pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0043974**
Facility Type	**Municipal**	APS ID	**1116962**
Major / Minor	**Major**	Authorization ID	**1490730**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Valley Forge Sewer Authority**	Facility Name	**Valley Forge Sewer Authority WWTP**
Applicant Address	333 Pawling Road	Facility Address	333 Pawling Road
	Phoenixville, PA 19460-2656		Phoenixville, PA 19460-2656
Applicant Contact	Richard Taylor	Facility Contact	Matthew Jackson
Applicant Phone	(610) 935-1553	Facility Phone	(610) 935-1553
Client ID	85898	Site ID	255005
Ch 94 Load Status	Not Overloaded	Municipality	Schuylkill Township
Connection Status	Self Imposed Connection Prohibition	County	Chester
Date Application Received	June 26, 2024	EPA Waived?	No
Date Application Accepted		If No, Reason	Major Facility, Pretreatment

Purpose of Application: Permit Renewal

Summary of Review

The applicant requests renewal of an NPDES permit to discharge treated sewage from Valley Forge Sewer Authority WWTP.

The plant consists of two primary clarifiers, two aeration tanks, four final clarifiers, UV disinfection, three gravity thickeners and three centrifuges. Sodium Hypochlorite is used for back up disinfection and for return activated sludge.

No upgrades are proposed at this renewal.

Total Nitrogen reduction will require addition of a third aeration tank and creation of anoxic zones in each aeration tank – a future project. There are no facilities in the current plant for Total Phosphorus removal – it would most likely be accomplished by chemical addition or biological removal – a concept study would be required to determine the most cost-effective method.

The following municipalities are served by this facility: Charlestown Twp, Easttown Twp, East Pikeland Twp, East Whiteland Twp, Malvern Borough, Schuylkill Twp, Tredyffrin Twp, and Willistown Twp.

The facility also accepts hauled in Municipal and Residual wastes.
Biosolids produced at the facility are disposed by land application at various locations.

Approve	Deny	Signatures	Date
X		*Sara Abraham* Sara Reji Abraham, E.I.T. / Project Manager	August 20, 2024
X		*Pravin Patel* Pravin C. Patel, P.E. / Environmental Engineer Manager	08/20/2024

Summary of Review

Facility has an approved pretreatment program and is required to continue implementing the program.
The following are the Significant Industrial Users (SIUs) contributing their wastewater to the VFSA system:

1. Beyond Meat
2. Fujirebio Diagnostics, Inc.
3. Catalent Micron Technologies, Inc.
4. Janssen Biotech, Inc.
5. Loparex
6. Main Line Health Paoli Hospital
7. Accupac, Inc.
8. Colorcon

According to the permittee, VFSA treatment plant is not currently in or projected to be in a hydraulic or organic overload condition.

Based on the review of the DMRs, the discharge is in compliance with the permit limits most of the time.

In 2002 the Department conducted a Schuylkill River Reallocation Study for all the dischargers between Black Run Dam and Norristown Dam. That time the permit was prepared with CBOD5, NH3-N and DO limits based on the study. Mass loading limits are still the same. Concentration limits were adjusted during the 2015 permit issuance when the permitted flow was increased.

A new WQM model run was conducted which also provides the same limits for CBOD5, NH3-N and DO for the draft permit.

Influent monitoring for BOD5, CBOD5 and TSS are continued based on Chapter 94 requirement and to check compliance with the 85% removal requirement for secondary treatment.

In April 2007, EPA established the PCB TMDL for Schuylkill River to address the PCB impairment of Schuylkill River. The TMDL was established using a water quality criterion of 0.044 ng/l for PCBs. This facility is included in the TMDL with an assigned WLA of $1.82 * 10^{-3}$ g/day. The review of 2023 sampling results show elevated PCB concentration in the discharge. VFSA is currently unaware of PCB sources within its sewer network system. VFSA may perform more trackback events and consider sampling the hauled in waste in 2024 as part of its trackback program. Special condition requiring the implementation of PMP and annual sampling for dry weather and wet weather, is included in Part C of the permit similar to the existing condition.

Sludge use and disposal description and location: Biosolids produced at the facility is land applied at various sites.

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.

Act 14 Notifications:

Schuylkill Township - February 15, 2024
Chester County - February 15, 2024

Summary of Review

Permit Conditions:

A. No Stormwater
B. Acquire Necessary Property Rights
C. Proper Sludge Disposal
D. No unconventional oil and gas wastewater
E. Chlorine Optimization
F. Operator Notification
G. TMDL/WLA Analysis
H. Fecal Coliform Reporting
I. Operations and Maintenance Plan
J. Hauled-in Waste Condition
K. Pretreatment Program Implementation
L. Solids Management
M. WET Testing Requirements
N. Stormwater Requirements
O. PCB/PMP Requirements

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	11.75
Latitude	40º 7' 5.67"	Longitude	-75º 28' 1.87"
Quad Name		Quad Code	
Wastewater Description:	Treated Sewage Effluent		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	00833
NHD Com ID	26003372	RMI	32.0
Drainage Area	1690 sq.mi.		
Q_{7-10} Flow (cfs)	343	Q_{7-10} Basis	PA stream stats (previous fact sheet)
Elevation (ft)	69.4		
Watershed No.	3-F	Chapter 93 Class.	WWF, MF
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final, 04/07/2007	Name	Schuylkill River PCB TMDL

Treatment Facility Summary

Treatment Facility Name: Valley Forge Sewer Authority WWTP

WQM Permit No.	Issuance Date
1599422	06/19/2000
1599422 A2	12/28/2010

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Ultraviolet	11.75

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
11.75	26,700	Not Overloaded	Centrifugation	Land Application

Compliance History

DMR Data for Outfall 001 (from June 1, 2023 to May 31, 2024)

Parameter	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23
Flow (MGD) Average Monthly	6.49	9.583	8.95	7.57	9.756	7.87	4.96	5.16	5.41	5.31	5.95	5.68
Flow (MGD) Daily Maximum	7.22	19.130	12.07	8.66	19.74	17.99	7.45	6.06	7.83	5.91	7.72	10.51
pH (S.U.) Instantaneous Minimum	6.9	6.9	7.0	7.0	6.6	6.7	6.8	7.0	6.9	7.0	6.9	6.8
pH (S.U.) Instantaneous Maximum	7.3	7.6	7.5	7.6	7.9	7.3	7.2	7.4	7.4	7.4	8.0	7.4
DO (mg/L) Instantaneous Minimum	7.0	7.2	8.7	8.7	8.3	6.5	8.0	7.5	7.5	7.3	7.5	7.8
DO (mg/L) Average Monthly	8.2	8.7	9.5	9.8	9.1	9.1	8.5	8.3	8.0	7.7	7.8	8.1
TRC (mg/L) Average Monthly	GG	< 0.02	GG	GG	GG	GG	GG	GG	GG	< 0.02	GG	< 0.02
TRC (mg/L) Instantaneous Maximum	GG	< 0.02	GG	GG	GG	GG	GG	GG	GG	0.02	GG	< 0.02
CBOD5 (lbs/day) Average Monthly	443	412	< 321	392	451	443	< 331	330	238	201	242	231
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly	7554	6897	9690	7568	7452	6956	7809	6663	6775	6371	7098	6775
CBOD5 (lbs/day) Weekly Average	515	572	367	482	680	526	439	463	303	235	278	254
CBOD5 (mg/L) Average Monthly	8	5	< 4	6	5	7	< 8	8	5	5	5	5
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	130	89	94	123	88	108	167	144	143	129	131	140
CBOD5 (mg/L) Weekly Average	10	6	5	7	6	8	9	10	7	5	5	6

BOD5 (lbs/day) Raw Sewage Influent Average Monthly	8587	7404	9581	7846	7814	7299	8086	6311	6696	6352	7621	7629
BOD5 (mg/L) Raw Sewage Influent Average Monthly	148	96	94	124	92	114	173	136	141	126	142	157
TSS (lbs/day) Average Monthly	653	726	593	654	622	837	574	612	320	287	275	352
TSS (lbs/day) Raw Sewage Influent Average Monthly	11122	9898	13312	10618	10484	11104	9497	10963	9651	9267	9045	10016
TSS (lbs/day) Weekly Average	877	1306	658	926	918	1139	802	914	363	338	323	413
TSS (mg/L) Average Monthly	12	9	8	10	7	12	14	14	7	6	6	8
TSS (mg/L) Raw Sewage Influent Average Monthly	191	127	131	167	123	173	206	236	205	168	167	205
TSS (mg/L) Weekly Average	18	11	9	14	9	14	16	20	8	8	7	9
Total Dissolved Solids (mg/L) Average Monthly	525	416	441	524	449	432	528	562	581	638	554	590
Total Dissolved Solids (mg/L) Daily Maximum	610	460	486	590	522	480	582	580	654	726	600	646
Fecal Coliform (No./100 ml) Geometric Mean	> 27	< 13	< 13	< 17	> 14	< 21	14	18	< 13	< 7	< 8	< 4
Fecal Coliform (No./100 ml) 90% of Samples		405	146	335	573	742	87	292				
Fecal Coliform (No./100 ml) Instantaneous Maximum	> 2420								1554	162	2420	132
UV Transmittance (%) Daily Minimum	46.5	49.4	47.7	58	40.6	38.8	49.2	45.3	46.4	56	42.4	42.6
Total Nitrogen (mg/L) Average Monthly	22.6	15.3	17.4	< 21	16.6	18.8	< 26	< 26.2	< 24.6	< 25.6	< 18.3	24.6

Ammonia (lbs/day) Average Monthly	< 31	< 69	< 42	< 32	< 86	< 63	< 21	< 27	< 23	< 22	< 28	< 43
Ammonia (mg/L) Average Monthly	< 0.6	< 0.7	< 0.6	< 0.5	< 0.9	< 0.8	< 0.5	< 0.6	< 0.5	< 0.5	< 0.6	< 0.9
Total Phosphorus (mg/L) Average Monthly	5.8	2.5	3.9	3.9	2.9	3.2	4.5	3.5	5.3	6	5.5	7
Total Copper (lbs/day) Average Monthly	0.75	0.61	0.82	0.76	0.57	0.85	0.54	0.84	0.42	0.40	0.84	0.31
Total Copper (lbs/day) Daily Maximum	0.75	0.61	0.82	0.76	0.57	0.85	0.54	0.84	0.42	0.40	0.84	0.31
Total Copper (mg/L) Average Monthly	0.013	0.0074	0.011	0.012	0.0092	0.017	0.014	0.018	0.0097	0.0090	0.017	0.0066
Total Copper (mg/L) Daily Maximum	0.013	0.0074	0.011	0.012	0.0092	0.017	0.014	0.018	0.0097	0.0090	0.017	0.0066
Sulfate (mg/L) Average Quarterly			34.5			47.6			49.5			43.9
Chloride (mg/L) Average Quarterly			143			134			151			145
Bromide (mg/L) Average Quarterly			< 2.50			< 1.00			< 1.0			< 1.00
PCBs (Dry Weather) (pg/L) Daily Maximum						893						
PCBs (Wet Weather) (pg/L) Daily Maximum						13250						
Chronic WET - Ceriodaphnia Survival (TUc) Daily Maximum			GG			8.3			GG			GG
Chronic WET - Ceriodaphnia Reproduction (TUc) Daily Maximum			GG			8.3			GG			GG
Chronic WET - Pimephales Survival (TUc) Daily Maximum			GG			8.3			GG			GG
Chronic WET - Pimephales Growth (TUc) Daily Maximum			GG			8.3			GG			GG

Compliance History

Effluent Violations for Outfall 001, from: July 1, 2023 to: May 31, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	05/31/24	Geo Mean	> 27	No./100 ml	200	No./100 ml
Fecal Coliform	01/31/24	Geo Mean	> 14	No./100 ml	200	No./100 ml
Fecal Coliform	05/31/24	IMAX	> 2420	No./100 ml	1000	No./100 ml
Fecal Coliform	07/31/23	IMAX	2420	No./100 ml	1000	No./100 ml
Fecal Coliform	09/30/23	IMAX	1554	No./100 ml	1000	No./100 ml

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 11.75
Latitude 40º 7' 6.55" **Longitude** -75º 28' 2.12"
Wastewater Description: Treated Sewage Effluent

Technology-Based Limitations

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

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

Proposed Effluent Limitations

Parameter	Limit (mg/l)	SBC	Model
CBOD5	16	Average Monthly	WQM 7.0
Total Suspended Solids	30	Average Monthly	DRBC
Total Dissolved Solids	1000	Average Monthly	DRBC
NH3-N	6.3	Average Monthly	WQM 7.0
DO	5.0	Inst.Min.	WQM 7.0
pH	Within 6.0 to 9.0 Std. all time		Ch. 93
Fecal Coliform	200/1000	Geo.mean/Imax	Ch.93 and DRBC
TRC*	0.42	Average Monthly	Spreadsheet
UV Transmittance	Report	Min.	Data Collection/SOP
Total Phosphorus	Report	Average Monthly	Data Collection/SOP
Total Nitrogen	Report	Average Monthly	Data Collection/SOP

* monitoring needed only during the use of chlorine.
** All these limits are similar to the existing limits.

A “Reasonable Potential Analysis” determined the following parameters were candidates for limitations or monitoring:

Parameter	Limit (mg/l)	SBC	Model
Total Copper *	0.027	Average Monthly	TMS
Total Zinc**	Report	Average Monthly	TMS

* Total Copper limit is same as in the existing permit. A stream hardness of 132 mg/l (from application) and discharge hardness of 177 mg/l (from application) is used in the TMS run.
**This is a new parameter which is included based on the TMS run.

E. Coli

Monitoring for E. Coli is included in the draft permit according to the DEP SOP guidance (Chapter 92.a.61). This is a new requirement and is consistent with the requirements of other similar discharges in the area.

PFAS:

Sample results show detection of the parameters PFOA, PFOS, and PFBS in the discharge. HFPO-DA is reported as non-detect. According to our new guidance, quarterly monitoring of these parameters are included in the draft permit. The permittee may discontinue monitoring for these parameters if the results in 4 consecutive monitoring periods indicate non-detect results at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittee must enter a No Discharge Indicator (NODI) Code of “GG” on DMRs.

Anti-Backsliding

Monitoring for Chloride, Bromide, and Sulfate are eliminated. Discharge concentrations for Chloride and Sulfate are much lower than the criteria and there is no criterion for Bromide. Historically PADEP was implementing monitoring for these special parameters and since PADEP has sufficient data from the last permit term, a monitoring is no longer implemented unless required by other agencies, e.g. DRBC. Therefore, it is recommended that the existing monitoring requirements for Chloride, Sulfate and Bromide to be removed. This is justified by the anti-backsliding prohibition exception as stated in 40 CFR 122.44(l)(2)(i)(B)(1).

See the attached TMS, WQM 7.0 and TRC reports:

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Valley Forge Sewer Authority WWTP** NPDES Permit No.: **PA0043974** Outfall No.: **001**

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

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
11.75	177	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		726									
	Chloride (PWS)	mg/L		168									
	Bromide	mg/L		1.3									
	Sulfate (PWS)	mg/L		68.3									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		33									
	Total Antimony	µg/L		1									
	Total Arsenic	µg/L		1.5									
	Total Barium	µg/L		55									
	Total Beryllium	µg/L		0.5									
	Total Boron	µg/L		210									
	Total Cadmium	µg/L		0.2									
	Total Chromium (III)	µg/L		1									
	Hexavalent Chromium	µg/L		0.52									
	Total Cobalt	µg/L	<	2.5									
	Total Copper	µg/L		26									
	Free Cyanide	µg/L		2.8									
	Total Cyanide	µg/L		5.1									
	Dissolved Iron	µg/L		87									
	Total Iron	µg/L		180									
	Total Lead	µg/L		1									
	Total Manganese	µg/L		24									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		3.9									
	Total Phenols (Phenolics) (PWS)	µg/L		3									
	Total Selenium	µg/L		2									
	Total Silver	µg/L		0.5									
	Total Thallium	µg/L	<	0.5									
	Total Zinc	µg/L		61									
	Total Molybdenum	µg/L		4.4									
	Acrolein	µg/L	<	1.3									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	2									
	Benzene	µg/L	<	0.12									
	Bromoform	µg/L	<	0.37									
	Carbon Tetrachloride	µg/L	<	0.23									
	Chlorobenzene	µg/L		0.28									
	Chlorodibromomethane	µg/L	<	0.25									
	Chloroethane	µg/L	<	0.47									
	2-Chloroethyl Vinyl Ether	µg/L	<	3.1									

Group 3	Chloroform	µg/L		0.24									
	Dichlorobromomethane	µg/L	<	0.18									
	1,1-Dichloroethane	µg/L	<	0.05									
	1,2-Dichloroethane	µg/L	<	0.12									
	1,1-Dichloroethylene	µg/L	<	0.13									
	1,2-Dichloropropane	µg/L	<	0.26									
	1,3-Dichloropropylene	µg/L	<	0.47									
	1,4-Dioxane	µg/L	<	0.48									
	Ethylbenzene	µg/L	<	0.2									
	Methyl Bromide	µg/L	<	0.42									
	Methyl Chloride	µg/L		0.41									
	Methylene Chloride	µg/L	<	0.14									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.38									
	Tetrachloroethylene	µg/L	<	0.38									
	Toluene	µg/L	<	0.27									
	1,2-trans-Dichloroethylene	µg/L	<	0.24									
	1,1,1-Trichloroethane	µg/L	<	0.12									
	1,1,2-Trichloroethane	µg/L	<	0.13									
	Trichloroethylene	µg/L	<	0.5									
	Vinyl Chloride	µg/L	<	0.33									
Group 4	2-Chlorophenol	µg/L	<	0.39									
	2,4-Dichlorophenol	µg/L	<	0.59									
	2,4-Dimethylphenol	µg/L	<	0.49									
	4,6-Dinitro-o-Cresol	µg/L	<	1.4									
	2,4-Dinitrophenol	µg/L	<	3.5									
	2-Nitrophenol	µg/L	<	0.68									
	4-Nitrophenol	µg/L	<	1.4									
	p-Chloro-m-Cresol	µg/L	<	0.59									
	Pentachlorophenol	µg/L	<	1.8									
	Phenol	µg/L	<	0.25									
	2,4,6-Trichlorophenol	µg/L	<	0.96									
Group 5	Acenaphthene	µg/L	<	0.4									
	Acenaphthylene	µg/L	<	0.39									
	Anthracene	µg/L	<	0.4									
	Benzidine	µg/L	<	2.5									
	Benzo(a)Anthracene	µg/L	<	0.41									
	Benzo(a)Pyrene	µg/L	<	0.36									
	3,4-Benzofluoranthene	µg/L	<	0.4									
	Benzo(ghi)Perylene	µg/L	<	0.42									
	Benzo(k)Fluoranthene	µg/L	<	0.39									
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.44									
	Bis(2-Chloroethyl)Ether	µg/L	<	0.38									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.44									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	0.8									
	4-Bromophenyl Phenyl Ether	µg/L	<	0.45									
	Butyl Benzyl Phthalate	µg/L	<	0.58									
	2-Chloronaphthalene	µg/L	<	0.4									
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.4									
	Chrysene	µg/L	<	0.42									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.43									
	1,2-Dichlorobenzene	µg/L	<	0.37									
	1,3-Dichlorobenzene	µg/L	<	0.43									
	1,4-Dichlorobenzene	µg/L	<	0.43									
	3,3-Dichlorobenzidine	µg/L	<	1									
	Diethyl Phthalate	µg/L	<	0.56									
	Dimethyl Phthalate	µg/L	<	0.42									
	Di-n-Butyl Phthalate	µg/L	<	0.57									
	2,4-Dinitrotoluene	µg/L	<	0.46									
	2,6-Dinitrotoluene	µg/L	<	0.41									
	Di-n-Octyl Phthalate	µg/L	<	0.87									
	1,2-Diphenylhydrazine	µg/L	<	0.38									
	Fluoranthene	µg/L	<	0.45									
	Fluorene	µg/L	<	0.38									
	Hexachlorobenzene	µg/L	<	0.43									
	Hexachlorobutadiene	µg/L	<	0.49									
	Hexachlorocyclopentadiene	µg/L	<	0.73									
	Hexachloroethane	µg/L	<	0.37									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.4									

	Isophorone	µg/L	<	0.43										
	Naphthalene	µg/L	<	0.62										
	Nitrobenzene	µg/L	<	0.63										
	n-Nitrosodimethylamine	µg/L	<	1.1										
	n-Nitrosodi-n-Propylamine	µg/L	<	0.42										
	n-Nitrosodiphenylamine	µg/L	<	0.49										
	Phenanthrene	µg/L	<	0.39										
	Pyrene	µg/L	<	0.42										
	1,2,4-Trichlorobenzene	µg/L	<	0.42										
Group 6	Aldrin	µg/L	<	0.0068										
	alpha-BHC	µg/L	<	0.011										
	beta-BHC	µg/L	<	0.012										
	gamma-BHC	µg/L	<	0.012										
	delta BHC	µg/L	<	0.014										
	Chlordane	µg/L	<	0.068										
	4,4-DDT	µg/L	<	0.0068										
	4,4-DDE	µg/L	<	0.018										
	4,4-DDD	µg/L	<	0.018										
	Dieldrin	µg/L	<	0.011										
	alpha-Endosulfan	µg/L	<	0.0097										
	beta-Endosulfan	µg/L	<	0.011										
	Endosulfan Sulfate	µg/L	<	0.014										
	Endrin	µg/L	<	0.013										
	Endrin Aldehyde	µg/L	<	0.02										
	Heptachlor	µg/L	<	0.011										
	Heptachlor Epoxide	µg/L	<	0.0097										
	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	<	0.19										
	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 1.4, May 2023

Stream / Surface Water Information

Valley Forge Sewer Authority WWTP, NPDES Permit No. PA0043974, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Schuylkill River**

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	000833	32	69.4	1690			Yes
End of Reach 1	000833	27.5	58	1720			Yes

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

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	32	0.1	343									132	7		
End of Reach 1	27.5	0.1	348												

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	32														
End of Reach 1	27.5														

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Valley Forge Sewer Authority WWTP, NPDES Permit No. PA0043974, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.055 Analysis Hardness (mg/l): 154.13 Analysis pH: 7.00

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	1,525	
Total Antimony	0	0		0	1,100	1,100	2,237	
Total Arsenic	0	0		0	340	340	691	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	42,702	
Total Boron	0	0		0	8,100	8,100	16,471	
Total Cadmium	0	0		0	3.066	3.31	6.73	Chem Translator of 0.926 applied
Total Chromium (III)	0	0		0	812.034	2,570	5,225	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	33.1	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	193	
Total Copper	0	0		0	20.202	21.0	42.8	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	44.7	
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	103.091	142	288	Chem Translator of 0.728 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	3.35	Chem Translator of 0.85 applied
Total Nickel	0	0		0	675.176	677	1,376	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	6.770	7.96	16.2	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	132	
Total Zinc	0	0		0	169.064	173	352	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	6.1	
Acrylonitrile	0	0		0	650	650	1,322	
Benzene	0	0		0	640	640	1,301	

Bromoform	0	0		0	1,800	1,800	3,660	
Carbon Tetrachloride	0	0		0	2,800	2,800	5,694	
Chlorobenzene	0	0		0	1,200	1,200	2,440	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	36,602	
Chloroform	0	0		0	1,900	1,900	3,864	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	30,502	
1,1-Dichloroethylene	0	0		0	7,500	7,500	15,251	
1,2-Dichloropropane	0	0		0	11,000	11,000	22,368	
1,3-Dichloropropylene	0	0		0	310	310	630	
Ethylbenzene	0	0		0	2,900	2,900	5,897	
Methyl Bromide	0	0		0	550	550	1,118	
Methyl Chloride	0	0		0	28,000	28,000	56,936	
Methylene Chloride	0	0		0	12,000	12,000	24,401	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	2,033	
Tetrachloroethylene	0	0		0	700	700	1,423	
Toluene	0	0		0	1,700	1,700	3,457	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	13,827	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	6,100	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	6,914	
Trichloroethylene	0	0		0	2,300	2,300	4,677	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,139	
2,4-Dichlorophenol	0	0		0	1,700	1,700	3,457	
2,4-Dimethylphenol	0	0		0	660	660	1,342	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	163	
2,4-Dinitrophenol	0	0		0	660	660	1,342	
2-Nitrophenol	0	0		0	8,000	8,000	16,267	
4-Nitrophenol	0	0		0	2,300	2,300	4,677	
p-Chloro-m-Cresol	0	0		0	160	160	325	
Pentachlorophenol	0	0		0	8.723	8.72	17.7	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	935	
Acenaphthene	0	0		0	83	83.0	169	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	610	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.02	
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	61,003	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	9,150	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	549	
Butyl Benzyl Phthalate	0	0		0	140	140	285	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	

Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	1,667	
1,3-Dichlorobenzene	0	0		0	350	350	712	
1,4-Dichlorobenzene	0	0		0	730	730	1,484	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	8,134	
Dimethyl Phthalate	0	0		0	2,500	2,500	5,084	
Di-n-Butyl Phthalate	0	0		0	110	110	224	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	3,253	
2,6-Dinitrotoluene	0	0		0	990	990	2,013	
1,2-Diphenylhydrazine	0	0		0	15	15.0	30.5	
Fluoranthene	0	0		0	200	200	407	
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	20.3	
Hexachlorocyclopentadiene	0	0		0	5	5.0	10.2	
Hexachloroethane	0	0		0	60	60.0	122	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	20,334	
Naphthalene	0	0		0	140	140	285	
Nitrobenzene	0	0		0	4,000	4,000	8,134	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	34,568	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	610	
Phenanthrene	0	0		0	5	5.0	10.2	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	264	
Aldrin	0	0		0	3	3.0	6.1	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	0.95	0.95	1.93	
Chlordane	0	0		0	2.4	2.4	4.88	
4,4-DDT	0	0		0	1.1	1.1	2.24	
4,4-DDE	0	0		0	1.1	1.1	2.24	
4,4-DDD	0	0		0	1.1	1.1	2.24	
Dieldrin	0	0		0	0.24	0.24	0.49	
alpha-Endosulfan	0	0		0	0.22	0.22	0.45	
beta-Endosulfan	0	0		0	0.22	0.22	0.45	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.086	0.086	0.17	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.52	0.52	1.06	
Heptachlor Epoxide	0	0		0	0.5	0.5	1.02	
Toxaphene	0	0		0	0.73	0.73	1.48	

☑ ***CFC*** CCT (min): 720 PMF: 0.379 Analysis Hardness (mg/l): 137.51 Analysis pH: 7.00

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	1,795	
Total Arsenic	0	0		0	150	150	1,224	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	33,455	
Total Boron	0	0		0	1,600	1,600	13,056	
Total Cadmium	0	0		0	0.307	0.34	2.8	Chem Translator of 0.896 applied
Total Chromium (III)	0	0		0	96.208	112	913	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	84.8	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	155	
Total Copper	0	0		0	11.758	12.2	99.9	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	42.4	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	29,805	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.554	4.77	38.9	Chem Translator of 0.745 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	7.39	Chem Translator of 0.85 applied
Total Nickel	0	0		0	68.093	68.3	557	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	40.7	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	106	
Total Zinc	0	0		0	154.745	157	1,281	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	24.5	
Acrylonitrile	0	0		0	130	130	1,061	
Benzene	0	0		0	130	130	1,061	
Bromoform	0	0		0	370	370	3,019	
Carbon Tetrachloride	0	0		0	560	560	4,570	
Chlorobenzene	0	0		0	240	240	1,958	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	28,559	
Chloroform	0	0		0	390	390	3,182	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	25,296	
1,1-Dichloroethylene	0	0		0	1,500	1,500	12,240	
1,2-Dichloropropane	0	0		0	2,200	2,200	17,952	
1,3-Dichloropropylene	0	0		0	61	61.0	498	
Ethylbenzene	0	0		0	580	580	4,733	
Methyl Bromide	0	0		0	110	110	898	
Methyl Chloride	0	0		0	5,500	5,500	44,879	
Methylene Chloride	0	0		0	2,400	2,400	19,584	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	1,714	
Tetrachloroethylene	0	0		0	140	140	1,142	
Toluene	0	0		0	330	330	2,693	

1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	11,424	
1,1,1-Trichloroethane	0	0		0	610	610	4,978	
1,1,2-Trichloroethane	0	0		0	680	680	5,549	
Trichloroethylene	0	0		0	450	450	3,672	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	898	
2,4-Dichlorophenol	0	0		0	340	340	2,774	
2,4-Dimethylphenol	0	0		0	130	130	1,061	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	131	
2,4-Dinitrophenol	0	0		0	130	130	1,061	
2-Nitrophenol	0	0		0	1,600	1,600	13,056	
4-Nitrophenol	0	0		0	470	470	3,835	
p-Chloro-m-Cresol	0	0		0	500	500	4,080	
Pentachlorophenol	0	0		0	6.693	6.69	54.6	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	743	
Acenaphthene	0	0		0	17	17.0	139	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	481	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.82	
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	48,959	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	7,425	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	441	
Butyl Benzyl Phthalate	0	0		0	35	35.0	286	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	1,306	
1,3-Dichlorobenzene	0	0		0	69	69.0	563	
1,4-Dichlorobenzene	0	0		0	150	150	1,224	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	6,528	
Dimethyl Phthalate	0	0		0	500	500	4,080	
Di-n-Butyl Phthalate	0	0		0	21	21.0	171	
2,4-Dinitrotoluene	0	0		0	320	320	2,611	
2,6-Dinitrotoluene	0	0		0	200	200	1,632	
1,2-Diphenylhydrazine	0	0		0	3	3.0	24.5	
Fluoranthene	0	0		0	40	40.0	326	
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	16.3	
Hexachlorocyclopentadiene	0	0		0	1	1.0	8.16	
Hexachloroethane	0	0		0	12	12.0	97.9	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	17,136	

Naphthalene	0	0		0	43	43.0	351	
Nitrobenzene	0	0		0	810	810	6,609	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	27,743	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	481	
Phenanthrene	0	0		0	1	1.0	8.16	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	212	
Aldrin	0	0		0	0.1	0.1	0.82	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0043	0.004	0.035	
4,4-DDT	0	0		0	0.001	0.001	0.008	
4,4-DDE	0	0		0	0.001	0.001	0.008	
4,4-DDD	0	0		0	0.001	0.001	0.008	
Dieldrin	0	0		0	0.056	0.056	0.46	
alpha-Endosulfan	0	0		0	0.056	0.056	0.46	
beta-Endosulfan	0	0		0	0.056	0.056	0.46	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.036	0.036	0.29	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.0038	0.004	0.031	
Heptachlor Epoxide	0	0		0	0.0038	0.004	0.031	
Toxaphene	0	0		0	0.0002	0.0002	0.002	

☑ ***THH*** CCT (min): 720 PMF: 0.379 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	45.7	
Total Arsenic	0	0		0	10	10.0	81.6	
Total Barium	0	0		0	2,400	2,400	19,584	
Total Boron	0	0		0	3,100	3,100	25,296	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	4	4.0	32.6	
Dissolved Iron	0	0		0	300	300	2,448	
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	8,160	
Total Mercury	0	0		0	0.050	0.05	0.41	

Total Nickel	0	0		0	610	610	4,978	
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	1.96	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	24.5	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	816	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	46.5	
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	269	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	68	68.0	555	
Methyl Bromide	0	0		0	100	100.0	816	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	465	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	816	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	81,598	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	30	30.0	245	
2,4-Dichlorophenol	0	0		0	10	10.0	81.6	
2,4-Dimethylphenol	0	0		0	100	100.0	816	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	16.3	
2,4-Dinitrophenol	0	0		0	10	10.0	81.6	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	32,639	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	571	
Anthracene	0	0		0	300	300	2,448	
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	

Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	1,632	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	0.82	
2-Chloronaphthalene	0	0		0	800	800	6,528	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	1,000	1,000	8,160	
1,3-Dichlorobenzene	0	0		0	7	7.0	57.1	
1,4-Dichlorobenzene	0	0		0	300	300	2,448	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	4,896	
Dimethyl Phthalate	0	0		0	2,000	2,000	16,320	
Di-n-Butyl Phthalate	0	0		0	20	20.0	163	
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	20	20.0	163	
Fluorene	0	0		0	50	50.0	408	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	4	4.0	32.6	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	34	34.0	277	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	81.6	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	163	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.57	
Aldrin	0	0		0	N/A	N/A	N/A	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	4.2	4.2	34.3	
Chlordane	0	0		0	N/A	N/A	N/A	
4,4-DDT	0	0		0	N/A	N/A	N/A	
4,4-DDE	0	0		0	N/A	N/A	N/A	
4,4-DDD	0	0		0	N/A	N/A	N/A	
Dieldrin	0	0		0	N/A	N/A	N/A	
alpha-Endosulfan	0	0		0	20	20.0	163	
beta-Endosulfan	0	0		0	20	20.0	163	
Endosulfan Sulfate	0	0		0	20	20.0	163	
Endrin	0	0		0	0.03	0.03	0.24	
Endrin Aldehyde	0	0		0	1	1.0	8.16	

Heptachlor	0	0		0	N/A	N/A	N/A	
Heptachlor Epoxide	0	0		0	N/A	N/A	N/A	
Toxaphene	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 720 PMF: 0.549 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	2.27	
Benzene	0	0		0	0.58	0.58	22.0	
Bromoform	0	0		0	7	7.0	265	
Carbon Tetrachloride	0	0		0	0.4	0.4	15.2	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	30.3	
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	0.95	0.95	36.0	
1,2-Dichloroethane	0	0		0	9.9	9.9	375	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	34.1	
1,3-Dichloropropylene	0	0		0	0.27	0.27	10.2	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	

Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	758	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	7.58	
Tetrachloroethylene	0	0		0	10	10.0	379	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.55	0.55	20.9	
Trichloroethylene	0	0		0	0.6	0.6	22.7	
Vinyl Chloride	0	0		0	0.02	0.02	0.76	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	1.14	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	56.9	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.0001	0.0001	0.004	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.038	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.004	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.038	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.38	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	1.14	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	12.1	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	4.55	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.004	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	1.9	
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	1.9	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	1.9	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	1.14	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.003	

Hexachlorobutadiene	0	0		0	0.01	0.01	0.38	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	3.79	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.038	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.027	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.19	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	125	
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	
Aldrin	0	0		0	0.0000008	8.00E-07	0.00003	
alpha-BHC	0	0		0	0.0004	0.0004	0.015	
beta-BHC	0	0		0	0.008	0.008	0.3	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0003	0.0003	0.011	
4,4-DDT	0	0		0	0.00003	0.00003	0.001	
4,4-DDE	0	0		0	0.00002	0.00002	0.0008	
4,4-DDD	0	0		0	0.0001	0.0001	0.004	
Dieldrin	0	0		0	0.000001	0.000001	0.00004	
alpha-Endosulfan	0	0		0	N/A	N/A	N/A	
beta-Endosulfan	0	0		0	N/A	N/A	N/A	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	N/A	N/A	N/A	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.000006	0.000006	0.0002	
Heptachlor Epoxide	0	0		0	0.00003	0.00003	0.001	
Toxaphene	0	0		0	0.0007	0.0007	0.027	

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Copper	2.69	4.19	27.4	42.8	68.6	µg/L	27.4	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	225	AFC	Discharge Conc > 10% WQBEL (no RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	978	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	45.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	81.6	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	19,584	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	10,557	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	2.8	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	913	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	21.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	124	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	28.7	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	2,448	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	29,805	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	38.9	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	8,160	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.41	µg/L	Discharge Conc < TQL
Total Nickel	557	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	40.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	10.4	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	1.96	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	3.91	µg/L	Discharge Conc < TQL
Acrylonitrile	2.27	µg/L	Discharge Conc < TQL
Benzene	22.0	µg/L	Discharge Conc < TQL
Bromoform	265	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	15.2	µg/L	Discharge Conc < TQL
Chlorobenzene	816	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	30.3	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	23,460	µg/L	Discharge Conc < TQL
Chloroform	46.5	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	36.0	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	375	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	269	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	34.1	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	10.2	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS

Ethylbenzene	555	µg/L	Discharge Conc < TQL
Methyl Bromide	717	µg/L	Discharge Conc < TQL
Methyl Chloride	36,494	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	758	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	7.58	µg/L	Discharge Conc < TQL
Tetrachloroethylene	379	µg/L	Discharge Conc < TQL
Toluene	465	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	816	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	3,910	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	20.9	µg/L	Discharge Conc < TQL
Trichloroethylene	22.7	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.76	µg/L	Discharge Conc < TQL
2-Chlorophenol	245	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	81.6	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	816	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	16.3	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	81.6	µg/L	Discharge Conc < TQL
2-Nitrophenol	10,427	µg/L	Discharge Conc < TQL
4-Nitrophenol	2,998	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	209	µg/L	Discharge Conc < TQL
Pentachlorophenol	1.14	µg/L	Discharge Conc < TQL
Phenol	32,639	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	56.9	µg/L	Discharge Conc < TQL
Acenaphthene	108	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	2,448	µg/L	Discharge Conc < TQL
Benzidine	0.004	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.038	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.004	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.038	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.38	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	1.14	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	1,632	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	12.1	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	352	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.82	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	6,528	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	4.55	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.004	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	1,069	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	57.1	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	951	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	1.9	µg/L	Discharge Conc < TQL
Diethyl Phthalate	4,896	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	3,258	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	143	µg/L	Discharge Conc < TQL

2,4-Dinitrotoluene	1.9	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	1.9	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	1.14	µg/L	Discharge Conc < TQL
Fluoranthene	163	µg/L	Discharge Conc < TQL
Fluorene	408	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.003	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.38	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	6.52	µg/L	Discharge Conc < TQL
Hexachloroethane	3.79	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.038	µg/L	Discharge Conc < TQL
Isophorone	277	µg/L	Discharge Conc < TQL
Naphthalene	182	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	81.6	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.027	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.19	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	125	µg/L	Discharge Conc < TQL
Phenanthrene	6.52	µg/L	Discharge Conc < TQL
Pyrene	163	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.57	µg/L	Discharge Conc < TQL
Aldrin	0.00003	µg/L	Discharge Conc < TQL
alpha-BHC	0.015	µg/L	Discharge Conc < TQL
beta-BHC	0.3	µg/L	Discharge Conc < TQL
gamma-BHC	1.24	µg/L	Discharge Conc < TQL
delta BHC	N/A	N/A	No WQS
Chlordane	0.011	µg/L	Discharge Conc < TQL
4,4-DDT	0.001	µg/L	Discharge Conc < TQL
4,4-DDE	0.0008	µg/L	Discharge Conc < TQL
4,4-DDD	0.004	µg/L	Discharge Conc < TQL
Dieldrin	0.00004	µg/L	Discharge Conc < TQL
alpha-Endosulfan	0.29	µg/L	Discharge Conc < TQL
beta-Endosulfan	0.29	µg/L	Discharge Conc < TQL
Endosulfan Sulfate	163	µg/L	Discharge Conc < TQL
Endrin	0.11	µg/L	Discharge Conc < TQL
Endrin Aldehyde	8.16	µg/L	Discharge Conc < TQL
Heptachlor	0.0002	µg/L	Discharge Conc < TQL
Heptachlor Epoxide	0.001	µg/L	Discharge Conc < TQL
Toxaphene	0.002	µg/L	Discharge Conc < TQL

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	**32.000**	69.40	1690.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	343.00	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
VFSA WWTP	PA0043974	0.0000	11.7500	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	16.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	6.30	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	**27.500**	58.00	1720.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	348.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

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												
32.000	343.00	0.00	343.00	18.1772	0.00048	1.16	332.69	286.85	0.94	0.294	20.25	7.00
Q1-10 Flow												
32.000	219.52	0.00	219.52	18.1772	0.00048	NA	NA	NA	0.74	0.371	20.38	7.00
Q30-10 Flow												
32.000	466.48	0.00	466.48	18.1772	0.00048	NA	NA	NA	1.10	0.249	20.19	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
03F	833	SCHUYLKILL RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
32.000	11.750	20.252	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
332.688	1.160	286.855	0.936
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.70	0.381	0.32	0.714
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.080	2.108	Tsivoglou	5
Reach Travel Time (days)			
0.294			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.029	2.67	0.31	8.07
0.059	2.64	0.30	8.06
0.088	2.61	0.30	8.05
0.118	2.58	0.29	8.04
0.147	2.56	0.29	8.04
0.176	2.53	0.28	8.04
0.206	2.50	0.27	8.03
0.235	2.47	0.27	8.03
0.264	2.44	0.26	8.03
0.294	2.41	0.26	8.03

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
32.000	VFSA WWTP	16.24	12.6	16.24	12.6	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
32.000	VFSA WWTP	1.86	6.3	1.86	6.3	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)		
32.00	VFSA WWTP	16	16	6.3	6.3	5	5	0	0

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)
32.000	VFSA WWTP	PA0043974	0.000	CBOD5	16		
				NH3-N	6.3	12.6	
				Dissolved Oxygen			5

TRC calculation spreadsheet

1A	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7			Valley Forge Sewer Authority		
4	343	= Q stream (cfs)		0.5	= CV Daily	
5	11.75	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		0.054	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		0.379	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
		= % Factor of Safety (FOS)			=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 0.344		1.3.2.iii	WLA cfc = 2.235
12	PENTOXSD TRG	5.1a	LTAMULT afc = 1.000		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 0.344		5.1d	LTA_cfc = 1.299
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.423		AFC	
18			INST MAX LIMIT (mg/l) = 0.516			

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)**

Development of Effluent Limitations

Outfall No.	002	**Design Flow (MGD)**	0
Latitude	40º 17' 0.00"	**Longitude**	-75º 27' 50.00"
Wastewater Description:	Stormwater		

According to the permittee there is no discharge from Outfall 002.
Stormwater monitoring is only needed upon request similar to the existing permit.

Whole Effluent Toxicity (WET)

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

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

The dilution series used for the tests was: 100%, 56%, 12%, 6%, and 3%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 12%.

WET Summary and Evaluation

Facility Name	Valley Forge Sewer Authority WWTP
Permit No.	PA0043974
Design Flow (MGD)	11.75
Q_{7-10} Flow (cfs)	343
PMF_a	0.055
PMF_c	0.379

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/17/20	10/24/21	11/1/22	10/23/23
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/17/20	10/24/21	11/1/22	12/4/23
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/17/20	10/26/21	11/1/22	10/24/23
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/17/20	10/26/21	11/1/22	10/24/23
Pimephales	Growth	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**
TIWC	**12** % Effluent
Dilution Series	**3, 6, 12, 56, 100** % Effluent
Permit Limit	**None**
Permit Limit Species	

Based on the review of the WET test reports, test of significant toxicity (TST) was performed using DEP's WET Analysis Spreadsheet. There is no reasonable potential, and no WET limits are recommended. The standard WET condition based on the DEP WET SOP is incorporated in Part C of the draft permit.

Proposed Effluent Limitations and Monitoring Requirements

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	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	5.0 Inst Min	Report	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.42	XXX	0.52	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - Apr 30	1918	3069	XXX	20	30 Wkly Avg	40	1/day	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) May 1 - Oct 31	1535	2302	XXX	16	24 Wkly Avg	32	1/day	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	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 Suspended Solids	2939	4410	XXX	30	45 Wkly Avg	60	1/day	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	1000	2000	2500	1/week	24-Hr Composite
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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
Ultraviolet light transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/week	Calculation
Ammonia-Nitrogen Nov 1 - Apr 30	1228	XXX	XXX	12.5	XXX	25	1/day	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	614	XXX	XXX	6.3	XXX	12.5	1/day	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Copper, Total	2.69	4.19 Daily Max	XXX	0.027	0.043	0.068	1/month	24-Hr Composite
Zinc, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	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
PFOA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFOS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFBS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
HFPO-DA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Toxicity, Chronic - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit	24-Hr Composite
Toxicity, Chronic - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit	24-Hr Composite
Toxicity, Chronic - Pimephales Survival (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit	24-Hr Composite
Toxicity, Chronic - Pimephales Growth (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit	24-Hr Composite

Proposed Effluent Limitations and Monitoring Requirements

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	Upon Request	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	XXX	Report	XXX	Upon Request	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	XXX	Report	XXX	Upon Request	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	Upon Request	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	Upon Request	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	XXX	Report	XXX	Upon Request	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	Upon Request	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report	XXX	Upon Request	Grab
Iron, Dissolved	XXX	XXX	XXX	XXX	Report	XXX	Upon Request	Grab

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