIVER	21.220	39.59	1770.10	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	0.125	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

SWP Basin	Stream Code	Stream Name
03F	833	SCHUYLKILL RIVER

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												
23.400	220.75	0.00	220.75	15.0833	0.00041	1.177	275.77	234.21	0.73	0.039	20.00	7.00
22.940	220.76	0.00	220.76	27.614	0.00532	1.217	237.23	195	0.86	0.011	20.00	7.00
22.790	232.48	0.00	232.48	29.0063	0.00034	1.181	291.17	246.64	0.76	0.043	20.00	7.01
22.260	250.10	0.00	250.10	37.5148	0.00059	1.166	297.91	255.47	0.83	0.077	20.00	7.01
Q1-10 Flow												
23.400	141.28	0.00	141.28	15.0833	0.00041	NA	NA	NA	0.58	0.049	20.00	7.00
22.940	141.29	0.00	141.29	27.614	0.00532	NA	NA	NA	0.69	0.013	20.00	7.00
22.790	148.79	0.00	148.79	29.0063	0.00034	NA	NA	NA	0.61	0.053	20.00	7.01
22.260	160.07	0.00	160.07	37.5148	0.00059	NA	NA	NA	0.67	0.095	20.00	7.01
Q30-10 Flow												
23.400	264.90	0.00	264.90	15.0833	0.00041	NA	NA	NA	0.80	0.035	20.00	7.00
22.940	264.92	0.00	264.92	27.614	0.00532	NA	NA	NA	0.94	0.010	20.00	7.00
22.790	278.98	0.00	278.98	29.0063	0.00034	NA	NA	NA	0.83	0.039	20.00	7.01
22.260	300.12	0.00	300.12	37.5148	0.00059	NA	NA	NA	0.91	0.070	20.00	7.01

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	1.2	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
03F	833	SCHUYLKILL RIVER

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
23.400	Norristown STP	9.67	20	9.67	20	0	0
22.940	ENPWJSA	9.67	24	9.67	24	0	0
22.790	Bridgeport STP	9.56	40	9.58	40	0	0
22.260	Matsunk WPCC	9.58	12	9.59	12	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
23.400	Norristown STP	1.92	10	1.92	10	0	0
22.940	ENPWJSA	1.92	12	1.92	12	0	0
22.790	Bridgeport STP	1.9	20	1.9	20	0	0
22.260	Matsunk WPCC	1.9	6	1.9	6	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)		
23.40	Norristown STP	20	20	10	10	4	4	0	0
22.94	ENPWJSA	20	20	12	12	5	5	0	0
22.79	Bridgeport STP	25	25	20	20	5	5	0	0
22.26	Matsunk WPCC	18	18	6	6	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
03F	833	SCHUYLKILL RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
23.400	9.750	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
275.771	1.177	234.215	0.726
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.15	0.598	0.64	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.972	1.395	Tsivoglou	5
Reach Travel Time (days)			
0.039			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.004	3.14	0.64	7.96
0.008	3.14	0.64	7.95
0.012	3.13	0.63	7.93
0.015	3.12	0.63	7.92
0.019	3.11	0.63	7.91
0.023	3.11	0.63	7.90
0.027	3.10	0.63	7.89
0.031	3.09	0.63	7.88
0.035	3.09	0.62	7.86
0.039	3.08	0.62	7.85

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
22.940	17.850	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
237.227	1.217	195.004	0.861
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.93	0.819	1.20	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.709	21.340	Tsivoglou	5
Reach Travel Time (days)			
0.011			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.001	3.93	1.20	7.73
0.002	3.93	1.19	7.76
0.003	3.92	1.19	7.78
0.004	3.92	1.19	7.80
0.005	3.92	1.19	7.82
0.006	3.91	1.19	7.84
0.007	3.91	1.19	7.86
0.009	3.91	1.19	7.88
0.010	3.90	1.19	7.90
0.011	3.90	1.19	7.92

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
03F	833	SCHUYLKILL RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
22.790	18.750	20.000	7.015
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
291.169	1.181	246.644	0.761
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.93	0.809	1.23	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.920	1.192	Tsivoglou	5
Reach Travel Time (days)			
0.043			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.004	3.91	1.23	7.89
0.009	3.90	1.23	7.86
0.013	3.89	1.22	7.83
0.017	3.87	1.22	7.80
0.021	3.86	1.22	7.77
0.026	3.85	1.21	7.74
0.030	3.83	1.21	7.71
0.034	3.82	1.21	7.68
0.038	3.81	1.20	7.65
0.043	3.79	1.20	7.63

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
22.260	24.250	20.000	7.013
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
297.905	1.166	255.468	0.828
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.10	0.843	1.27	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.586	2.293	Tsivoglou	5
Reach Travel Time (days)			
0.077			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.008	4.08	1.26	7.54
0.015	4.05	1.25	7.50
0.023	4.02	1.25	7.46
0.031	4.00	1.24	7.42
0.038	3.97	1.23	7.38
0.046	3.95	1.23	7.35
0.054	3.92	1.22	7.31
0.061	3.90	1.21	7.28
0.069	3.87	1.21	7.24
0.077	3.85	1.20	7.21

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
03F	833	SCHUYLKILL RIVER

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)
23.400	Norristown STP	PA0027421	9.750	CBOD5	20		
				NH3-N	10	20	
				Dissolved Oxygen			4

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)
22.940	ENPWJSA	PA0026816	8.100	CBOD5	20		
				NH3-N	12	24	
				Dissolved Oxygen			5

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)
22.790	Bridgeport STP	PA0020397	0.900	CBOD5	25		
				NH3-N	20	40	
				Dissolved Oxygen			5

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)
22.260	Matsunk WPCC	PA0026085	5.500	CBOD5	18		
				NH3-N	6	12	
				Dissolved Oxygen			5

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.0, July 2020

Discharge Information

Instructions | Discharge | Stream

Facility: **Matsunk WPCC** NPDES Permit No.: **PA0026085** Outfall No.: **002**

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

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
5.5	217	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		609									
	Chloride (PWS)	mg/L		200									
	Bromide	mg/L		0.22									
	Sulfate (PWS)	mg/L		5.6									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		80									
	Total Antimony	µg/L		2									
	Total Arsenic	µg/L		1									
	Total Barium	µg/L		89									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L		300									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L		3.4									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L		0.6									
	Total Copper	µg/L		52.0268			0.2714						
	Free Available Cyanide	µg/L		3									
	Total Cyanide	µg/L		3									
	Dissolved Iron	µg/L		180									
	Total Iron	µg/L		200									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		31									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		5.2									
	Total Phenols (Phenolics) (PWS)	µg/L		38									
	Total Selenium	µg/L		2									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L	<	1									
	Total Zinc	µg/L		58									
	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									

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Group 3	Carbon Tetrachloride	µg/L	<	0.5										
	Chlorobenzene	µg/L	<	0.5										
	Chlorodibromomethane	µg/L	<	0.5										
	Chloroethane	µg/L	<	0.5										
	2-Chloroethyl Vinyl Ether	µg/L	<	5										
	Chloroform	µg/L		2										
	Dichlorobromomethane	µg/L	<	0.5										
	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	<	100										
	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	<											
	Pentachlorophenol	µg/L	<	10										
	Phenol	µg/L	<	10										
	2,4,6-Trichlorophenol	µg/L	<	10										
Group 5	Acenaphthene	µg/L	<	5										
	Acenaphthylene	µg/L	<	5										
	Anthracene	µg/L	<	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	<	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	<											
	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										
	1,2-Diphenylhydrazine	µg/L	<	5										
	Fluoranthene	µg/L	<	5										
	Fluorene	µg/L	<	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	<	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												

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.0, July 2020

Stream / Surface Water Information

Matsunk WPCC, NPDES Permit No. PA0026085, Outfall 002

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 (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	000833	22.26	42.85	1770			Yes
End of Reach 1	000833	21.025	38.74	1780			Yes

Q_{7-10}

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	22.26	0.153										212.67	7		
End of Reach 1	21.025	0.153													

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	22.26														
End of Reach 1	21.025														

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Toxics Management Spreadsheet
Version 1.0, July 2020

Model Results

Matsunk WPCC, NPDES Permit No. PA0026085, Outfall 002

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

☑ ***Hydrodynamics***

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

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
22.26	270.81		270.81	8.509	0.00063	1.166	293.194	251.487	0.817	0.092	3504.595
21.025	272.34		272.34								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
22.26	993.43		993.43	8.509	0.00063	2.045	293.194	143.36	1.671	0.045	1577.505
21.025	998.335		998.33								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.065 Analysis Hardness (mg/l): 214.07 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	
Bromide	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	2,312	
Total Antimony	0	0		0	1,100	1,100	3,391	
Total Arsenic	0	0		0	340	340	1,048	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	64,728	
Total Boron	0	0		0	8,100	8,100	24,966	
Total Cadmium	0	0		0	4.218	4.62	14.3	Chem Translator of 0.912 applied
Total Chromium (III)	0	0		0	1062.742	3,363	10,366	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	50.2	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	293	
Total Copper	0	0		0	27.531	28.7	88.4	Chem Translator of 0.96 applied

Free Available Cyanide	0	0		0	22	22.0	67.8	
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	146.321	215	663	Chem Translator of 0.68 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	5.08	Chem Translator of 0.85 applied
Total Nickel	0	0		0	891.504	893	2,753	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	11.912	14.0	43.2	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	200	
Total Zinc	0	0		0	223.328	228	704	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	9.25	
Acrylonitrile	0	0		0	650	650	2,003	
Benzene	0	0		0	640	640	1,973	
Bromoform	0	0		0	1,800	1,800	5,548	
Carbon Tetrachloride	0	0		0	2,800	2,800	8,630	
Chlorobenzene	0	0		0	1,200	1,200	3,699	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	55,481	
Chloroform	0	0		0	1,900	1,900	5,856	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	46,234	
1,1-Dichloroethylene	0	0		0	7,500	7,500	23,117	
1,2-Dichloropropane	0	0		0	11,000	11,000	33,905	
1,3-Dichloropropylene	0	0		0	310	310	956	
1,4-Dioxane	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	2,900	2,900	8,939	
Methyl Bromide	0	0		0	550	550	1,695	
Methyl Chloride	0	0		0	28,000	28,000	86,304	
Methylene Chloride	0	0		0	12,000	12,000	36,987	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	3,082	
Tetrachloroethylene	0	0		0	700	700	2,158	
Toluene	0	0		0	1,700	1,700	5,240	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	20,959	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	9,247	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	10,480	
Trichloroethylene	0	0		0	2,300	2,300	7,089	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,726	
2,4-Dichlorophenol	0	0		0	1,700	1,700	5,240	
2,4-Dimethylphenol	0	0		0	660	660	2,034	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	247	
2,4-Dinitrophenol	0	0		0	660	660	2,034	
2-Nitrophenol	0	0		0	8,000	8,000	24,658	
4-Nitrophenol	0	0		0	2,300	2,300	7,089	
Pentachlorophenol	0	0		0	8.723	8.72	26.9	
Phenol	0	0		0	N/A	N/A	N/A	

2,4,6-Trichlorophenol	0	0		0	460	460	1,418	
Acenaphthene	0	0		0	83	83.0	256	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	925	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.54	
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	92,468	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	13,870	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	832	
Butyl Benzyl Phthalate	0	0		0	140	140	432	
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	2,527	
1,3-Dichlorobenzene	0	0		0	350	350	1,079	
1,4-Dichlorobenzene	0	0		0	730	730	2,250	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	12,329	
Dimethyl Phthalate	0	0		0	2,500	2,500	7,706	
Di-n-Butyl Phthalate	0	0		0	110	110	339	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	4,932	
2,6-Dinitrotoluene	0	0		0	990	990	3,051	
1,2-Diphenylhydrazine	0	0		0	15	15.0	46.2	
Fluoranthene	0	0		0	200	200	616	
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	30.8	
Hexachlorocyclopentadiene	0	0		0	5	5.0	15.4	
Hexachloroethane	0	0		0	60	60.0	185	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	30,823	
Naphthalene	0	0		0	140	140	432	
Nitrobenzene	0	0		0	4,000	4,000	12,329	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	52,399	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	925	
Phenanthrene	0	0		0	5	5.0	15.4	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	401	

☑ *CFC* CCT (min): 720 PMF: 0.453 Analysis Hardness (mg/l): 212.95 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	
Bromide	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	3,394	
Total Arsenic	0	0		0	150	150	2,314	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	63,248	
Total Boron	0	0		0	1,600	1,600	24,682	
Total Cadmium	0	0		0	0.416	0.47	7.31	Chem Translator of 0.877 applied
Total Chromium (III)	0	0		0	137.646	160	2,469	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	160	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	293	
Total Copper	0	0		0	17.085	17.8	275	Chem Translator of 0.96 applied
Free Available Cyanide	0	0		0	5.2	5.2	80.2	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	49,242	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	5.670	8.33	128	Chem Translator of 0.681 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	14.0	Chem Translator of 0.85 applied
Total Nickel	0	0		0	98.578	98.9	1,525	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	77.0	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	201	
Total Zinc	0	0		0	224.153	227	3,507	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	46.3	
Acrylonitrile	0	0		0	130	130	2,005	
Benzene	0	0		0	130	130	2,005	
Bromoform	0	0		0	370	370	5,708	
Carbon Tetrachloride	0	0		0	560	560	8,639	
Chlorobenzene	0	0		0	240	240	3,702	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	53,993	
Chloroform	0	0		0	390	390	6,016	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	47,822	
1,1-Dichloroethylene	0	0		0	1,500	1,500	23,140	
1,2-Dichloropropane	0	0		0	2,200	2,200	33,938	
1,3-Dichloropropylene	0	0		0	61	61.0	941	
1,4-Dioxane	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	580	580	8,947	
Methyl Bromide	0	0		0	110	110	1,697	
Methyl Chloride	0	0		0	5,500	5,500	84,845	
Methylene Chloride	0	0		0	2,400	2,400	37,023	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	3,240	

Tetrachloroethylene	0	0		0	140	140	2,160	
Toluene	0	0		0	330	330	5,091	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	21,597	
1,1,1-Trichloroethane	0	0		0	610	610	9,410	
1,1,2-Trichloroethane	0	0		0	680	680	10,490	
Trichloroethylene	0	0		0	450	450	6,942	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	1,697	
2,4-Dichlorophenol	0	0		0	340	340	5,245	
2,4-Dimethylphenol	0	0		0	130	130	2,005	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	247	
2,4-Dinitrophenol	0	0		0	130	130	2,005	
2-Nitrophenol	0	0		0	1,600	1,600	24,682	
4-Nitrophenol	0	0		0	470	470	7,250	
Pentachlorophenol	0	0		0	6.693	6.69	103	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	1,404	
Acenaphthene	0	0		0	17	17.0	262	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	910	
Benzo(a)Anthracene	0	0		0	0.1	0.1	1.54	
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	92,559	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	14,038	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	833	
Butyl Benzyl Phthalate	0	0		0	35	35.0	540	
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	2,468	
1,3-Dichlorobenzene	0	0		0	69	69.0	1,064	
1,4-Dichlorobenzene	0	0		0	150	150	2,314	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	12,341	
Dimethyl Phthalate	0	0		0	500	500	7,713	
Di-n-Butyl Phthalate	0	0		0	21	21.0	324	
2,4-Dinitrotoluene	0	0		0	320	320	4,936	
2,6-Dinitrotoluene	0	0		0	200	200	3,085	
1,2-Diphenylhydrazine	0	0		0	3	3.0	46.3	
Fluoranthene	0	0		0	40	40.0	617	
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	30.9	

Hexachlorocyclopentadiene	0	0		0	1	1.0	15.4	
Hexachloroethane	0	0		0	12	12.0	185	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	32,396	
Naphthalene	0	0		0	43	43.0	663	
Nitrobenzene	0	0		0	810	810	12,495	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	52,450	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	910	
Phenanthrene	0	0		0	1	1.0	15.4	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	401	

☑ ***THH*** CCT (min): 720 PMF: 0.453 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	
Bromide	0	0		0	N/A	N/A	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	86.4	
Total Arsenic	0	0		0	10	10.0	154	
Total Barium	0	0		0	2,400	2,400	37,023	
Total Boron	0	0		0	3,100	3,100	47,822	
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 Available Cyanide	0	0		0	140	140	2,160	
Dissolved Iron	0	0		0	300	300	4,628	
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	15,426	
Total Mercury	0	0		0	0.050	0.05	0.77	
Total Nickel	0	0		0	610	610	9,410	
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	3.7	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	6	6.0	92.6	
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	130	130	2,005	
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	509	
1,2-Dichloropropane	0	0	0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0	0	N/A	N/A	N/A	
1,4-Dioxane	0	0	0	N/A	N/A	N/A	
Ethylbenzene	0	0	0	530	530	8,176	
Methyl Bromide	0	0	0	47	47.0	725	
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	1,300	1,300	20,054	
1,2-trans-Dichloroethylene	0	0	0	140	140	2,160	
1,1,1-Trichloroethane	0	0	0	N/A	N/A	N/A	
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	81	81.0	1,250	
2,4-Dichlorophenol	0	0	0	77	77.0	1,188	
2,4-Dimethylphenol	0	0	0	380	380	5,862	
4,6-Dinitro-o-Cresol	0	0	0	13	13.0	201	
2,4-Dinitrophenol	0	0	0	69	69.0	1,064	
2-Nitrophenol	0	0	0	N/A	N/A	N/A	
4-Nitrophenol	0	0	0	N/A	N/A	N/A	
Pentachlorophenol	0	0	0	N/A	N/A	N/A	
Phenol	0	0	0	10,400	10,400	160,435	
2,4,6-Trichlorophenol	0	0	0	N/A	N/A	N/A	
Acenaphthene	0	0	0	670	670	10,336	
Anthracene	0	0	0	8,300	8,300	128,039	
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-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	150	150	2,314	
2-Chloronaphthalene	0	0		0	1,000	1,000	15,426	
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	420	420	6,479	
1,3-Dichlorobenzene	0	0		0	420	420	6,479	
1,4-Dichlorobenzene	0	0		0	420	420	6,479	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	17,000	17,000	262,249	
Dimethyl Phthalate	0	0		0	270,000	270,000	4,165,137	
Di-n-Butyl Phthalate	0	0		0	2,000	2,000	30,853	
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	130	130	2,005	
Fluorene	0	0		0	1,100	1,100	16,969	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	40	40.0	617	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.0038	0.004	0.059	
Isophorone	0	0		0	35	35.0	540	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	17	17.0	262	
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	830	830	12,804	
1,2,4-Trichlorobenzene	0	0		0	35	35.0	540	

☑ *CRL* CCT (min): 720 PMF: 0.676 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	
Bromide	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 Available 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	0.051	0.051	4.07	
Benzene	0	0		0	1.2	1.2	95.9	
Bromoform	0	0		0	4.3	4.3	343	
Carbon Tetrachloride	0	0		0	0.23	0.23	18.4	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.4	0.4	32.0	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	455	
Dichlorobromomethane	0	0		0	0.55	0.55	43.9	
1,2-Dichloroethane	0	0		0	0.38	0.38	30.4	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	0.34	0.34	27.2	
1,4-Dioxane	0	0		0	N/A	N/A	N/A	
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	4.6	4.6	367	
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	13.6	
Tetrachloroethylene	0	0		0	0.69	0.69	55.1	
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	0.59	0.59	47.1	
Trichloroethylene	0	0		0	2.5	2.5	200	
Vinyl Chloride	0	0		0	0.025	0.025	2.0	
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	
Pentachlorophenol	0	0		0	0.270	0.27	21.6	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	112	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.000086	0.00009	0.007	
Benzo(a)Anthracene	0	0		0	0.0038	0.004	0.3	
Benzo(a)Pyrene	0	0		0	0.0038	0.004	0.3	
3,4-Benzofluoranthene	0	0		0	0.0038	0.004	0.3	
Benzo(k)Fluoranthene	0	0		0	0.0038	0.004	0.3	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	2.4	
Bis(2-Ethylhexyl)Phthalate	0	0		0	1.2	1.2	95.9	
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	0.0038	0.004	0.3	
Dibenzo(a,h)Anthrancene	0	0		0	0.0038	0.004	0.3	
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	0.021	0.021	1.68	
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	3.99	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	3.99	
1,2-Diphenylhydrazine	0	0		0	0.036	0.036	2.88	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00028	0.0003	0.022	
Hexachlorobutadiene	0	0		0	0.44	0.44	35.1	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	1.4	1.4	112	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
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	0.00069	0.0007	0.055	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.4	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	264	

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 Dissolved Solids (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Chloride (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Bromide	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Sulfate (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Total Copper	2.05	2.71	44.7	59.1	112	µg/L	44.7	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	451	AFC	Discharge Conc > 10% WQBEL (no RP)
1,4-Dioxane	Report	Report	Report	Report	Report	µg/L	N/A	N/A	Special Monitoring Applies

☑ ***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).

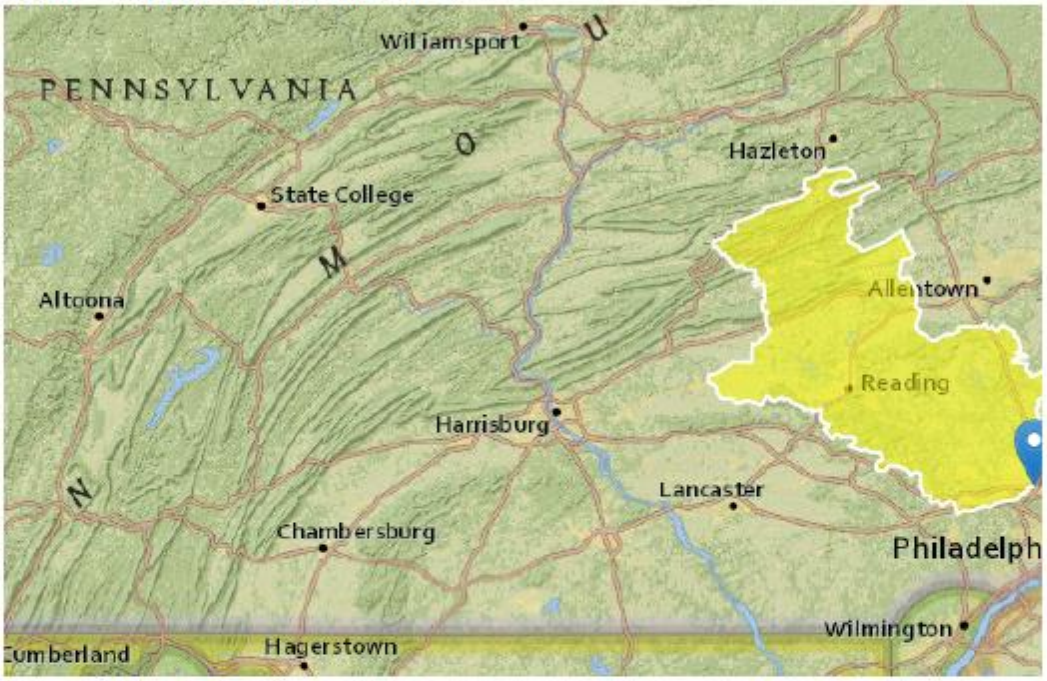
Pollutants	Governing WQBEL	Units	Comments
Total Aluminum	1,482	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	86.4	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	154	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	37,023	µg/L	Discharge Conc ≤ 10% WQBEL
Total Boron	16,002	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Chromium (III)	2,469	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	N/A	N/A	Discharge Conc < TQL
Total Cobalt	188	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	32.2	µg/L	Discharge Conc < TQL
Free Available Cyanide	43.5	µg/L	Discharge Conc ≤ 25% WQBEL
Dissolved Iron	4,628	µg/L	Discharge Conc ≤ 10% WQBEL

Total Iron	49,242	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Total Manganese	15,426	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	128	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Mercury	0.77	µg/L	Discharge Conc < TQL
Total Silver	27.7	µg/L	Discharge Conc < TQL
Total Thallium	3.7	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	5.93	µg/L	Discharge Conc < TQL
Acrylonitrile	4.07	µg/L	Discharge Conc < TQL
Benzene	95.9	µg/L	Discharge Conc < TQL
Bromoform	343	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	18.4	µg/L	Discharge Conc < TQL
Chlorobenzene	2,005	µg/L	Discharge Conc < TQL
Chlorodibromomethane	32.0	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	35,561	µg/L	Discharge Conc < TQL
Dichlorobromomethane	43.9	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	30.4	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	509	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	21,732	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	27.2	µg/L	Discharge Conc < TQL
Ethylbenzene	5,729	µg/L	Discharge Conc < TQL
Methyl Bromide	725	µg/L	Discharge Conc < TQL
Methyl Chloride	55,317	µg/L	Discharge Conc < TQL
Methylene Chloride	367	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	13.6	µg/L	Discharge Conc < TQL
Tetrachloroethylene	55.1	µg/L	Discharge Conc < TQL
Toluene	3,359	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	2,160	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	5,927	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	47.1	µg/L	Discharge Conc < TQL
Trichloroethylene	200	µg/L	Discharge Conc < TQL
Vinyl Chloride	2.0	µg/L	Discharge Conc < TQL
2-Chlorophenol	1,106	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	1,188	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	1,304	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	158	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	1,064	µg/L	Discharge Conc < TQL
2-Nitrophenol	15,805	µg/L	Discharge Conc < TQL
4-Nitrophenol	4,544	µg/L	Discharge Conc < TQL
Pentachlorophenol	17.2	µg/L	Discharge Conc < TQL
Phenol	160,435	µg/L	Discharge Conc < TQL

2,4,6-Trichlorophenol	112	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Benzidine	0.007	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.3	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.3	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.3	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.3	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	2.4	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	95.9	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	533	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	277	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	15,426	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	0.3	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.3	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	1,620	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	691	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	1,442	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	1.68	µg/L	Discharge Conc < TQL
Diethyl Phthalate	7,902	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	4,939	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	217	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	3.99	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	3.99	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	2.88	µg/L	Discharge Conc < TQL
Pyrene	12,804	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorobenzene	0.022	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	19.8	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	9.88	µg/L	Discharge Conc < TQL
Hexachloroethane	112	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.059	µg/L	Discharge Conc < TQL
Isophorone	540	µg/L	Discharge Conc < TQL
Naphthalene	277	µg/L	Discharge Conc < TQL
Nitrobenzene	262	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.055	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.4	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	264	µg/L	Discharge Conc < TQL
Phenanthrene	9.88	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	257	µg/L	Discharge Conc < TQL

At Outfall 002 on Schuylkill River

Region ID: PA
Workspace ID: PA20201022144616517000
Clicked Point (Latitude, Longitude): 40.09147, -75.32147
Time: 2020-10-22 10:46:36 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1770	square miles
BSLOPD	Mean basin slope measured in degrees	5.5196	degrees
ROCKDEP	Depth to rock	4.5	feet
URBAN	Percentage of basin with urban development	10.0528	percent
PRECIP	Mean Annual Precipitation	46	inches

Parameter Code	Parameter Description	Value	Unit
STRDEN	Stream Density -- total length of streams divided by drainage area	1.5	miles per square mile
CARBON	Percentage of area of carbonate rock	13.84	percent

Low-Flow Statistics Parameters[49 Percent (866 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	5.5196	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.5	feet	4.13	5.21
URBAN	Percent Urban	10.0528	percent	0	89

Low-Flow Statistics Parameters[51 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	1.5	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	13.84	percent	0	99

Low-Flow Statistics Disclaimers[49 Percent (866 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[49 Percent (866 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	271	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 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 Percent (905 square miles) Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	666	ft^3/s
30 Day 2 Year Low Flow	782	ft^3/s
7 Day 10 Year Low Flow	447	ft^3/s
30 Day 10 Year Low Flow	524	ft^3/s
90 Day 10 Year Low Flow	637	ft^3/s

Low-Flow Statistics Flow Report[Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	553	ft^3/s
30 Day 2 Year Low Flow	662	ft^3/s
7 Day 10 Year Low Flow	361	ft^3/s
30 Day 10 Year Low Flow	427	ft^3/s
90 Day 10 Year Low Flow	539	ft^3/s

Low-Flow Statistics Citations

Permit No. PA0026085

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.02
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Matsunk WPCC

Permit No.: PA0026085

Replicate No.	Test Completion Date: 4/3/2017 Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	0	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	0.900	1.000
Std Dev.	0.316	0.000
# Replicates	10	10
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/6/2018 Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	0
6	1	1
7	1	1
8	0	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	0.900	0.900
Std Dev.	0.316	0.316
# Replicates	10	10
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

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

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

Permit No. PA0026085

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.02
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Matsunk WPCC

Permit No.: PA0026085

Replicate No.	Test Completion Date 4/3/2017 Control	TIWC
1	34	39
2	36	39
3	32	39
4	44	38
5	19	38
6	29	40
7	9	38
8	30	42
9	37	33
10	32	38
11		
12		
13		
14		
15		
Mean	30.200	38.400
Std Dev.	9.818	2.271
# Replicates	10	10

T-Test Result	6.4634
Deg. of Freedom	15
Critical T Value	0.8662
Pass or Fail	PASS

Replicate No.	Test Completion Date 11/6/2018 Control	TIWC
1	32	26
2	36	34
3	36	33
4	28	34
5	36	0
6	35	35
7	30	37
8	0	26
9	40	34
10	41	39
11		
12		
13		
14		
15		
Mean	31.400	29.800
Std Dev.	11.749	11.272
# Replicates	10	10

T-Test Result	1.3813
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	PASS

Replicate No.	Test Completion Date 11/4/2019 Control	TIWC
1	26	33
2	27	36
3	22	29
4	28	40
5	39	35
6	27	32
7	35	30
8	30	19
9	33	38
10	34	34
11		
12		
13		
14		
15		
Mean	30.100	32.600
Std Dev.	5.087	5.854
# Replicates	10	10

T-Test Result	4.5370
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	PASS

Replicate No.	Test Completion Date 12/8/2020 Control	TIWC
1	38	40
2	40	38
3	36	39
4	35	35
5	38	36
6	34	41
7	38	36
8	38	36
9	26	44
10	34	34
11		
12		
13		
14		
15		
Mean	35.700	37.900
Std Dev.	3.945	3.107
# Replicates	10	10

T-Test Result	8.1988
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Permit No. PA0026085

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.02
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Matsunk WPCC

Permit No.: PA0026085

Replicate No.	Test Completion Date: 4/4/2017 Control	TIWC
1	10	10
2	10	10
3	9	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	10.000
Std Dev.	0.500	0.000
# Replicates	4	4
T-Test Result	12.5523	
Deg. of Freedom	3	
Critical T Value	0.7649	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/6/2018 Control	TIWC
1	10	9
2	10	9
3	10	9
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	9.250
Std Dev.	0.000	0.500
# Replicates	4	4
T-Test Result	5.6643	
Deg. of Freedom	3	
Critical T Value	0.7649	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/5/2019 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	

Replicate No.	Test Completion Date: 12/8/2020 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	

Permit No. PA0026085

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.02
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Matsunk WPCC

Permit No.: PA0026085

Replicate No.	Test Completion Date: 4/4/2017 Control	TIWC
1	0.376	0.412
2	0.361	0.474
3	0.379	0.452
4	0.366	0.374
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.371	0.428
Std Dev.	0.008	0.044
# Replicates	4	4
T-Test Result	6.7229	
Deg. of Freedom	3	
Critical T Value	0.7649	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/6/2018 Control	TIWC
1	0.531	0.444
2	0.503	0.447
3	0.53	0.497
4	0.472	0.524
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.509	0.478
Std Dev.	0.028	0.039
# Replicates	4	4
T-Test Result	4.3391	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/5/2019 Control	TIWC
1	0.36	0.437
2	0.356	0.398
3	0.464	0.407
4	0.401	0.382
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.395	0.406
Std Dev.	0.050	0.023
# Replicates	4	4
T-Test Result	4.9644	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 12/8/2020 Control	TIWC
1	0.411	0.463
2	0.466	0.354
3	0.489	0.428
4	0.388	0.429
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.439	0.419
Std Dev.	0.047	0.046
# Replicates	4	4
T-Test Result	3.0953	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

WET Summary and Evaluation

Facility Name	Matsunk WPCC
Permit No.	PA0026085
Design Flow (MGD)	5.5
Q_{7-10} Flow (cfs)	271
PMF_a	0.065
PMF_o	0.453

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	4/3/17	11/6/18	11/4/19	12/8/20
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	4/3/17	11/6/18	11/4/19	12/8/20
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	4/4/17	11/6/18	11/5/19	12/8/20
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	4/4/17	11/6/18	11/5/19	12/8/20
Pimephales	Growth	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	Chronic	
TIWC	6	% Effluent
Dilution Series	3, 6, 30, 60, 100	% Effluent
Permit Limit	None	
Permit Limit Species		