pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0013129**
Facility Type	**Industrial**	APS ID	**276529**
Major / Minor	**Major**	Authorization ID	**1387039**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**Carpenter Tech Corp**	Facility Name	**Carpenter Technology Corporation**
Applicant Address	PO Box 14662	Facility Address	101 Bern Street
	Reading, PA 19612-4662		Reading, PA 19601-1203
Applicant Contact	Michael Hart	Facility Contact	Michael Hart
Applicant Phone	(610) 208-2470	Facility Phone	(610) 208-2470
Client ID	77325	Site ID	445262
SIC Code	3315	Municipality	Reading City
SIC Description	Manufacturing - Steel Wire And Related Products	County	Berks
Date Application Received	March 1, 2022	EPA Waived?	No
Date Application Accepted	March 11, 2022	If No, Reason	Major Facility

Purpose of Application: This is an application for NPDES renewal.

Approve	Deny	Signatures	Date
X		Nicholas Hong, P.E. / Environmental Engineer Nick Hong (via electronic signature)	December 19, 2024
X		Daniel W. Martin, P.E. / Environmental Engineer Manager *Daniel W. Martin*	January 2, 2025
X		Maria D. Bebenek, P.E. / Environmental Program Manager *Maria D. Bebenek*	January 2, 2025

Summary of Review

The application submitted by the applicant requests a NPDES renewal permit for the Carpenter Technology Corporation located at 101 Bern Street, Reading, PA 19601 in Berks County, municipality of Reading City. The existing permit became effective on September 1, 2017 and expired on August 31, 2022. The application for renewal was received by DEP Southcentral Regional Office (SCRO) on March 1, 2022.

The purpose of this Fact Sheet is to present the basis of information used for establishing the proposed NPDES permit effluent limitations. The Fact Sheet includes a description of the facility, a description of the facility's receiving waters, a description of the facility's receiving waters attainment/non-attainment assessment status, and a description of any changes to the proposed monitoring/sampling frequency. Section 7 provides the justification for the proposed NPDES effluent limits derived from technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), total maximum daily loading (TMDL), antidegradation, anti-backsliding, and/or whole effluent toxicity (WET). A brief summary of the outlined descriptions has been included in the Summary of Review section.

The subject facility has multiple outfalls. Internal Outfall 901 is one of the monitoring points for the 1.45 MGD (design flow). The annual average flow rate is 0.92 MGD. The applicant does not anticipate any proposed upgrades to the treatment facility in the next five years. The NPDES application has been processed as a Major Industrial Wastewater Facility (< 250 MGD) due to the type of wastewater and the design flow rate for the facility. The applicant disclosed the Act 14 requirement to Berks County Commissioners, Muhlenberg Township, and Reading City Hall and the notice was received by the parties on January 10, 2022.

Utilizing the DEP's web-based Emap-PA information system, the receiving waters has been determined to be the Schuylkill River. The sequence of receiving streams that the Schuylkill River discharges into the Delaware River which eventually drains into the Delaware Bay. The receiving water has protected water usage for warm water fishes (WWF) and migratory fishes (MF). No Class A Wild Trout fisheries are impacted by this discharge. The absence of high quality and/or exceptional value surface waters removes the need for an additional evaluation of anti-degradation requirements.

The Schuylkill River is a Category 2 and 4a stream listed in the 2024 Integrated List of All Waters (formerly 303d Listed Streams). This stream is an attaining stream that supports aquatic life and recreational uses. The receiving stream is also impaired for fish consumption. The receiving waters is subject to the Schuylkill River PCB total maximum daily load (TMDL) plan to improve water quality in the subject facility's watershed.

The existing permit and proposed permit differ as follows:

- Sulfate, bromide, and chloride have been eliminated.
- Cadmium has been included for stormwater monitoring
- Changes to permit limits occurred for many of the existing parameters. This is due to use of 0.92 MGD as the average flow rate and due to different production levels.
- Chemical additive usage limits are included in the NPDES permit.
- Monitoring for all groundwater pollutants

Sludge use and disposal description and location(s): Sludge dust disposed at Inmetco in Ellwood City, PA, Michigan Disposal Waste Treatment, and Envirite in York, PA

The proposed permit will expire five (5) years from the effective date.

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

Summary of Review
Any additional information or public review of documents associated with the discharge or facility may be available at PA DEP Southcentral Regional Office (SCRO), 909 Elmerton Avenue, Harrisburg, PA 17110. To make an appointment for file review, contact the SCRO File Review Coordinator at 717.705.4700.

1.0 Applicant

1.1 General Information

This fact sheet summarizes PA Department of Environmental Protection's review for the NPDES renewal for the following subject facility.

Facility Name:	Carpenter Technology Corporation
NPDES Permit #	PA0013129
Physical Address:	101 Bern Street Reading, PA 19601
Mailing Address:	PO Box 14662 Reading, PA 19612
Contact:	Michael Hart, PE Environmental Engineer (610) 208-2470 mhart@cartech.com Scott McGoldrick SMcGoldrick@cartech.com
Consultant:	There was not a consultant utilized for this NPDES renewal.

1.2 Permit History

Carpenter Technology Corporation develops, manufactures, and distributes stainless steel and corrosion-resistant wire, bar, and strip alloys for the aerospace and defense, consumer, medical, transportation, energy, and distribution industries.

Description of Facility

This facility manufactures specialty steel and alloys including stainless steel, tool steels, high temperature, electronic, and other specialty steel alloys in forms including billet, bar, wire, rod, and narrow strip. Manufacturing processes at the Reading plant includes melting, refining, casting, hot forming, forging, drawing, annealing, cleaning, and electroplating. Their process wastewater is subject to federal Effluent Limitation Guidelines (ELGs) 40 CFR Part 420 for Iron and Steel Manufacturing and 40 CFR Part 433 for Metal Finishing. Besides process wastewater, they discharge non-contact cooling water, stormwater associated with industrial activity, and remediated groundwater. Sanitary wastewater from the site is directed to a POTW (City of Reading). The facility is staffed 24/7 but production is not necessarily occurring 24/7. Per the Water Balance, the facility uses both city water and on-site wells for operations. City water is the sole source for the recirculating noncontact cooling water discharges.

The untreated non-contact cooling water from their recirculating systems would only be discharged through outfalls 002, 004, 005, 011, 012, 013, and 014 in the event of an emergency such as a power failure or equipment failure. In the case of outfall 002, there would only be a discharge in the event the backup generators also failed.

EPA is the lead agency for this RCRA site's groundwater cleanup. From a file search, it appears a recovery trench was constructed and that air sparging of contaminated groundwater has been conducted since 1991 [RCRA Corrective Action permit No. PAD 002344315].

The wastewater treatment plant has a design flow of 1.45 MGD and is permitted under Water Quality Management (WQM) permit #0684202.

Bernhart Creek lies just to the north of the Carpenter facility. There is a TMDL for Bernhart Creek in Reading. The source of the impairments is listed as industrial point sources and the cause is listed as metals and salinity/TDS/chlorides.

The stream was originally assessed prior to 1996 and at that time it was designated as being impaired by metals and salinity/chlorides/TDS from industrial point sources. A recent water quality survey showed that the current in-stream levels of salinity/chlorides/TDS are acceptable. It was recommended that the salinity/chlorides/TDS listing be removed from the 1996 Pennsylvania 303(d) list. The water quality survey also showed that the stream was consistently above established criterion for lead. It was recommended that the total maximum daily load of lead discharged to the stream be limited to 0.02 lbs/day. Lead contamination has been an ongoing problem in this watershed.

Some of the outfalls from this facility historically discharged to Bernhart Creek. Effluent is piped underground through an urban area with discharge to the Schuylkill River.

2.0 Treatment Facility Summary

2.1.1 Site location

The physical address for the facility is 101 Bern Street, Reading, PA 19601. A topographical and an aerial photograph of the facility are depicted as Figure 1 and Figure 2.

Figure 1: Topographical map of the subject facility

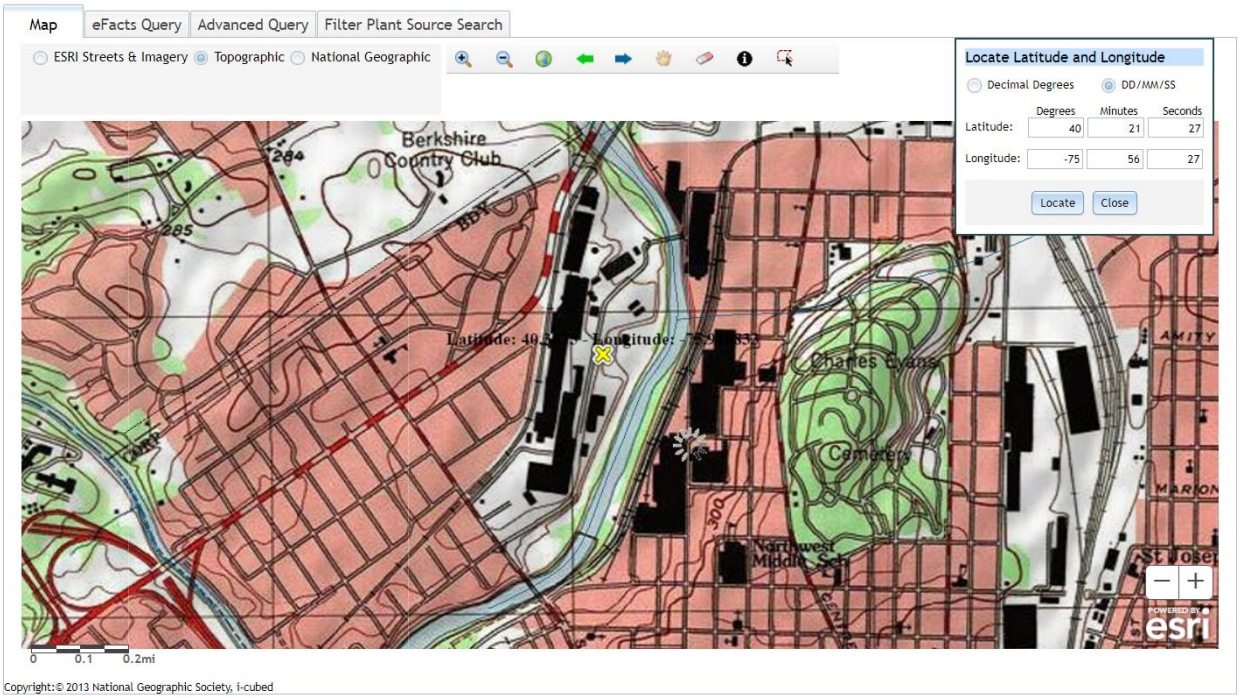
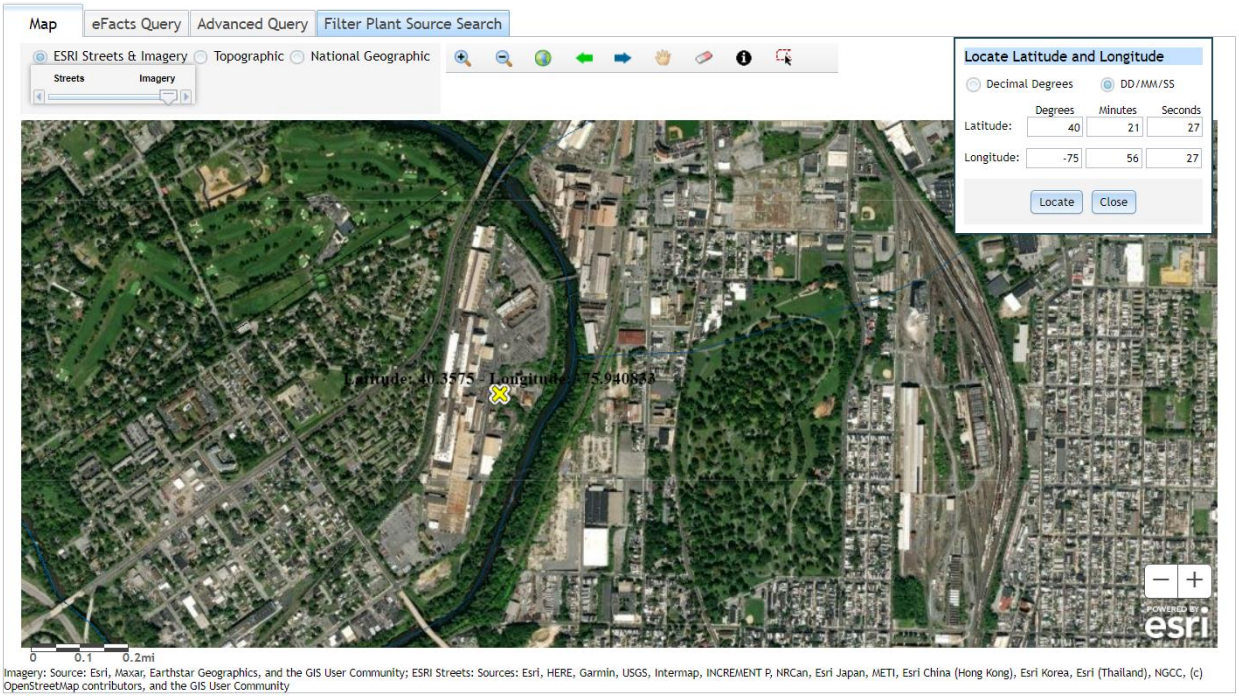


Figure 2: Aerial Photograph of the subject facility



2.1.2 Sources of Wastewater/Stormwater/Groundwater

Influent Flow

Section 2.2 depicts an overall process flow diagram.

The facility intakes the following quantities of water:
(a) municipal city water - 0.9 MGD;
(b) self-servicing wells - 1 MGD; and
(c) groundwater remediation wells - 0.06 MGD. The groundwater remediation wells do not serve as a source of water for the facilities process. Rather the groundwater remediation wells feed into the wastewater treatment plant.

The peak process water is estimated to be 1.9 MGD (i.e. 0.9 MGD + 1.0 MGD = 1.9 MGD).

Sources of Water

The facility uses groundwater withdrawn from Wells 2, 3, 4, 5, 6 and 7 for industrial contact and non-contact cooling purposes in steel manufacturing. The DRBC docket permits up to 43.4 million gallons per month of groundwater withdrawal. The wells are in the Allentown Formation and are located in the Schuylkill River Watershed in the City of Reading, Berks County, PA. The average and peak daily demands are reported to be 1.00 million gallons per day (mgd) and 1.74 mgd, respectively. The facility anticipates the 10-year average and peak daily demand to increase to 1.1 mgd and 1.91 mgd respectively.

Groundwater Remediation System

EPA is the lead agency for this RCRA site's groundwater cleanup. From a file search, it appears a recovery trench was constructed and that air sparging of contaminated groundwater has been conducted since 1991 [RCRA Corrective Action permit No. PAD 002344315].

Groundwater is also withdrawn from five existing recovery wells (Wells 85-03, 85-05, 89-02, 89-03, and 89-04) under the terms of an EPA approved corrective action groundwater program (Approved October 1998). The water withdrawn from the recovery wells is treated for volatile organic compounds (VOCs) and metals. The five groundwater wells are sampled semi-annually for five Volatile Organic Compounds (VOCs) with the results sent to EPA.

The VOCs sampled are:

- 1,1-Dichloroethylene (1,1-DCE);
- Cis 1,2-Dichloroethylene (cis 1,2-DCE);
- 1,1,1-Trichloroethane (1,1,1-TCA);
- Trichloroethylene (TCE);
- Tetrachloroethylene (PCE).

Based on information from the EPA clean up status webpage, the most recent monitoring data demonstrates that the remediation system has been effective in reducing contaminant concentrations below or near maximum contaminant levels (MCLs). (Courtesy of DRBC Docket No D-2022-001-1, Approval Date of September 7, 2023)

The groundwater remediation system effluent is further treated by the industrial wastewater treatment plant prior to discharge through the outfall.

Approximately 0.06 MGD from the groundwater remediation system is directed to the industrial wastewater treatment plant directly.

2.2 Description of Wastewater Treatment Process

The subject facility is a 1.45 MGD design flow facility. Influent to the IWTP consists of: quenching, annealing, descaling, pickling, forging and forming, electroplating, washing, and cleaning wastewater from the steelmaking and finishing processes, pre-treated contaminated groundwater, wet scrubber wastewater, sludge dewatering filtrate, blowdown, floor drains, secondary containment drainage, stormwater from around spent waste transfer station, chemical unloading area, dry solids silo, etc. The IWTP consists of the following unit processes: equalization/aeration, lime neutralization-metals precipitation, flocculation, sedimentation and neutralization. The resulting sludge is thickened by a belt filter press and drying.

The facility is being evaluated for flow, pH, oil and grease, TSS, TDS, sulfate, bromide, chloride, temperature, ammonia, nitrate, and total nitrogen. The metals that were evaluated were cadmium, chromium, hexavalent chromium, copper, cyanide, lead, nickel, silver, and zinc. Organics that were evaluated were naphthalene; 1,1-dichloroethylene; 1,1,1-trichloroethane; tetrachloroethylene; and total toxic organics. The existing permits limits for the facility is summarized in Section 2.4.

The treatment process is summarized in the table.

Treatment Facility Summary

Treatment Facility Name: Carpenter Technology Corp

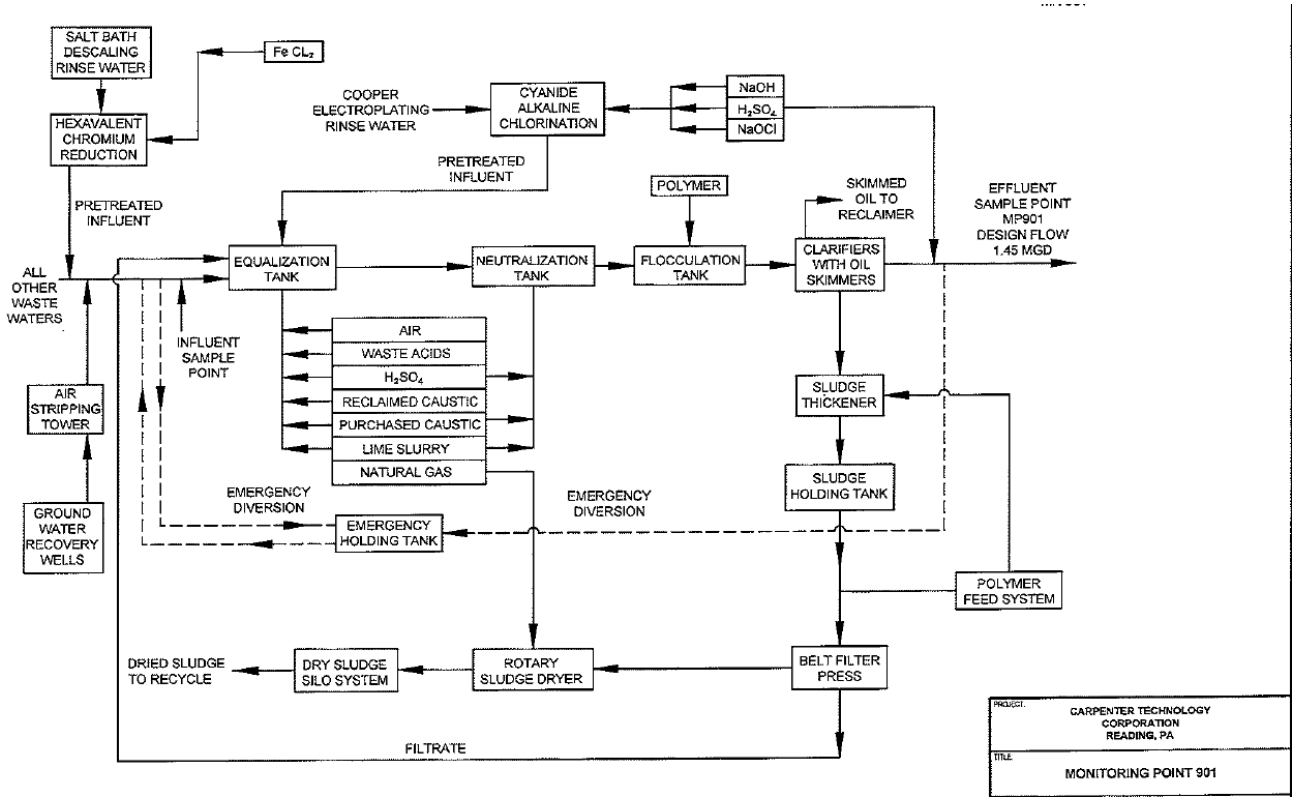
WQM Permit No.	Issuance Date
0684202	07/30/1984

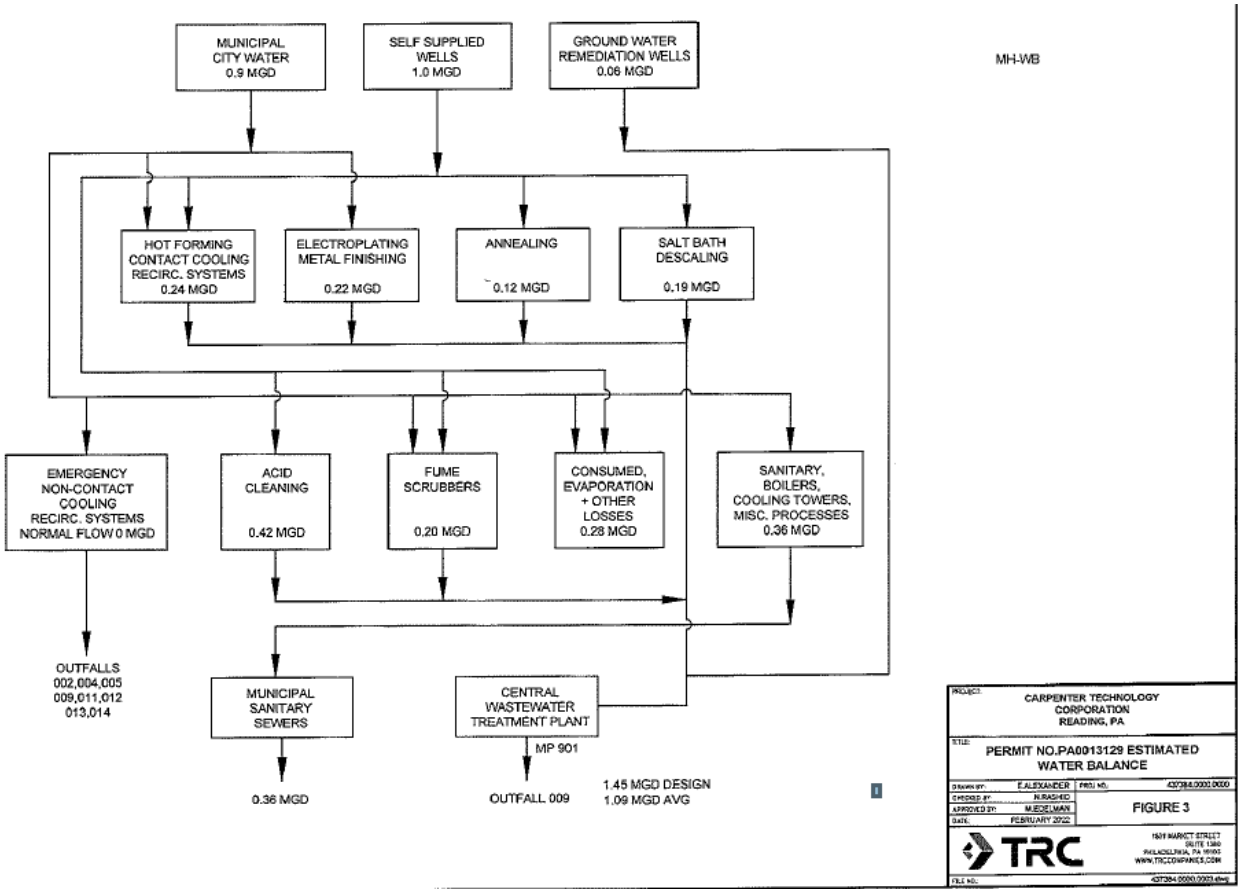
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial			No Disinfection	1.45

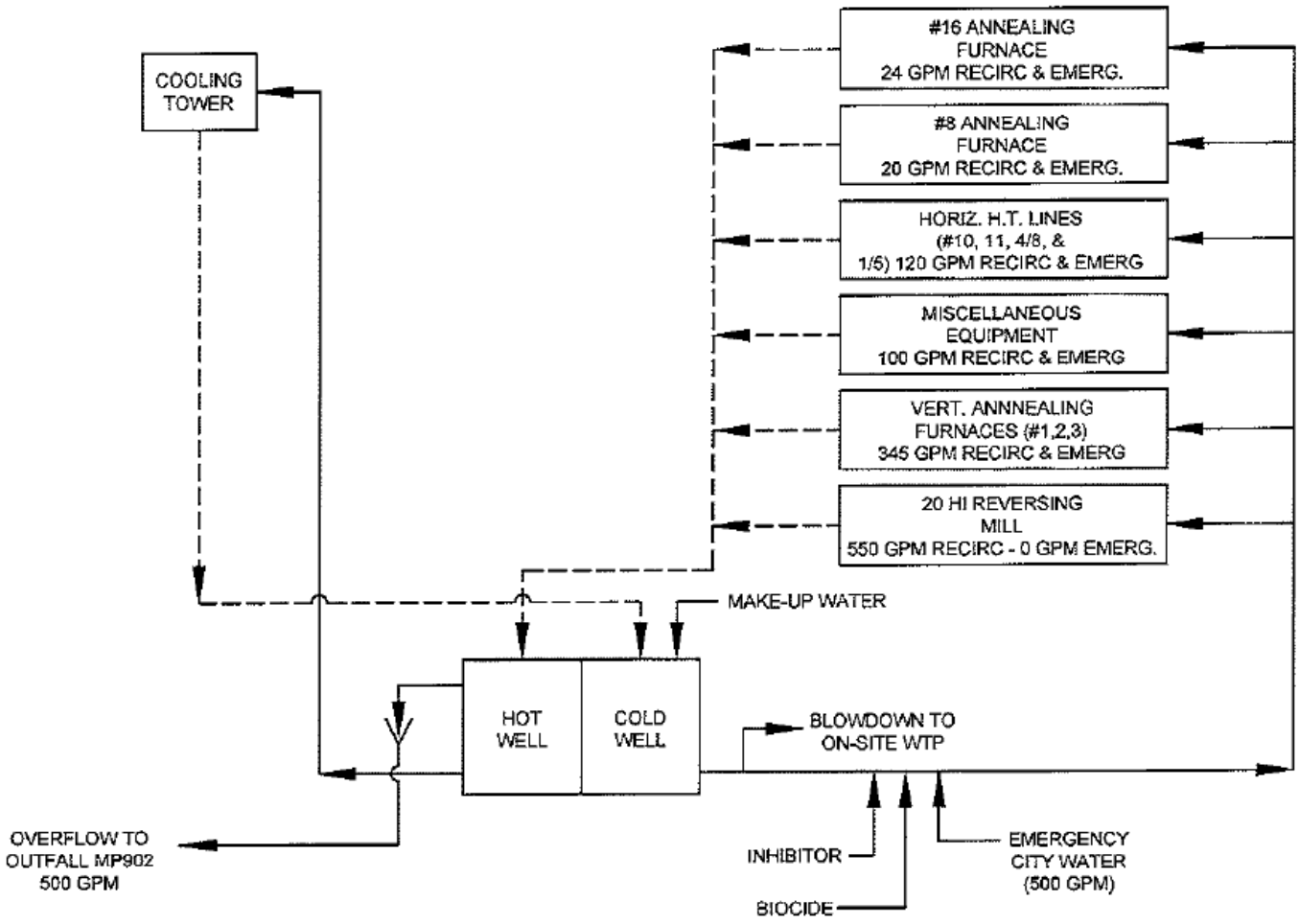
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
1.45		Not Overloaded		

Approximately 0.36 MGD of wastewater is discharged to the sanitary sewer for treatment by the City of Reading.

Schematics of the treatment process are depicted.


SALT BATH DESCALING RINSE WATER
$FeCl_2$
HEXAVALENT CHROMIUM REDUCTION
COOPER ELECTROPLATING RINSE WATER
CYANIDE ALKALINE CHLORINATION
NaOH
H_2SO_4
NaOCl
PRETREATED INFLUENT
PRETREATED INFLUENT
POLYMER
SKIMMED OIL TO RECLAIMER
EFFLUENT SAMPLE POINT MP901 DESIGN FLOW 1.45 MGD
ALL OTHER WASTE WATERS
EQUALIZATION TANK
NEUTRALIZATION TANK
FLOCCULATION TANK
CLARIFIERS WITH OIL SKIMMERS
INFLUENT SAMPLE POINT
AIR
WASTE ACIDS
H_2SO_4
RECLAIMED CAUSTIC
PURCHASED CAUSTIC
LIME SLURRY
NATURAL GAS
AIR STRIPPING TOWER
SLUDGE THICKENER
SLUDGE HOLDING TANK
GROUND WATER RECOVERY WELLS
EMERGENCY DIVERSION
EMERGENCY HOLDING TANK
EMERGENCY DIVERSION
POLYMER FEED SYSTEM
DRIED SLUDGE TO RECYCLE
DRY SLUDGE SILO SYSTEM
ROTARY SLUDGE DRYER
BELT FILTER PRESS
FILTRATE
PROJECT: CARPENTER TECHNOLOGY CORPORATION READING, PA
TITLE: MONITORING POINT 901


MUNICIPAL CITY WATER 0.9 MGD
SELF SUPPLIED WELLS 1.0 MGD
GROUND WATER REMEDIATION WELLS 0.06 MGD
MH-WB
HOT FORMING CONTACT COOLING RECIRC. SYSTEMS 0.24 MGD
ELECTROPLATING METAL FINISHING 0.22 MGD
ANNEALING 0.12 MGD
SALT BATH DESCALING 0.19 MGD
EMERGENCY NON-CONTACT COOLING RECIRC. SYSTEMS NORMAL FLOW 0 MGD
ACID CLEANING 0.42 MGD
FUME SCRUBBERS 0.20 MGD
CONSUMED, EVAPORATION + OTHER LOSSES 0.28 MGD
SANITARY, BOILERS, COOLING TOWERS, MISC. PROCESSES 0.36 MGD
OUTFALLS 002,004,005 009,011,012 013,014
MUNICIPAL SANITARY SEWERS
CENTRAL WASTEWATER TREATMENT PLANT
MP 901
0.36 MGD
OUTFALL 009
1.45 MGD DESIGN
1.09 MGD AVG
PROJECT: CARPENTER TECHNOLOGY CORPORATION READING, PA
TITLE: PERMIT NO.PA0013129 ESTIMATED WATER BALANCE
E.ALEXANDER
N.RASHID
M.EDELMAN
FEBRUARY 2020
FIGURE 3
TRC



2.3.1 Facility Outfall Information- Stormwater/Wastewater

External Upstream and External Downstream Outfalls

The subject facility outfall is within the vicinity of another sewage/wastewater outfall.

The upstream outfall is Reading Airport (PA0028720) which is about 2 miles from the subject facility.

The downstream outfalls are:

(a) Wyomissing (PA0026638) which is about 2 miles from the subject facility; and
(b) Reading WWTP (PA0026549) which is about 5 miles from the subject facility.

Water quality modeling was conducted to review interactions among the dischargers

Design Flow Outfalls

The table below summarizes the facility's outfalls and internal monitoring points.

Outfall IMP No	Discharge Characterization	Design Flow Rate (MGD)
902	Process; Groundwater	1.45
002	Stormwater	NA
004	Process; Stormwater	0.13
005	Process; Stormwater	0.15
011	Process	2
012	Process	1.44
013	Process	0.72
902	Process	0.72
014	Process; Stormwater	3.09
42 Additional Stormwater Outfalls		-----

Two outfalls had a different flow rate in the NPDES renewal application from February 23, 2022) than the NPDES from September 1, 2017. Outfall 012 was changed to 1.44 MGD and Outfall 013 was changed to 0.72 MGD.

The other outfalls retained the same design flow rates.

Stormwater outfalls

Federal regulations 40 CFR 122.26(b)14 define "stormwater associated with industrial activity" and requires that such discharges be authorized by a NPDES permit. All of the stormwater discharges to Schuylkill River according to eMapPA. Past applications and permits showed some facility discharges to Bernhart Creek. Bernhart Creek was diverted some years ago with piping conveying the water directly to Schuylkill River.

The 47 stormwater outfalls will be listed in Part C of the permit. Drainage areas were given by the applicant for most of the outfalls.

The DEP's NPDES PAG-03 NOI application instructions (revised in February 2023) allows representative sampling of substantially identical outfalls. Three stormwater outfalls were previously represented by the permittee as representative of all stormwater at the site in response to an EPA site visit/audit and Order for Compliance (CWA-03-2001-0392). Those outfalls are E6-N, W-11, and HT-1. The reader should note that some of the outfall numbers were renumbered. Outfalls 015 (also called E6N), 016 (also called W11), and 017 (also called HT1). Outfall 018 (also called HT2) shall be used for the purpose of PCB sampling.

After reviewing drainage maps and other application data, the renewal permit therefore continues to allow the same three outfalls to be sampled as the previous permit and used as representative outfalls for monitoring. The previous permit from 2007, 2012 and 2017 approved sampling at these three outfalls in lieu of sampling at each and every stormwater outfall at the site.

Outfall 018 (HT-2) is the stormwater outfall for PCB sampling to satisfy the Schuylkill River PCB TMDL to identify sources of PCBs entering the river. From the drainage maps supplied with the permit application, it appears that this outfall drains a former PCB storage area and the residual waste landfill area. Sampling will be required for PCBs to identify legacy concentrations in storm runoff.

The table summarizes manufacturing activities for each of the stormwater outfalls.

Of all the stormwater only outfalls, three will continue to be sampled per permit requirements and used to represent the other site outfalls. The three representative stormwater outfalls are Outfalls 15, 16, and 17.

The following tables index which stormwater outfalls are associated with which industrial activity.

Industrial Activity	
Primary Operations	1
Scrap Storage	2
Product Storage	3
Wastewater Treatment	4
Mainteneance	5
Finishing Operations	6
Shipping / Receiving	7
Baghouse Operations	8
Vehicle Traffic	9
General Storage	10
Landfill Operations	11

Carpenter Technology Reading Stormwater Industrial Activities											
	Industrial Activity										
Outfall Number	1	2	3	4	5	6	7	8	9	10	11
002/E6L	X	X	X		X			X	X	X	
003/E7E	X								X	X	
004/E7F	X								X	X	
005/E8	X								X		
007/E12										X	
009/W10			X			X		X	X		
010/W12						X	X		X	X	
014/E6R	X	X	X		X			X	X	X	
015/E6N	X	X	X		X			X	X	X	
016/W11				X			X	X	X	X	
017/HT1	X		X		X	X	X	X	X	X	X
018/HT2	X		X						X	X	
W3	X								X		
W4									X		
W8			X			X		X	X		
W9						X			X	X	
W13			X			X	X		X	X	
E3A									X	X	
E3B									X	X	
E7A									X	X	
E7B									X	X	
E7G	X								X	X	
E7H	X								X	X	
E9A	X								X		
E9B	X								X		
E10	X								X	X	
E11										X	
E13A									X	X	
E13B									X	X	
E13C									X	X	
E13D									X	X	
E13E									X	X	
E13F									X	X	
E13G									X	X	
E15	X								X	X	
E16	X								X	X	
E6O	X	X	X		X			X	X	X	
E6P	X	X	X		X			X	X	X	
E6Q	X	X	X		X			X	X	X	
E6B	X	X	X		X			X	X	X	
E101	X								X		

Carpenter Technology Reading Stormwater Industrial Activities											
	Industrial Activity										
Outfall Number	1	2	3	4	5	6	7	8	9	10	11
HT3	X		X						X	X	
HT4	X		X						X	X	
CS1			X		X	X			X	X	
CS2			X		X	X			X	X	
CS3			X		X	X			X	X	
CS4			X		X	X			X	X	

2.3.2 Stormwater Sampling Results

The table below summarizes stormwater sampling results reported in the NPDES renewal application. The number of grab samples for each pollutant was one sample.

Sulfate and chloride were detected.

Other pollutants (CN, Ag, Bromide, Naphthalene, tetrachlorethylene, 1,1-dichloroethane, 1,1,1-trichlorethyene) were at non-detect levels and these pollutants shall not require monitoring for the proposed permit.

Stormwater Sampling Results Reported in NPDES Application

Pollutant (mg/l)	Outfall						No. Storm Events Sampled
	015/E6N		016/W11		017/HT1		
Oil and Grease	<	5.3	<	5.6	<	5.3	1
BOD	<	23	<	23	<	23	1
COD	<	75	<	75	<	75	1
TSS		72.8		28		48.8	1
TN		1.8	<	1		3.7	1
TP		0.07		0.052		0.1	1
Cr(T)		0.12		0.02		0.06	1
Cr(+6)		0.02	<	0.01		0.02	1
Cu(t)		0.06		0.03		0.05	1
CN(T)	<	0.01	<	0.01	<	0.01	1
Pb(T)	<	0.022	<	0.022	<	0.022	1
Ni(T)		0.13		0.04		0.196	1
Ag(T)	<	0.006	<	0.006	<	0.006	1
Zn(T)		1.04		0.04		0.1	1
Cd(T)	<	0.006	<	0.006	<	0.006	1
Al(T)		1.93		0.73		1.03	1
Fe(T)		1.96		1.04		1.64	1
TDS		68	<	20		73	1
NH3-N		0.83	<	0.75		0.1	1
NO3-N		0.36		0.19		0.56	1
Sulfate		21		2.4		6.7	1
Chloride		12		4.2		11.7	1
Bromide	<	2.5	<	2.5	<	2.5	1
Naphthalene	<	0.002	<	0.002	<	0.02	1
Tetrachloroethylene	<	0.001	<	0.001	<	0.002	1
1,1,-Dichloroethane	<	0.001	<	0.001	<	0.001	1
1,1,1-Trichloroethylene	<	0.001	<	0.001	<	0.001	1

Notes:
- No date of sampling was listed on NPDES application

Consistent with the PAG-03 Appendix B (Primary Metals), monitoring is recommended for TSS, Oil and Grease, Total Aluminum, Total Zinc, Total Copper, Total Iron, and Total Lead.

Consisted with PAG-03 Appendix U (Fabricated Metal Products), monitoring is recommended for pH.

Pollutants cadmium and nickel were included since they are elements used at the facility.

Since hexavalent chromium is included in the current permit, it shall continue to the proposed permit.

2.3.1 Operational Considerations- Chemical Additives

Chemical additives are chemical products introduced into a waste stream that is used for cleaning, disinfecting, or maintenance and which may be detected in effluent discharged to waters of the Commonwealth. Chemicals excluded are those used for neutralization of waste streams, the production of goods, and treatment of wastewater.

The subject facility utilizes the following chemicals as part of their treatment process.

- Calcium hydroxide and sodium hydroxide for neutralization and precipitation
- Sodium hypochlorite for alkaline chlorination
- Ferrous chloride for hexavalent chromium reduction
- Polymer AP1142T for flocculant
- AF2290 for defoamer
- Sulfuric acid for pH adjustment

The table below summarizes usage rates for chemical additives.

Chemicals Additives Usage Summary

Outfall	System	Chemical Additive	Usage Rates (lbs/day)	
			Average	Maximum
002	Vacuum Induction Melting	Gengard GN8113	6	8.1
		Spectrus NX1106	2.4	16.7
004	Vacuum Induction Melting	Gengard GN8203	1.2	1.6
		Spectrus NX1106	0.6	4.2
		Corrshield MD4103	1.4	1.8
005	Annealing Fce and Quench Tank Heat Exchanger	Gengard GN8203	1.2	1.6
		Spectrus NX1106	0.6	4.2
011	Melting and Refining / Electric Arc Furnaces	Continuum AT3203	4.5	6
		Spectrus NX1106	2.3	16.3
012	Rotary Forge and Furnaces	Gengard GN8113	16.2	21.6
		Spectrus NX1106	2.1	14.6
013	Batch Furnaces and Rolling Mill	Continuum AT3203	9	12
		Spectrus NX1106	1.6	11.3
014	VAR and ESR Furnaces	Gengard GN8113	27	36.1
		Spectrus NX1106	2.9	19.5
		Spectrus NX1103	0.6	1.8
902	Annealing Furnaces and Reversing Mill	Gengard GN8203	3	4
		Spectrus NX1106	1.5	10.4
	Totals	**Continuum AT3203**	**13.5**	**18**
	Totals	**Corrshield MD4103**	**1.4**	**1.8**
	Totals	**Gengard GN8113**	**49.2**	**65.8**
	Totals	**Gengard GN8203**	**5.4**	**7.2**
	Totals	**Spectrus NX1103**	**0.6**	**1.8**
	Totals	**Spectrus NX1106**	**14**	**97.2**

All the non-contact cooling water discharges to the Schuylkill River. The additives are used as a corrosion inhibitor and biocide. The non-contact cooling water outfalls were modelled as a single point of discharge when modeling with TMS.

There were two modeling runs conducted with two different flow rates.

Modeling Run #1 used the sum of the total average flow of 0.008 MGD (i.e. 0.001 MGD * 8 non-contact cooling water outfalls = 0.008 MGD).

Modeling Run #2 used a total flow rate of 3.08 MGD. This was the flow rate also utilized for thermal modeling. Consequently, as there would be more dilution, the maximum allowable usage rates were higher for the 3.08 MGD flow rate then for the 0.008 MGD flow rate.

The table below shows that the maximum requested usage rates would exceed maximum allowable usage rates for Spectrus NX1103 and Spectrus1106. The maximum usage rates would be exceeded if every process line uses the additive on the same day at the same time.

For Spectrus NX1106, average requested usage rates would exceed maximum allowable usage rates.

Summary of Allowable Usages for Chemical Additives

Additive/Chemical	Max Requested Usage (lbs/day)	Maximum Allowable Usage (lbs/day) w/ 0.008 MGD flow rate	Maximum Allowable Usage (lbs/day) w/ 3.08 MGD flow rate
Continuum AT3203	18	117	154
Corrshield MD4103	1.8	127	NO RP
Gengard GN8113	65.8	617	NO RP
Gengard GN8203	7.2	958	NO RP
Spectrus NX1103	1.8	1.07	NO RP
Spectrus NX1106	97.2	11.8	NO RP

Notes:
RP - Reasonable Potential

The proposed permit shall utilize the allowable usage rates using the 0.008 MGD. These are the more stringent maximum allowable usage rates. The facility is more likely to have actual flow discharge of 0.008 MGD. The TMS output for non-contact cooling waters is in the appendix. Part C of the NPDES permit will include maximum usage rates for the additives.

2.4 Existing NPDES Permits Limits

The existing NPDES permit limits are summarized in the table.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. A. For Outfall 901 , **Latitude** 40° 21' 27" , **Longitude** 75° 56' 18" , **River Mile Index** 78.2 , **Stream Code** 0833

Receiving Waters: Schuylkill River

Type of Effluent: Process wastewater, blowdown, remediated groundwater

1. The permittee is authorized to discharge during the period from Permit Effective Date through Permit Expiration Date.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow, MGD	Report	Report	-	-	-	-	Continuous	Measured
pH, s.u.	-	-	6.0	-	-	9.0	1/day	Grab
Oil and Grease	181	363	-	15.0	30.0	30	2/month	Grab
Total Suspended Solids	363	726	-	30.0	60.0	75	2/month	24-hour composite
Total Dissolved Solids	Report	-	-	Report	-	-	1/month	Grab
Sulfate	-	-	-	Report	-	-	1/month	Grab
Bromide	-	-	-	-	-	Report	1/year	Grab
Chloride	-	-	-	Report	-	-	1/month	Grab
Temperature, °F	-	-	-	Report	Report	-	2/month	i-s
Ammonia	512	1024	-	42.3	84.7	106	2/month	24-hour composite
Nitrate	-	Report	-	-	Report	-	1/month	24-hour composite
Total Nitrogen	-	Report	-	-	Report	-	1/quarter	24-hour composite
Cadmium, Total	-	0.6	-	-	0.05	0.08	1/year	24-hour composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Chromium, Total	9.6	21.1	-	Report	Report	2	2/month	24-hour composite
Hexavalent Chromium	0.7	1.5	-	0.06	0.12	0.15	2/month	24-hour composite
Copper, Total	1.9	3.9	-	0.16	0.32	0.4	2/month	24-hour composite
Cyanide, Total	1.7	3.8	-	Report	-	0.35	2/month	Grab
Lead, Total	-	2.9	-	-	0.24	0.28	1/year	24-hour composite
Nickel, Total	9.2	21.7	-	Report	Report	1.9	2/month	24-hour composite
Silver, Total	-	0.8	-	-	0.07	0.1	1/year	24-hour composite
Zinc, Total	-	7.1	-	-	0.58	0.72	1/year	24-hour composite
Naphthalene	-	-	-	-	Report	-	1/year	24-hour composite
1,1-Dichloroethylene	-	-	-	-	-	Report	1/year	Grab
1,1,1-Trichloroethane	-	-	-	-	-	Report	1/year	Grab
Tetrachloroethylene	-	-	-	-	-	Report	1/year	Grab
Total Toxic Organics *	-	4.0	-	-	0.33	-	1/year	See Part C

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Immediately after the treatment plant including after final pH adjustment

*as defined in 40 CFR 433.10 (e) and copied into Part C of permit

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. B. For Outfall 902 , **Latitude** 40° 21' 27" , **Longitude** 75° 56' 18" , **River Mile Index** 78.2 , **Stream Code** 0833

Receiving Waters: Schuylkill River

Type of Effluent: Emergency overflow of recirculating non-contact cooling water from Annealing furnaces and Reversing Mill

1. The permittee is authorized to discharge during the period from Permit Effective Date through Permit Expiration Date.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when discharging *	Estimate
pH (s.u.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily when discharging *	Grab
Temperature (°F)	XXX	XXX	XXX	XXX	110	110	Daily when discharging *	i-s

* Monitor daily during each day of emergency overflow of non-contact cooling water; monitoring of co-mingled stormwater is not required at this outfall

Compliance Sampling Location: at Internal Monitoring Point before mixing with treatment plant effluent or stormwater

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. C. **For Outfall** 002, **Latitude** 40° 21' 41", **Longitude** 75° 56' 15", **River Mile Index** approx. 78.2, **Stream Code** 0833

Receiving Waters: Schuylkill River

Type of Effluent: Emergency overflow of recirculating non-contact cooling water from Vacuum Melting + stormwater

1. The permittee is authorized to discharge during the period from Permit Effective Date through Permit Expiration Date.

2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2)	Required
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when discharging *	Estimate
pH (s.u.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily when discharging *	Grab
Temperature (°F)	XXX	XXX	XXX	XXX	110	110	Daily when discharging *	i-s

* Monitor daily during each day of emergency overflow of non-contact cooling water; monitoring of co-mingled stormwater is not required at this outfall.

Compliance Sampling Location: at outfall during dry weather or before mixing with stormwater during periods of significant rainfall

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. D. For Outfall 004 , **Latitude** 40° 21' 36" , **Longitude** 75° 56' 17" , **River Mile Index** approx. 78.2 , **Stream Code** 0833

Receiving Waters: Schuylkill River

Type of Effluent: Emergency overflow of recirculating non-contact cooling water from Vacuum Melting + stormwater

1. The permittee is authorized to discharge during the period from Permit Effective Date through Permit Expiration Date.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2)	Required
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when discharging *	Estimate
pH (s.u.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily when discharging *	Grab
Temperature (°F)	XXX	XXX	XXX	XXX	110	110	Daily when discharging *	i-s

* Monitor daily during each day of emergency overflow of non-contact cooling water; monitoring of co-mingled stormwater is not required at this outfall

Compliance Sampling Location: at outfall during dry weather or before mixing with stormwater during periods of significant rainfall

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. E. **For Outfall** 005, **Latitude** 40° 21' 36", **Longitude** 75° 56' 16", **River Mile Index** approx. 78.2, **Stream Code** 0833

Receiving Waters: Schuylkill River

Type of Effluent: Emergency overflow of recirculating non-contact cooling water from Annealing Furnace and Quench Tank Heat Exchanger + stormwater

1. The permittee is authorized to discharge during the period from Permit Effective Date through Permit Expiration Date.

2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when discharging *	Estimate
pH (s.u.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily when discharging *	Grab
Temperature (°F)	XXX	XXX	XXX	XXX	110	110	Daily when discharging *	i-s

* Monitor daily during each day of emergency overflow of non-contact cooling water; monitoring of co-mingled stormwater is not required at this outfall

Compliance Sampling Location: at outfall during dry weather or before mixing with stormwater during periods of significant rainfall

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. F. For Outfall 011 , **Latitude** 40° 21' 42" , **Longitude** 75° 56' 21" , **River Mile Index** approx. 78.2 , **Stream Code** 0833

Receiving Waters: Schuylkill River

Type of Effluent: Emergency overflow of recirculating non-contact cooling water from Melting and Refining/Electric Arc Furnaces

1. The permittee is authorized to discharge during the period from Permit Effective Date through Permit Expiration Date.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when discharging *	Estimate
pH (s.u.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily when discharging *	Grab
Temperature (°F)	XXX	XXX	XXX	XXX	110	110	Daily when discharging *	i-s

* Monitor daily during each day of emergency overflow of non-contact cooling water

Compliance Sampling Location: at outfall

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. G. For Outfall 012 , **Latitude** 40° 22' 16" , **Longitude** 75° 56' 32 , **River Mile Index** approx. 78.2 , **Stream Code** 0833

Receiving Waters: Schuylkill River

Type of Effluent: Emergency overflow of recirculating non-contact cooling water from Rotary Forge and Rotary Furnace

1. The permittee is authorized to discharge during the period from Permit Effective Date through Permit Expiration Date.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when discharging *	Estimate
pH (s.u.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily when discharging *	Grab
Temperature (°F)	XXX	XXX	XXX	XXX	110	110	Daily when discharging *	i-s

* Monitor daily during each day of emergency overflow of non-contact cooling water

Compliance Sampling Location: at outfall

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. H. **For Outfall** 013 , **Latitude** 40° 22' 16" , **Longitude** 75° 56' 32" , **River Mile Index** approx. 78.2 , **Stream Code** 0833

Receiving Waters: Schuylkill River

Type of Effluent: Emergency overflow of recirculating non-contact cooling water from Batch Furnaces and Rolling Mill

1. The permittee is authorized to discharge during the period from Permit Effective Date through Permit Expiration Date.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when discharging *	Estimate
pH (s.u.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily when discharging *	Grab
Temperature (°F)	XXX	XXX	XXX	XXX	110	110	Daily when discharging *	i-s

* Monitor daily during each day of emergency overflow of non-contact cooling water

Compliance Sampling Location: at outfall

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. I. **For Outfall** 014 , **Latitude** 40° 21' 47" , **Longitude** 75° 56' 11" , **River Mile Index** approx. 78.2 , **Stream Code** 0833

Receiving Waters: Schuylkill River

Type of Effluent: Emergency overflow of recirculating non-contact cooling water from VAR/ESR Furnaces + stormwater

1. The permittee is authorized to discharge during the period from Permit Effective Date through Permit Expiration Date.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when discharging *	Estimate
pH (s.u.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily when discharging *	Grab
Temperature (°F)	XXX	XXX	XXX	XXX	110	110	Daily when discharging *	i-s

* Monitor daily during each day of emergency overflow of non-contact cooling water; monitoring of co-mingled stormwater is not required at this outfall

Compliance Sampling Location: at outfall during dry weather or before mixing with stormwater during periods of significant rainfall

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. J. For Outfalls 015 (E6N), 016 (W-11), 017 (HT-1), **Latitude** See Part C, **Longitude** See Part C, **River Mile Index** approx. 78.2, **Stream Code** 0833

Receiving Waters: Schuylkill River

Type of Effluent: Stormwater (only)

1. The permittee is authorized to discharge during the period from Permit Effective Date through Permit Expiration Date.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (s.u.)	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Hexavalent Chromium	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Aluminum	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Copper	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Iron	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Lead	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Nickel	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Zinc	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

Compliance Sampling Location: at outfall

Other Comments: See Part C – Requirements Applicable to Stormwater Outfalls for further conditions and instructions.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. K. For Outfall 018 (HT2), Latitude 40° 21' 42", Longitude 75° 56' 19", River Mile Index approx. 78.2, Stream Code 0833

Receiving Waters: Schuylkill River

Type of Effluent: stormwater

1. The permittee is authorized to discharge during the period from Permit Effective Date through Permit Expiration Date.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total PCBs, wet weather (ng/l)	XXX	XXX	XXX	XXX	Report	XXX	See Part C of Permit	Grab *

Compliance Sampling Location: at outfall

Other Comments: See Part C. Conditions: VI. PCB Monitoring for more requirements.

*Grab samples must be taken within the first 30 minutes of discharge

3.0 Facility NPDES Compliance History

3.1 Summary of Inspections

A summary of the most recent inspections during the existing permit review cycle is as follows.

The DEP inspector noted the following during the inspection.

09/27/2017:

There was nothing significant to report.

09/19/2019:

There was nothing significant to report.

08/11/2021:

- Annual shut down occurred during the July 4th to July 8th . During the shutdown the industrial wastewater treatment plant was drained to the influent surge tank. Elk Environmental was contracted to remove settled sludge to the surge tank.
- Clarifier chain was replaced
- Belts in hydraulic section of belt filter were replaced.
- The facility was advised to register for the Delaware Valley Early Warning System

01/13/2022:

- Scott McGoldrick, Environmental Manager at Carpenter Technology, reported on January 13, 2022 that 20% sodium hydroxide caustic solution was discharged to the Schuylkill River from an outfall that connects to their surface stormwater system. The caustic solution line into the bench cleaning department's scrubber was broken. The 5-day report estimated >50 gallons was released to the surface water.

04/29/2022

- Notice of Violation letter mailed to Carpenter Technology in response to the January 13. 2022 spill.

3.2 Summary of DMR Data

A review of approximately 1-year of DMR data for Outfall 901 shows that the monthly average flow data for the facility below the design capacity of the treatment system. The maximum average flow data for the DMR reviewed was 1.055 MGD in October 2023. The design capacity of the treatment system is 1.45 MGD.

The off-site laboratory used for the analysis of the parameters was Lancaster Laboratories/Eurofins located at 2425 New Holland Pike, Lancaster, PA 17601 and MJ Reider Associates located at 107 Angelica Street, Reading, PA 19611.

DMR Data for Outfall 004 (from October 1, 2023 to September 30, 2024)

Parameter	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23
Flow (MGD) Average Monthly										0.001		
Flow (MGD) Daily Maximum										0.029		
pH (S.U.) Minimum										8.5		
pH (S.U.) Instantaneous Maximum										8.5		
Temperature (ºF) Daily Maximum										74.0		

DMR Data for Outfall 011 (from October 1, 2023 to September 30, 2024)

Parameter	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23
Flow (MGD) Average Monthly			0.001									
Flow (MGD) Daily Maximum			0.029									
pH (S.U.) Minimum			8.5									
pH (S.U.) Instantaneous Maximum			8.5									
Temperature (ºF) Daily Maximum			79.0									

DMR Data for Outfall 012 (from October 1, 2023 to September 30, 2024)

Parameter	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23
Flow (MGD) Average Monthly					0.005							
Flow (MGD) Daily Maximum					0.144							
pH (S.U.) Minimum					7.8							
pH (S.U.) Instantaneous Maximum					7.8							
Temperature (ºF) Daily Maximum					70.7							

DMR Data for Outfall 015 (from October 1, 2023 to September 30, 2024)

Parameter	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23
pH (S.U.) Daily Maximum				8.9						8.1		
TSS (mg/L) Daily Maximum				188						32		
Oil and Grease (mg/L) Daily Maximum				< 5.1						< 5.6		
Total Aluminum (mg/L) Daily Maximum				4.8						0.48		
Hexavalent Chromium (mg/L) Daily Maximum				0.03						< 0.01		
Total Copper (mg/L) Daily Maximum				0.04						0.03		
Total Iron (mg/L) Daily Maximum				2.45						0.68		
Total Lead (mg/L) Daily Maximum				< 0.02						< 0.02		
Total Nickel (mg/L) Daily Maximum				0.07						0.08		
Total Zinc (mg/L) Daily Maximum				0.18						0.16		

DMR Data for Outfall 016 (from October 1, 2023 to September 30, 2024)

Parameter	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23
pH (S.U.) Daily Maximum				7.0						7.7		
TSS (mg/L) Daily Maximum				18.8						11.2		
Oil and Grease (mg/L) Daily Maximum				< 5.1						< 5.2		
Total Aluminum (mg/L) Daily Maximum				0.43						0.36		
Hexavalent Chromium (mg/L) Daily Maximum				< 0.01						< 0.01		
Total Copper (mg/L) Daily Maximum				0.04						0.06		

Total Iron (mg/L) Daily Maximum				0.69						0.92		
Total Lead (mg/L) Daily Maximum				< 0.02						< 0.02		
Total Nickel (mg/L) Daily Maximum				0.05						0.09		
Total Zinc (mg/L) Daily Maximum				0.05						0.11		

DMR Data for Outfall 017 (from October 1, 2023 to September 30, 2024)

Parameter	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23
pH (S.U.) Daily Maximum				8.8						8.6		
TSS (mg/L) Daily Maximum				29.6						40.4		
Oil and Grease (mg/L) Daily Maximum				< 5.1						< 5.4		
Total Aluminum (mg/L) Daily Maximum				0.6						0.68		
Hexavalent Chromium (mg/L) Daily Maximum				< 0.01						< 0.01		
Total Copper (mg/L) Daily Maximum				0.02						0.03		
Total Iron (mg/L) Daily Maximum				0.76						1.09		
Total Lead (mg/L) Daily Maximum				< 0.02						< 0.02		
Total Nickel (mg/L) Daily Maximum				0.09						0.13		
Total Zinc (mg/L) Daily Maximum				0.03						0.06		

DMR Data for Outfall 018 (from October 1, 2023 to September 30, 2024)

Parameter	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23
PCBs (Wet Weather) (ng/L) Daily Maximum										0.350		

DMR Data for Outfall 901 (from October 1, 2023 to September 30, 2024)

Parameter	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23
Flow (MGD) Internal Monitoring Point Average Monthly	1.004	0.822	0.756	0.996	0.993	0.898	0.886	0.873	0.902	0.791	0.853	1.055
Flow (MGD) Internal Monitoring Point Daily Maximum	1.399	1.228	1.339	1.303	1.380	1.394	1.400	1.359	1.237	1.329	1.350	1.400
pH (S.U.) Internal Monitoring Point Minimum	6.0	6.0	6.8	7.8	6.0	7.8	6.0	6.0	6.0	6.0	6.0	6.0
pH (S.U.) Internal Monitoring Point Instantaneous Maximum	9.0	9.0	8.9	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Temperature (ºF) Internal Monitoring Point Average Monthly	73.8	75.2	80.2	75.7	72.8	67.4	67.2	60.4	64.7	66.0	66.2	71.6
Temperature (ºF) Internal Monitoring Point Daily Maximum	74.5	76.8	81.5	76.3	75.6	67.6	67.8	61.3	67.6	66.4	66.4	71.8
TSS (lbs/day) Internal Monitoring Point Average Monthly	< 11	11	12	20	< 11	12	< 9	< 9	12	< 7	14	< 9
TSS (lbs/day) Internal Monitoring Point Daily Maximum	11	12	16	30	< 12	13	11	10	16	7	14	< 9
TSS (mg/L) Internal Monitoring Point Average Monthly	< 1.1	1.4	1.4	2.0	< 1.1	1.2	< 1.1	< 1.1	1.6	< 1.1	1.6	< 1.0
TSS (mg/L) Internal Monitoring Point Daily Maximum	1.2	1.6	1.6	2.8	1.2	1.2	1.2	1.2	2.0	1.2	1.6	< 1.0
Total Dissolved Solids (lbs/day) Internal Monitoring Point Average Monthly	20850	11365	17237	16781	29167	36886	24123	19462	15227	14915	16523	17811
Total Dissolved Solids (mg/L) Internal Monitoring Point Average Monthly	2000	1470	1750	1900	3290	3410	2760	2270	1930	2630	1950	1900
Oil and Grease (lbs/day) Internal Monitoring Point Average Monthly	< 56	< 42	< 45	< 55	< 55	< 50	< 42	< 46	< 39	< 31	< 45	< 46

Oil and Grease (lbs/day) Internal Monitoring Point Daily Maximum	< 59	< 42	< 51	< 60	< 62	< 55	< 45	< 47	< 40	< 33	< 47	< 48
Oil and Grease (mg/L) Internal Monitoring Point Average Monthly	< 5.7	< 5.3	< 5.3	< 5.6	< 5.4	< 5.1	< 5.1	< 5.4	< 5.1	< 5.1	< 5.4	< 5.1
Oil and Grease (mg/L) Internal Monitoring Point Daily Maximum	< 5.7	< 5.3	< 5.3	< 5.6	< 5.4	< 5.1	< 5.1	< 5.6	< 5.1	< 5.1	< 5.6	< 5.1
Total Nitrogen (lbs/day) Internal Monitoring Point Daily Maximum	542			942			679			756		
Total Nitrogen (mg/L) Internal Monitoring Point Daily Maximum	55			87			86			81		
Ammonia (lbs/day) Internal Monitoring Point Average Monthly	26	21	24	48	34	32	47	33	24	32	16	21
Ammonia (lbs/day) Internal Monitoring Point Daily Maximum	40	23	26	53	39	39	51	36	25	33	23	21
Ammonia (mg/L) Internal Monitoring Point Average Monthly	2.7	2.7	2.9	5.0	3.5	3.2	5.8	3.9	3.1	5.3	1.9	2.3
Ammonia (mg/L) Internal Monitoring Point Daily Maximum	4.2	3.0	3.6	6.0	4.4	3.6	6.6	4.2	3.3	5.8	2.7	2.3
Nitrate (lbs/day) Internal Monitoring Point Daily Maximum	406	413	546	405	414	521	870	844	917	958	260	584
Nitrate (mg/L) Internal Monitoring Point Daily Maximum	42.7	53.4	75.5	45.9	46.7	58.6	99.5	98.5	122	169	30.7	67.1
Total Cadmium (lbs/day) Internal Monitoring Point Daily Maximum										< 0.06		
Total Cadmium (mg/L) Internal Monitoring Point Daily Maximum										< 0.006		
Hexavalent Chromium (lbs/day) Internal Monitoring Point Average Monthly	< 0.1	< 0.1	0.1	< 0.1	0.1	< 0.1	< 0.1	0.1	< 0.1	0.1	< 0.1	< 0.1

Hexavalent Chromium (lbs/day) Internal Monitoring Point Daily Maximum	< 0.1	0.1	0.2	0.1	0.1	< 0.1	< 0.1	0.1	< 0.1	0.1	< 0.1	0.1
Hexavalent Chromium (mg/L) Internal Monitoring Point Average Monthly	< 0.01	< 0.01	0.02	< 0.01	0.01	< 0.01	< 0.01	0.01	< 0.01	0.01	< 0.01	< 0.01
Hexavalent Chromium (mg/L) Internal Monitoring Point Daily Maximum	< 0.01	0.01	0.02	0.01	0.01	< 0.01	< 0.01	0.01	< 0.01	0.01	< 0.01	0.01
Total Chromium (lbs/day) Internal Monitoring Point Average Monthly	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2
Total Chromium (lbs/day) Internal Monitoring Point Daily Maximum	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3
Total Chromium (mg/L) Internal Monitoring Point Average Monthly	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.03
Total Chromium (mg/L) Internal Monitoring Point Daily Maximum	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03
Total Copper (lbs/day) Internal Monitoring Point Average Monthly	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2
Total Copper (lbs/day) Internal Monitoring Point Daily Maximum	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.3	0.2
Total Copper (mg/L) Internal Monitoring Point Average Monthly	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.03	0.02
Total Copper (mg/L) Internal Monitoring Point Daily Maximum	0.01	0.02	0.02	0.01	0.01	0.02	0.02	0.02	0.01	0.02	0.04	0.02
Total Cyanide (lbs/day) Internal Monitoring Point Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Total Cyanide (lbs/day) Internal Monitoring Point Daily Maximum	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1
Total Cyanide (mg/L) Internal Monitoring Point Average Monthly	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Cyanide (mg/L) Internal Monitoring Point Instantaneous Maximum	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01
Total Lead (lbs/day) Internal Monitoring Point Daily Maximum										< 0.2		
Total Lead (mg/L) Internal Monitoring Point Daily Maximum										< 0.02		
Total Nickel (lbs/day) Internal Monitoring Point Average Monthly	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2
Total Nickel (lbs/day) Internal Monitoring Point Daily Maximum	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.1	0.2	0.2
Total Nickel (mg/L) Internal Monitoring Point Average Monthly	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02
Total Nickel (mg/L) Internal Monitoring Point Daily Maximum	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.02
Total Silver (lbs/day) Internal Monitoring Point Daily Maximum										< 0.06		
Total Silver (mg/L) Internal Monitoring Point Daily Maximum										< 0.006		
Sulfate (mg/L) Internal Monitoring Point Average Monthly	84.5	97.5	106	65.1	60.0	54.4	69.7	49.8	68.4	65.6	61.9	77
Total Zinc (lbs/day) Internal Monitoring Point Daily Maximum										< 0.06		
Total Zinc (mg/L) Internal Monitoring Point Daily Maximum										< 0.006		

Total Toxic Organics (lbs/day) Internal Monitoring Point Daily Maximum										< 0.1		
Total Toxic Organics (mg/L) Internal Monitoring Point Daily Maximum										< 0.01		
Chloride (mg/L) Internal Monitoring Point Average Monthly	866	1020	658	790	1520	1590	1040	765	790	881	907	729
Bromide (mg/L) Internal Monitoring Point Instantaneous Maximum										< 3.8		
1,1,1-Trichloroethane (mg/L) Internal Monitoring Point Instantaneous Maximum										< 0.001		
Naphthalene (mg/L) Internal Monitoring Point Daily Maximum										< 0.002		
1,1-Dichloroethylene (mg/L) Internal Monitoring Point Instantaneous Maximum										< 0.001		
Tetrachloro-ethylene (mg/L) Internal Monitoring Point Instantaneous Maximum										< 0.001		

3.3 Non-Compliance

3.3.1 Non-Compliance- NPDES Effluent

A summary of the non-compliance to the permit limits for the existing permit cycle is as follows.

From the DMR data beginning in September 1, 2017 and ending November 19, 2024, the table summarizes effluent non-compliances.

Summary of Non-Compliance with NPDES Pemit Limits
Beginning September 1, 2017 and Ending November 19, 2024

MONITORING_PERIOD_BEGIN_DATE	MONITORING_PERIOD_END_DATE	REPORT_FREQUENCY_DESC	OUTFALL_NUMBER	STAGE_DESC	NON_COMPLIANCE_DATE	NON_COMPL_TYPE_DESC	NON_COMPL_CATEGORY_DESC	PARAMETER
11/1/2017	11/30/2017	Monthly			1/9/2018	Late DMR Submission	Other Violations	
11/1/2017	11/30/2017	Monthly	901	Internal Monitoring Point	12/18/2017	Sample type not in accordance with permit	Other Violations	pH
12/1/2017	12/31/2017	Monthly	901	Internal Monitoring Point	1/24/2018	Sample type not in accordance with permit	Other Violations	pH
1/1/2018	1/31/2018	Monthly	901	Internal Monitoring Point	2/19/2018	Sample type not in accordance with permit	Other Violations	pH
2/1/2018	2/28/2018	Monthly	901	Internal Monitoring Point	3/14/2018	Sample type not in accordance with permit	Other Violations	pH
3/1/2018	3/31/2018	Monthly	901	Internal Monitoring Point	4/2/2018	Sample type not in accordance with permit	Other Violations	pH
4/1/2018	4/30/2018	Monthly	901	Internal Monitoring Point	5/8/2018	Sample type not in accordance with permit	Other Violations	pH
5/1/2018	5/31/2018	Monthly	901	Internal Monitoring Point	6/12/2018	Sample type not in accordance with permit	Other Violations	pH
8/1/2018	8/31/2018	Monthly	901	Internal Monitoring Point	9/14/2018	Sample type not in accordance with permit	Other Violations	pH
11/1/2018	11/30/2018	Monthly	901	Internal Monitoring Point	12/17/2018	Sample type not in accordance with permit	Other Violations	pH
12/1/2018	12/31/2018	Monthly	901	Internal Monitoring Point	1/21/2019	Sample type not in accordance with permit	Other Violations	pH
1/1/2019	1/31/2019	Monthly	901	Internal Monitoring Point	2/13/2019	Sample type not in accordance with permit	Other Violations	pH
2/1/2019	2/28/2019	Monthly	901	Internal Monitoring Point	3/14/2019	Sample type not in accordance with permit	Other Violations	pH
3/1/2019	3/31/2019	Monthly	901	Internal Monitoring Point	4/8/2019	Sample type not in accordance with permit	Other Violations	pH
4/1/2019	4/30/2019	Monthly	901	Internal Monitoring Point	5/16/2019	Sample type not in accordance with permit	Other Violations	pH
5/1/2019	5/31/2019	Monthly	901	Internal Monitoring Point	6/13/2019	Sample type not in accordance with permit	Other Violations	pH
6/1/2019	6/30/2019	Monthly	901	Internal Monitoring Point	7/10/2019	Sample type not in accordance with permit	Other Violations	pH
7/1/2019	7/31/2019	Monthly	901	Internal Monitoring Point	8/13/2019	Sample type not in accordance with permit	Other Violations	pH
8/1/2019	8/31/2019	Monthly	901	Internal Monitoring Point	9/16/2019	Sample type not in accordance with permit	Other Violations	pH
9/1/2019	9/30/2019	Monthly	901	Internal Monitoring Point	10/15/2019	Sample type not in accordance with permit	Other Violations	pH
10/1/2019	10/31/2019	Monthly	901	Internal Monitoring Point	11/13/2019	Sample type not in accordance with permit	Other Violations	pH
11/1/2019	11/30/2019	Monthly	901	Internal Monitoring Point	12/10/2019	Sample type not in accordance with permit	Other Violations	pH
12/1/2019	12/31/2019	Monthly	901	Internal Monitoring Point	1/21/2020	Sample type not in accordance with permit	Other Violations	pH
1/1/2020	1/31/2020	Monthly	901	Internal Monitoring Point	2/19/2020	Sample type not in accordance with permit	Other Violations	pH
2/1/2020	2/29/2020	Monthly	901	Internal Monitoring Point	3/18/2020	Sample type not in accordance with permit	Other Violations	pH
3/1/2020	3/31/2020	Monthly	901	Internal Monitoring Point	4/9/2020	Sample type not in accordance with permit	Other Violations	pH

3.3.2 Non-Compliance- Enforcement Actions

A summary of the non-compliance enforcement actions for the current permit cycle is as follows:

Beginning in September 1, 2017 and ending November 19, 2024, the following were observed enforcement actions.

Summary of Enforcement Action
Beginning September 1, 2017 and Ending October 25, 2023

ENF ID	ENF TYPE	ENF TYPE DESC	DATE	VIOLATIONS	ENF FINALSTATUS	DATE
403263	NOV	Notice of Violation	04/29/2022	CSL301	Comply/Closed	04/29/2022

3.4 Summary of Biosolids/Sludge Disposal

A summary of the biosolids/sludge disposed of from the facility is as follows.

In 2022, approximately 1,219.98 tons of dust disposed for reclamation.

In 2023, approximately 1,160.63 tons of dust disposed for reclamation, 381.58 tons from belt press to direct landfill, and 64.4 tons dust for treatment and disposal.

Sludge dust disposed at Inmetco in Ellwood City, PA, Michigan Disposal Waste Treatment, and Envirite in York, PA

3.5 Open Violations

As of December 2024, an open violation existed in the residual waste department. The final executed NPDES permit may be withheld until the open violation is remedy.

4.0 Receiving Waters and Water Supply Information Detail Summary

4.1 Receiving Waters

The receiving waters has been determined to be the Schuylkill River. The sequence of receiving streams that the Schuylkill River discharges into the Delaware River which eventually drains into the Delaware Bay.

4.2 Public Water Supply (PWS) Intake

The closest PWS to the subject facility is Pottstown Borough Water Authority (PWS ID #1460037) located approximately 55 miles downstream of the subject facility on the Schuylkill River. Based upon the distance and the flow rate of the facility, the PWS should not be impacted.

4.3 Class A Wild Trout Streams

Class A Wild Trout Streams are waters that support a population of naturally produced trout of sufficient size and abundance to support long-term and rewarding sport fishery. DEP classifies these waters as high-quality coldwater fisheries.

The information obtained from EMAP suggests that no Class A Wild Trout Fishery will be impacted by this discharge.

4.4 2024 Integrated List of All Waters (303d Listed Streams)

Section 303(d) of the Clean Water Act requires States to list all impaired surface waters not supporting uses even after appropriate and required water pollution control technologies have been applied. The 303(d) list includes the reason for impairment which may be one or more point sources (i.e. industrial or sewage discharges) or non-point sources (i.e. abandoned mine lands or agricultural runoff and the pollutant causing the impairment such as metals, pH, mercury or siltation).

States or the U.S. Environmental Protection Agency (EPA) must determine the conditions that would return the water to a condition that meets water quality standards. As a follow-up to listing, the state or EPA must develop a Total Maximum Daily Load (TMDL) for each waterbody on the list. A TMDL identifies allowable pollutant loads to a waterbody from both point and non-point sources that will prevent a violation of water quality standards. A TMDL also includes a margin of safety to ensure protection of the water.

The water quality status of Pennsylvania's waters uses a five-part categorization (lists) of waters per their attainment use status. The categories represent varying levels of attainment, ranging from Category 1, where all designated water uses are met to Category 5 where impairment by pollutants requires a TMDL for water quality protection.

The receiving waters is listed in the 2024 Pennsylvania Integrated Water Quality Monitoring and Assessment Report as a Category 2 and 4a waterbody. The surface waters is an attaining stream that supports aquatic life and recreational uses. The receiving stream is also impaired for fish consumption. The designated use has been classified as protected waters for warm water fishes (WWF) and migratory fishes (MF).

4.5 Low Flow Stream Conditions

Water quality modeling estimates are based upon conservative data inputs. The data are typically estimated using either a stream gauge or through USGS web based StreamStats program. The NPDES effluent limits are based upon the combined flows from both the stream and the facility discharge.

A conservative approach to estimate the impact of the facility discharge using values which minimize the total combined volume of the stream and the facility discharge. The volumetric flow rate for the stream is based upon the seven-day, 10-year low flow (Q710) which is the lowest estimated flow rate of the stream during a 7 consecutive day period that occurs once in 10 -year time period. The facility discharge is based upon a known design capacity of the subject facility.

The gauge station used in previous fact sheets was the Schuylkill River at Berne, PA (USGS station number 1470500). This gauge station is located approximately 17.5 miles upstream of the subject facility.

The Schuylkill River at Reading gauge station was used to estimate Q710. The gauge station is approximately 2.4 miles downstream of the subject facility. This is consistent with the Fact Sheet from 2016 (See Comment and Response, Response #3).

The low flow yield and the Q710 for the gauge station was estimated as shown below.

Gauge Station Data		
USGS Station Number	1471510	
Station Name	Schuylkill River at Reading, PA	
Q710	244	ft^3/sec
Drainage Area (DA)	880	mi^2
Calculations		
The low flow yield of the gauge station is:		
Low Flow Yield (LFY) = Q710 / DA		
LFY =	(244 ft^3/sec) / (880 mi^2)	
LFY =	0.28	$ft^3/sec/mi^2$

At the subject facility location, StreamStats was utilized to estimate the Q710 and low flow yield. The Q710 at the subject facility is 162 ft^3/s and the low flow yield is 0.2436 $ft^3/s/mi^2$. A factor of 0.5 was used to account for incomplete mixing. This adjusts the low flow yield to 0.122 $ft^3/s/mi^2$.

The closest WQN station to the subject facility is the Schuylkill River station (WQN111).

For WQM modeling, pH and stream water temperature data from the water quality network station was used. pH was estimated to be 8.05 and the stream water temperature was estimated to be 23.33 C.

The hardness of the stream was estimated by collecting three samples upstream of the facility. The sampling result was 133 mg/l $CaCO_3$.

4.6 Summary of Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	2.16
Latitude	40º 21' 35.96"	Longitude	-75º 56' 17.14"
Quad Name		Quad Code	
Wastewater Description:	Emergency Noncontact Cooling Water (NCCW) and Stormwater		

Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	833
NHD Com ID	133228731	RMI	Same a 901
Drainage Area		Yield (cfs/mi^2)	Same a 901
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	Same a 901
Elevation (ft)		Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Discharge, Receiving Waters and Water Supply Information

Outfall No.	005	Design Flow (MGD)	.15
Latitude	40º 21' 35.70"	Longitude	-75º 56' 17.07"
Quad Name		Quad Code	
Wastewater Description:	Emergency Noncontact Cooling Water (NCCW) and Stormwater		

Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	833
NHD Com ID	133228731	RMI	Same a 901
Drainage Area	Same a 901	Yield (cfs/mi^2)	Same a 901
Q_{7-10} Flow (cfs)	Same a 901	Q_{7-10} Basis	Same a 901
Elevation (ft)	Same a 901	Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Discharge, Receiving Waters and Water Supply Information

Outfall No.	011	Design Flow (MGD)	1
Latitude	40º 21' 43.22"	Longitude	-75º 56' 19.81"
Quad Name		Quad Code	
Wastewater Description:	Emergency Noncontact Cooling Water (NCCW)		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	833
NHD Com ID	133228731	RMI	Same a 901
Drainage Area	Same a 901	Yield (cfs/mi^2)	Same a 901
Q_{7-10} Flow (cfs)	Same a 901	Q_{7-10} Basis	Same a 901
Elevation (ft)	Same a 901	Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Discharge, Receiving Waters and Water Supply Information

Outfall No.	012	Design Flow (MGD)	.72
Latitude	40º 21' 55.53"	Longitude	-75º 56' 37.24"
Quad Name		Quad Code	
Wastewater Description:	Emergency Noncontact Cooling Water (NCCW)		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	833
NHD Com ID	133228729	RMI	Same a 901
Drainage Area	Same a 901	Yield (cfs/mi^2)	Same a 901
Q_{7-10} Flow (cfs)	Same a 901	Q_{7-10} Basis	Same a 901
Elevation (ft)	Same a 901	Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Discharge, Receiving Waters and Water Supply Information

Outfall No.	013	Design Flow (MGD)	.4
Latitude	40º 21' 55.53"	Longitude	-75º 56' 37.24"
Quad Name		Quad Code	
Wastewater Description:	Emergency Noncontact Cooling Water (NCCW)		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	833
NHD Com ID	133228729	RMI	Same a 901
Drainage Area	Same a 901	Yield (cfs/mi^2)	Same a 901
Q_{7-10} Flow (cfs)	Same a 901	Q_{7-10} Basis	Same a 901
Elevation (ft)	Same a 901	Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Discharge, Receiving Waters and Water Supply Information

Outfall No.	014	Design Flow (MGD)	3.09
Latitude	40º 21' 42.33"	Longitude	-75º 56' 18.90"
Quad Name		Quad Code	
Wastewater Description:	Emergency Noncontact Cooling Water (NCCW) and Stormwater		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	833
NHD Com ID	133228731	RMI	Same a 901
Drainage Area	Same a 901	Yield (cfs/mi^2)	Same a 901
Q_{7-10} Flow (cfs)	Same a 901	Q_{7-10} Basis	Same a 901
Elevation (ft)	Same a 901	Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	.13
Latitude	40º 21' 41.12"	Longitude	-75º 56' 18.56"
Quad Name		Quad Code	
Wastewater Description:	Emergency Noncontact Cooling Water (NCCW) and Stormwater		

Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	833
NHD Com ID	133228731	RMI	Same a 901
Drainage Area	Same a 901	Yield (cfs/mi^2)	Same a 901
Q_{7-10} Flow (cfs)	Same a 901	Q_{7-10} Basis	Same a 901
Elevation (ft)	Same a 901	Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Discharge, Receiving Waters and Water Supply Information

Outfall No.	901	Design Flow (MGD)	1.45
Latitude	40º 21' 26.38"	Longitude	-75º 56' 18.68"
Quad Name		Quad Code	
Wastewater Description:	Process WTP IMP		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	833
NHD Com ID	133228733	RMI	78.2
Drainage Area	665	Yield (cfs/mi^2)	0.122
Q_{7-10} Flow (cfs)	162	Q_{7-10} Basis	StreamStats/streamgauge
Elevation (ft)	200	Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Background/Ambient Data		Data Source
pH (SU)	8.05	WQN111; median July to Sept
Temperature (°C)	23.3	WQN111; median July to Sept
Hardness (mg/L)	133	NPDES application dated 02/23/2022
Other:		

Nearest Downstream Public Water Supply Intake		Pottstown Borough Water Authority	
PWS Waters	Schuylkill River	Flow at Intake (cfs)	
PWS RMI	55.6	Distance from Outfall (mi)	21

Discharge, Receiving Waters and Water Supply Information

Outfall No.	902 (formerly 009)	Design Flow (MGD)	
Latitude	40º 21' 27.00"	Longitude	-75º 56' 18.00"
Quad Name		Quad Code	
Wastewater Description:	Emergency NCCW IMP		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	833
NHD Com ID		RMI	Same a 901
Drainage Area	Same a 901	Yield (cfs/mi^2)	Same a 901
Q_{7-10} Flow (cfs)	Same a 901	Q_{7-10} Basis	Same a 901
Elevation (ft)	Same a 901	Slope (ft/ft)	
Watershed No.		Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Discharge, Receiving Waters and Water Supply Information

Outfall No.	015	Design Flow (MGD)	0
Latitude	40º 21' 42.35"	Longitude	-75º 56' 18.90"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	833
NHD Com ID	133228731	RMI	
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Discharge, Receiving Waters and Water Supply Information

Outfall No.	016	Design Flow (MGD)	0
Latitude	40º 21' 20.51"	Longitude	-75º 56' 22.62"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	833
NHD Com ID	133228733	RMI	
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Discharge, Receiving Waters and Water Supply Information

Outfall No.	017	Design Flow (MGD)	0
Latitude	40º 21' 55.12"	Longitude	-75º 56' 35.55"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	833
NHD Com ID	133228729	RMI	0.1600
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Discharge, Receiving Waters and Water Supply Information

Outfall No.	018	Design Flow (MGD)	0
Latitude	40º 21' 55.12"	Longitude	-75º 56' 35.55"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	833
NHD Com ID	133228729	RMI	0.1600
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

5.0: Overview of Presiding Water Quality Standards

5.1 General

There are at least six (6) different policies which determines the effluent performance limits for the NPDES permit. The policies are technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), antidegradation, total maximum daily loading (TMDL), anti-backsliding, and whole effluent toxicity (WET) The effluent performance limitations enforced are the selected permit limits that is most protective to the designated use of the receiving waters. An overview of each of the policies that are applicable to the subject facility has been presented in Section 6.

5.2.1 Technology-Based Limitations

TBEL treatment requirements under section 301(b) of the Act represent the minimum level of control that must be imposed in a permit issued under section 402 of the Act (40 CFR 125.3). Available TBEL requirements for the state of Pennsylvania are itemized in PA Code 25, Chapter 92a.47.

The presiding sources for the basis for the effluent limitations are governed by either federal or state regulation. The reference sources for each of the parameters is itemized in the tables. The following technology-based limitations apply, subject to water quality analysis and best professional judgement (BPJ) where applicable:

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
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)

5.3 Water Quality-Based Limitations

WQBEL are based on the need to attain or maintain the water quality criteria and to assure protection of designated and existing uses (PA Code 25, Chapter 92a.2). The subject facility that is typically enforced is the more stringent limit of either the TBEL or the WQBEL.

Determination of WQBEL is calculated by spreadsheet analysis or by a computer modeling program developed by DEP. DEP permit engineers utilize the following computing programs for WQBEL permit limitations: (1) MS Excel worksheet for Total Residual Chorine (TRC); (2) WQM 7.0 for Windows Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen Version 1.1 (WQM Model) and (3) Toxics using DEP Toxics Management Spreadsheet (TMS) for Toxics pollutants.

The modeling point nodes utilized for this facility are summarized below.

General Data 1	*(Modeling Point #A)*	*(Modeling Point #1)*	*(Modeling Point #2)*	*(Modeling Point #3)*	*(Modeling Point #4)*	*(Modeling Point #5)*	*Units*
	Reading Airport	*Carpenter*	*Wyomissing*	*Reading WWTP*	*Point Downstream*	*Point Downstream*	
Stream Code	833	833	833	833	833	833	
River Mile Index	79.1	76.76	74.13	71.84	70.35	60.2	miles
Elevation	230.57	202.11	187.07	182.61	169.58	136.81	feet
Latitude	40.382218	40.361359	40.329599	40.305091	40.3064	40.25955	
Longitude	-75.952884	-75.938207	-75.938284	-75.920483	-75.906406	-75.765085	
Drainage Area	648	665	903	919	923	1010	sq miles
Q710	153	162	242	268	266	276	
Low Flow Yield	0.1181	0.2436	0.1340	0.1458	0.1441	0.1366	cfs/sq mile
Low Flow Yield Adjusted for PMF	0.0590	0.1218	0.0670	0.0729	-----	-----	cfs/sq mile
Low Flow Yield used for Modeling	**0.059**	**0.122**	**0.067**	**0.073**	**0.144**	**0.137**	**cfs/sq mile**
Notes:							
Low Flow Yield = Q710 / Drainage Area							
Low Flow Yield Adjusted = 0.5 PMF * Low Flow Yield Adjust for Tulpehocken							

5.3.1 Water Quality Modeling 7.0

The WQM Model is a computer model that is used to determine NPDES discharge effluent limitations for Carbonaceous BOD (CBOD5), Ammonia Nitrogen (NH3-N), and Dissolved Oxygen (DO) for single and multiple point source discharges scenarios. WQM Model is a complete-mix model which means that the discharge flow and the stream flow are assumed to instantly and completely mixed at the discharge node.

WQM recommends effluent limits for DO, CBOD5, and NH_3-N in mg/l for the discharge(s) in the simulation.

Four types of limits may be recommended. The limits are

(a) a *minimum concentration for DO in the discharge as 30-day average;*
(b) *a 30-day average concentration for CBOD5 in the discharge;*
(c) *a 30-day average concentration for the NH_3-N in the discharge;*
(d) *24-hour average concentration for NH_3-N in the discharge*.

The WQM Model requires several input values for calculating output values. The source of data originates from either EMAP, the National Map, or Stream Stats. Data for stream gauge information, if any, was abstracted from USGS Low-Flow, Base-Flow, and Mean-Flow Regression Equations for Pennsylvania Streams authored by Marla H. Stuckey (Scientific Investigations Report 2006-5130).

The applicable WQM Effluent Limit Type are discussed in Section 6 under the corresponding parameter which is either DO, CBOD, or ammonia-nitrogen.

5.3.2 Toxics Modeling

The Toxics Management Spreadsheet model is a computer model that is used to determine effluent limitations for toxics (and other substances) for single discharge wasteload allocations. This computer model uses a mass-balance water quality analysis that includes consideration for mixing, first-order decay, and other factors used to determine recommended water quality-based effluent limits. Toxics Management Spreadsheet does not assume that all discharges completely mix with the stream. The point of compliance with water quality criteria are established using criteria compliance times (CCTs). The available CCTs are either acute fish criterion (AFC), chronic fish criterion (CFC), or human health criteria (THH & CRL).

Acute Fish Criterion (AFC) measures the criteria compliance time as either the maximum criteria compliance time (i.e.15 minutes travel time downstream of the current discharge) or the complete mix time whichever comes first. AFC is evaluated at Q710 conditions.

Chronic Fish Criterion (CFC) measures the criteria compliance time as either the maximum criteria compliance time (i.e. 12 hours travel time downstream of the current discharge) or the complete mix time whichever comes first. CFC is evaluated at Q710 conditions.

Threshold Human Health (THH) measures the criteria compliance time as either the maximum criteria compliance time (i.e. 12 hours travel time downstream of the current discharge) or the estimated travel time downstream to the nearest potable water supply intake whichever comes first. THH is evaluated at Q710 conditions.

Cancer Risk Level (CRL) measures the criteria compliance time as either the maximum criteria compliance time (i.e. 12 hours travel time downstream of the current discharge) or the complete mix time whichever comes first. CRL is evaluated at Qh (harmonic mean or normal flow) conditions.

The Toxics Model requires several input values for calculating output values. The source of data originates from either EMAP, the National Map, or Stream Stats. Data for stream gauge information, if any, was abstracted from USGS Low-Flow, Base-Flow, and Mean-Flow Regression Equations for Pennsylvania Streams authored by Marla H. Stuckey (Scientific Investigations Report 2006-5130).

5.3.2.1 Determining if NPDES Permit Will Require Monitoring/Limits in the Proposed Permit for Toxic Pollutants

To determine if Toxics modeling is necessary, DEP has developed a Toxics Management Spreadsheet to identify toxics of concern. Toxic pollutants whose maximum concentrations as reported in the permit application or on DMRs are greater than the most stringent applicable water quality criterion are pollutants of concern. A Reasonable Potential Analysis was utilized to determine (a) if the toxic parameters modeled would require monitoring or (b) if permit limitations would be required for the parameters. The toxics reviewed for reasonable potential were the pollutants in Groups 1 through 5.

Based upon the SOP- Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants (Revised January 10, 2019), monitoring and/or limits will be established as follows.

(a) When reasonable potential is demonstrated, establish limits where the maximum reported concentration equals or exceeds 50% of the WQBEL.
(b) For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.
(c) For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10% - 50% of the WQBEL.

Applicable monitoring or permit limits for toxics are summarized in Section 6.

The Toxics Management Spreadsheet output has been included in Attachment B.

5.3.3 Whole Effluent Toxicity (WET)

The facility is not subject to WET.

5.4 Total Maximum Daily Loading (TMDL)

5.4.1 TMDL

The goal of the Clean Water Act (CWA), which governs water pollution, is to ensure that all of the Nation's waters are clean and healthy enough to support aquatic life and recreation. To achieve this goal, the CWA created programs designed to regulate and reduce the amount of pollution entering United States waters. Section 303(d) of the CWA requires states to assess their waterbodies to identify those not meeting water quality standards. If a waterbody is not meeting standards, it is listed as impaired and reported to the U.S. Environmental Protection Agency. The state then develops a plan to clean up the impaired waterbody. This plan includes the development of a Total Maximum Daily Load (TMDL) for the pollutant(s) that were found to be the cause of the water quality violations. A Total Maximum Daily Load (TMDL) calculates the maximum amount of a specific pollutant that a waterbody can receive and still meet water quality standards.

A TMDL for a given pollutant and waterbody is composed of the sum of individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include

an implicit or explicit margin of safety (MOS) to account for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody. The TMDL components are illustrated using the following equation:

$$TMDL = \Sigma WLAs + \Sigma LAs + MOS$$

Pennsylvania has committed to restoring all impaired waters by developing TMDLs and TMDL alternatives for all impaired waterbodies. The TMDL serves as the starting point or planning tool for restoring water quality.

5.4.1.1 Local TMDL

The subject facility discharges into a local TMDL- Schuylkill River PCB TMDL.

On behalf of the states of Delaware, New Jersey and Pennsylvania, and in cooperation with the Delaware River Basin Commission, the United States Environmental Protection Agency Regions II and III (EPA) establish these total maximum daily loads (TMDLs) for polychlorinated biphenyls (PCBs) in the Delaware River Estuary. EPA establishes these TMDLs in order to achieve and maintain the applicable water quality criteria for PCBs designed to protect human health from the carcinogenic effects of eating the contaminated fish now found in the Delaware Estuary. In accordance with Section 303(d) of the Clean Water Act (CWA) and its implementing regulations, these TMDLs provide allocations to point sources (WLAs) discharging PCBs as well as allocations to nonpoint sources (LAs) of PCBs, and an explicit margin of safety to account for uncertainties (Total Maximum Daily Loads for PCBs For Zones 2 – 5 of the Tidal Delaware River Page i).

Zones 2 through 5 of the Delaware River (Figure 1) have been designated by the Delaware River Basin Commission as that section of the mainstem of the Delaware River and the tidal portions of the tributaries thereto, between the head of Delaware Bay (River Mile 48.2) and the head of the tide at Trenton, New Jersey (River Mile 133.4).

Zones 2 to 4 are bordered by the State of New Jersey and the Commonwealth of Pennsylvania.

Zone 2 encompasses the area from the head of the tide at Trenton to River Mile 108.4. Zone 3 encompasses the area from River Mile 108.4 to River Mile 95.0. Zone 4 encompasses the area from River Mile 95.0 to River Mile 78.8, and Zone 5 encompasses the area from River Mile 78.8 to the head of Delaware Bay. Zone 5 is bordered by the States of Delaware and New Jersey.

The water quality standards that form the basis for the TMDLs are the current Delaware River Basin Commission water quality criteria for total PCBs for the protection of human health from carcinogenic effects. These criteria were identified as the TMDL targets by a letter dated April 16, 2003 from the Regional Administrators of EPA Regions II and III to the Executive Director of the Delaware River Basin Commission.

The criteria are 44.4 picograms per liter in Zones 2 and 3, 44.8 picograms per liter in Zone 4 and the upper portion of Zone 5, and 7.9 picograms per liter in lower Zone 5. The more stringent criterion in the lower estuary reflects a higher fish consumption rate utilized by the Commission and the State of Delaware, based upon an evaluation of fish consumption there. A consequence of the inconsistency in criteria is that a critical location occurs at the point between upper and lower Zone 5 where the criteria drop sharply from 44.8 picograms per liter to 7.9 picograms per liter. Achieving the lower standard in a portion of Zone 5 will require much larger reductions in the upper zones than would otherwise be necessary. Significant reductions are required throughout the estuary in any case, as ambient concentrations of PCBs in the water body currently exceed the criteria by two to three orders of magnitude. (Total Maximum Daily Loads for PCBs For Zones 2 – 5 of the Tidal Delaware River Page iv)

The Schuylkill River's PCB TMDL was established using a developed water quality criterion of 0.044 ng/L for PCBs. Implementation of the TMDL will be completed in two phases. Phase I implementation of the TMDL requires that this facility collect and analyze one sample per year for PCBs utilizing Method 1668A. Phase II implementation of the TMDL will involve the development and implementation of a PMP based on the PCB monitoring results.

If the first two samples collected at outfall 018 each result in total congeners' combined concentration of < 0.044 ng/l, including lab-estimated concentrations above the method detection level but below the quantifiable level, and the certified lab satisfies the QA/QC requirements for the analysis, the PCB monitoring is allowed to be discontinued.

Carpenter Technology History

Carpenter's Reading PA site does not directly use PCBs or PBC containing products in any manufacturing processes and the manufacturing process do not have the necessary chemistry or conditions to generate PCBs. The Carpenter's Reading

plant manufacturing processes that operate at elevated temperatures are actually similar to processes used to destroy PCBs. Previous PCB usage at the Reading PA site was limited to Aroclor oils inside transformers manufactured before 1977. These oils were contained within the transformers and some of these transformers were located inside buildings so there was no exposure to precipitation. T

In 1998 Carpenter developed an accelerated plan to eliminate all PCB transformers from the Reading site. Fifteen transformers were identified as containing Aroclor oils which was confirmed through sampling. Ten of these transformers were replaced with new transformers which do not contain PCBs, and five of the newer transformers were drained, cleaned, and refilled with non-PCB oil. All fluids and empty transformers were manifested and sent off site for proper disposal.

Implementation of the TMDL will be completed in two phases. Phase I implementation of the TMDL requires that this facility collect and analyze one sample per year for PCBs utilizing Method 1668A.

Phase II implementation of the TMDL will involve the development and implementation of a PMP based on the PCB monitoring results. Carpenter is required to collect and analyze annual samples for PCBs utilizing Method 1668A at outfall 018 (see exception discussed later in paragraph). Annual samples are collected during a wet weather flow period at stormwater outfall 018. Exception: if the first two samples collected at outfall 018 each result in total congeners' combined concentration of < 0.044 ng/l, including lab-estimated concentrations above the method detection level but below the quantifiable level, and the certified lab satisfies the QA/QC requirements for the analysis, the PCB monitoring is allowed to be discontinued.

The PCB sampling data from 2017 to 2023 are summarized in the table below. The average, minimum, and maximum values from the data set are included at the bottom of the table.

Summary fo PCB Sampling Data
Beginning January 2017 and Ending December 2023

Monitoring Period Begin Date	Monitoring Period End Date	Outfall	Parameter Name	DMR Value		Units	Statistical Base Code
01/01/2017	12/31/2017	018	PCBs Wet Weather Analysis	<	1.89	ng/L	Daily Maximum
01/01/2018	12/31/2018	018	PCBs Wet Weather Analysis	<	2.45	ng/L	Daily Maximum
01/01/2019	12/31/2019	018	PCBs Wet Weather Analysis	<	0.663	ng/L	Daily Maximum
01/01/2020	12/31/2020	018	PCBs Wet Weather Analysis		2.466	ng/L	Daily Maximum
01/01/2021	12/31/2021	018	PCBs Wet Weather Analysis		1.80	ng/L	Daily Maximum
01/01/2022	12/31/2022	018	PCBs Wet Weather Analysis		0.83	ng/L	Daily Maximum
01/01/2023	12/31/2023	018	PCBs Wet Weather Analysis		0.35	ng/L	Daily Maximum
			Average		1.338	ng/l	
			Minimum	<	0.350	ng/l	
			Maximum		2.450	ng/l	

Since the facility's sampling data exceed the Schuylkill River's PCB TMDL established water quality criterion of 0.044 ng/L, the facility shall begin implementation of Phase II. This involves development and implementation of a PMP.

Carpenter has reached out to DRBC for guidance on Method 1668. The PCB sampling, reporting and PCB minimization efforts will be modified upon DRBC guidance and recommendations.

Guidance on preparing a PMP plan can be found at DRBC website at https://www.nj.gov/drbc/programs/quality/pmp.html.

5.5 Anti-Degradation Requirement

Chapter 93.4a of the PA regulations requires that surface water of the Commonwealth of Pennsylvania may not be degraded below levels that protect the existing uses. The regulations specifically state that *Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected*. Antidegradation requirements are implemented through DEP's guidance manual entitled Water Quality Antidegradation Implementation Guidance (Document #391-0300-02).

The policy requires DEP to protect the existing uses of all surface waters and the existing quality of High Quality (HQ) and Exceptional Value (EV) Waters. Existing uses are protected when DEP makes a final decision on any permit or approval for an activity that may affect a protected use. Existing uses are protected based upon DEP's evaluation of the best available information (which satisfies DEP protocols and Quality Assurance/Quality Control (QA/QC) procedures) that indicates the protected use of the waterbody.

For a new, additional, or increased point source discharge to an HQ or EV water, the person proposing the discharge is required to utilize a nondischarge alternative that is cost-effective and environmentally sound when compared with the cost of the proposed discharge. If a nondischarge alternative is not cost-effective and environmentally sound, the person must use the best available combination of treatment, pollution prevention, and wastewater reuse technologies and assure that any discharge is nondegrading. In the case of HQ waters, DEP may find that after satisfaction of intergovernmental coordination and public participation requirements lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In addition, DEP will assure that cost-effective and reasonable best management practices for nonpoint source control in HQ and EV waters are achieved.

The subject facility's discharge will be to a non-special protection waters and the permit conditions are imposed to protect existing instream water quality and uses. Neither HQ waters or EV waters is impacted by this discharge.

5.6 Anti-Backsliding

Anti-backsliding is a federal regulation which prohibits a permit from being renewed, reissued, or modified containing effluent limitations which are less stringent than the comparable effluent limitations in the previous permit (40 CFR 122.l.1 and 40 CFR 122.l.2). A review of the existing permit limitations with the proposed permit limitations confirm that the facility is consistent with anti-backsliding requirements. The facility has proposed effluent limitations that are as stringent as the existing permit.

6.0 Discussion on Modeling Assumptions

Flow Rate for Outfall 901

The current permit utilized the design flow rate of 1.45 MGD for modeling.

DEP practices are to use average flow rates for modeling. The proposed permit uses an average flow rate of 0.92 MGD for modeling. The average flow rate was estimated using DMR data from November 2017 to July 2023. The flow rates are summarized in the table located in Attachment E. There are two columns in the table that report flow rate. One column is raw data from DMR. The second column excludes a possible outlier data point from June 2018 where the reported flow rate of 0.001 MGD was reported. This was done to calculate the statistics at the bottom of the table.

The average flow rate from November 2017 to July 2023 was 0.92 MGD. More recent flow rate data from January 2022 to July 2023 was 0.91 MGD. Since the flow rate from the November 2017 to July 2023 is nearly the same as the flow rate from January 2022 to July 2023, the average flow rate of 0.92 MGD was used for modeling.

Modeling Considerations:

Q710 Discussion:

See discussion in Section 4.5

Partial Mixing Factor Discussion:

Consistent with the Comment and Response from 2016, partial mixing factor of 0.50 was used. The mixing factor was determined from data the facility had submitted. (Comment and Response from 2016 / Response #3)

Thermal Modeling

Consistent with the Implementation Guidance for Temperature Criteria, thermal modeling was conducted using DEP's Thermal Discharge Limit Calculation Worksheet. DEP attempted to model for reasonable worst-case scenario based upon inputs to the model. The major variables in the model include stream Q710, partial mixing factor, and flow rate of discharge.

Flow Rate Discussion:

A conservative flow rate was chosen for modeling.

The facility has numerous outfalls discharging non-contact cooling water (Outfalls 002, 004, 005, 011, 012, 013, 902 (internal monitoring point), and 014. The non-contact cooling water is mostly closed loop except for discharges in emergency situations.

The flow rates that were considered for modeling purposes were:

(a) the total influent flow rate (0.9 MGD + 1.0 MGD + 0.06 MGD = 1.96 MGD),
(b) the sum of the average flow rate during production/operation (i.e. <0.001 MGD * 8 outfalls = <0.008 MGD), and
(c) a selection of the largest single individual design flow rate among all the outfalls discharging cooling water (i.e. 3.09 MGD).

To model for a reasonable worst-case scenario, the flow rate utilized for thermal monitoring was the largest single individual design flow rate amongst all the outfalls discharging cooling water which is 3.09 MGD. DEP recommended this flow rate for the following reasons:

- This flow rate is the largest amongst the itemized aforementioned a, b, and c listed above.
- Using actual flow rate for DMR data from November 2017 to August 2023, the largest daily maximum of non-contact cooling water discharged was 0.288 MGD in July 2019. The 3.09 MGD flow rate is nearly 10x larger than the 0.288 MGD flow rate.
- The non-contact cooling water is closed loop and only discharges in emergency situations.

This Fact Sheet estimated the Q710 using the Reading gauge station. Since the receiving stream is a large stream, incomplete mixing occurs. The facility submitted dye testing to support complete mixing with a day's time. DEP utilized a PMF of 0.5 (Fact Sheet 2016). The low flow yield was multiplied by 0.5.

A low flow yield of 0.122 ft3/s/mi2 was utilized for WQM and TMS for the subject facility.

For the thermal worksheet, the Q710 utilized was 162 ft^3/s with a PMF of 0.5.

Since the facility withdrawals water from a source other than the receiving stream, the facility matches the Case 2 scenario for thermal modeling. Map records the Schuylkill River as a warm water fish stream. Modeling outputs shows that the maximum permitted temperature for all 12 months shall be 110 F. Thermal discharges may not exceed 110°F (43.3°C) at any point accessible to the general public.

The draft permit limit for discharge temperature is the same as the current permit limit for discharge temperature.

The thermal worksheets are viewable in Appendix C.

7.0 NPDES Parameter Details

The basis for the proposed sampling and their monitoring frequency that will appear in the permit for each individual parameter are itemized in this Section. The final limits are the more stringent of technology based effluent treatment (TBEL) requirements, water quality based (WQBEL) limits, TMDL, antidegradation, anti-degradation, or WET.

The reader will find in this section:

a) a justification of recommended permit monitoring requirements and limitations for each parameter in the proposed NPDES permit;

b) a summary of changes from the existing NPDES permit to the proposed permit; and
c) a summary of the proposed NPDES effluent limits.

A summary of the recommended monitoring requirements and effluent limitations are itemized in the tables. The tables are categorized by (a) Conventional Pollutants and Disinfection, (b) Nitrogen Species and Phosphorus, and (c) Toxics.

7.1 Recommended Monitoring Requirements and Effluent Limitations

The facility has eleven (11) different process lines. The table below summarizes the code of federal regulations section enforcing the effluent limits guidelines (ELG) limits. The process lines are identified as Process Lines A through K. The ELG citations appear in the Attachment section of the Fact Sheet.

Process Line	Subcategory	Section
A	Hot Forming Section Specialty	420.72(b)(2)
B	Hot Forming Flat Specialty	420.72(c)(1)
C	Salt Bath Descaling Oxidizing Batch Rod Wire	420.82(a)(2)
D	Salt Bath Descaling Reducing Batch	420.82(b)(1)
E	Combination Acid Pickling Rod Wire Coil	420.92(c)(1)
F	Combination Acid Pickling Continuous	420.92(c)(3)
G	Cold Rolling Direct Application	420.102(a)(5)
H	Cold Rolling Recirculation	420.102(a)(2)
I	Alkaline Cleaning	420.112(b)
J	Fume Scrubbers - Combination Acid	420.92(c)(6)
K	Electroplating, Chem milling, Shaving, Shaped bar and wire, Turning, Polishing & Coatings	40 CFR 433.13.a. / 40 CFR 433.14.a

Based upon the production data from 2019 to 2023 for the facility, DEP selected the production data for 2023 as the basis for permit limit development. Among the years 2019 to 2023, year 2023 had the second highest production. While year 2019 was higher, the timeframe was pre-covid. The production data from 2023 was higher than the average production for the years 2019 to 2023.

A series of tables was utilized to calculate the ELG. A separate table was constructed as a decision tree to select the proposed effluent limit. The proposed effluent limits is the more stringent of the ELG, TBEL, WQBEL, or the current limit through anti-backsliding. The summary table identifies the purpose of the table.

Table	Purpose of Table
ELG1.0	Table of emission factors abstracted from ELG federal regulations for Process lines A to J
ELG1.1	Mass limits for Process Line A thru J. Mass limits obtained by Production x emission factor
ELG2.0	Table of emission factors abstracted from ELG federal regulations for process line K
ELG2.1	Mass limits for Process Line K. Mass limits obtained by Production x emission factor
ELG3.0	Total Mass Loading for Process lines A to K
CONC4.0	Summary of Concentration limits. This table evaluates which policy enforces permit limit
MASS5.0	Summary of Mass limits. This table evaluates which policy enforces permit limit

(1) Table ELG1.0 summarizes the emission factor for Process Lines A to J. Table ELG1.1 multiples the production rate by the emission factor to give the mass loadings for the pollutants.

(2) Table ELG2.0 summarizes the emission factors for Process Line K. Table ELG2.1 multiples the production rate by the emission factor to give the mass loadings for the pollutants.

The pollutants were calculated using the following equation

Mass Loading, lbs/day = (155 gal/min)(60 min/hr)(24 hr/day)*EF*8.34*(1/1e6)

Example: Mass loading for TSS = (155 gal/min)(60 min/hr)(24 hr/day)*(60 mg/l)*8.34*(1/1e6) = 111 lbs/day

(3) Table ELG3.0 provides a grand total of the mass loadings from Tables ELG1.1 and ELG2.1. The total mass loadings for Process Lines A to K appear in the table.

(4) Table CONC4.0 expresses values as concentration in mg/l. This table compares the ELG MassLimitConc (MLC), the TBEL, the WQBEL, and the current limit to select which limit presides for the proposed permit. The MLC was calculated by taking the total mass loadings from Table ELG3.0 and dividing by the average design flow rate and divided by the 8.34 factor

Example: MLC for TSS = (650 lbs/day) / [0.92 MGD / 8.34] = 85 mg/l.

(5) Table Mass5.0 expresses values as mass in lbs/day. This table compares the Total ELG1 + ELG2, the TBEL, the WQBEL, and the current limit to select which limit presides for the proposed permit.

Effluent Limits Development Discussion

WQM:

The deoxygenation coefficient was adjusted downward for Carpenter's discharge as recommended by the DEP's Standard Operating Procedure (SOP) for Establishing Effluent Limitations for Individual Industrial Permits. Fate coefficient for $CBOD_5$. The model default value for the deoxygenation coefficient is 1.5/day for sewage discharges but many industrial wastewaters do not have high $CBOD_5$ concentrations. To be conservative, the Fate coefficient used in the model was 0.7. (Fact Sheet from July 2016)

Metal Impurities:

Total, Lead, Total Silver, and Total Zinc: The Fact Sheet documents these metals as impurities. They are not utilized in the raw material. Thus, monitoring shall continue 1x/yr.

Naphthalene and Tetrachloroethylene:

The DEP accepts the permittee's previous arguments that imposing daily maximum limits for Naphthalene and Tetrachloroethylene (PCE) due to ELGs included in 40 CFR Part 420 are not appropriate in their case because:

a) the ELGs for Naphthalene and PCE only apply to cold forming process wastewater;
b) the cold forming process wastewater is a minor component of the total volume of wastewater treated in the IWTP;
c) these pollutants are covered by the ELG for TTO included in Part 433 to which the facility is also subject;
d) toxics modeling showed no reasonable potential.

As allowed in the previous permit, quarterly reporting of these parameters will continue to be required as will a concentration limit for TTO. Not imposing ELG limits for Naphthalene and PCE constitutes a waiver.

Pollutants Treated by Groundwater Remediation:

- 1,1-Dichloroethylene (1,1-DCE);
- Cis 1,2-Dichloroethylene;
- 1,1,1-Trichloroethane (1,1,1-TCA);
- Trichloroethylene (TCE); and
- Tetrachloroethylene (PCE).

PFOS:

Monitoring requirements and conditions for per- and polyfluoroalkyl substances (PFAS)-related compounds.

The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in 4 consecutive monitoring periods indicate non-detects 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, permittees should enter a No Discharge Indicator (NODI) Code of "GG" on DMRs

Schuylkill River PCB TMDL: - DRBC and EPA

See Section 5.4.1.1

Total Residual Chlorine (TRC)

Consistent with the Fact Sheet from July 2016, a TRC evaluation was completed.

The facility receives 0.9 MGD of chlorinated water from the city. An additional 1.0 MGD of water is supplied through groundwater wells. The process includes addition of sodium hypochlorite. The TRC modeling included (1) using a total influent flow rate of 1.9 MGD and (2) a partial mixing factor of 0.5 to account for incomplete mixing at the discharge point with the Schuylkill River.

The modeling recommends TBEL limits at 0.5 mg/l and 1.4 mg/l instantaneous maximum. Since no reasonable potential is apparent, no TRC limit has been included in the proposed permit.

Total Dissolved Solids (TDS) BASELINE

For documentation and future use, a baseline **TDS** load was calculated for this discharge:

3552 mg/l x 1.45 MGD x 8.34 = 43,000 lb/day (from Fact Sheet August 2017)

The NPDES application reported the sample maximum of 3,916 mg/l out of thirteen samples.

Thus, the TDS load is:

3916 mg/l x 1.45 MGD x 8.34 = 47,356 lbs/day.

Consistent with the SOP and Chapter 95.10, a monitoring requirement for TDS is required since the discharge exceeds 1,000 mg/L TDS.

Note: If an existing facility proposes to increase their annual average TDS mass loading by more than 5000 lb/day per Chapter 95.10 of the PA Code, a TDS limit of 2000 mg/l as a monthly average could apply, unless a variance is granted by the DEP.

Total Nitrogen and Phosphorus:

Industrial facilities that discharge nitrogen in quantities that may exceed 75 lbs/day should at minimum receive a monitoring requirement for Total Nitrogen. Monitoring results for TN were 81 mg/l December 2023, 86 mg/l March 2024, 87 mg/l June 2024, 55 mg/l in September 2024. Monitoring for nitrogen shall continue 1x/quarter.

Industrial facilities that discharge phosphorus in quantities that may exceed 25 lbs/day should at minimum receive a monitoring requirement for Total Phosphorus. Samples results from the NPDES application for phosphorus were very low levels of phosphorus. The application reported a maximum value of <0.02 mg/l from three samples. Since the phosphorus does not exceed 25 lbs/day, monitoring shall not be required for phosphorus.

Major Changes to Permit Limit Developments

- Flow Rate Basis
  - Current: 1.45 MGD. This is the design flow rate.
  - Proposed: 0.92 MGD. Guidance documents recommend utilizing average design flow rate.
- Instantaneous Maximum (IMAX)
  - Current: Anti-backsliding from previous permits was implemented for IMAX
  - Proposed: IMAX was determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants)
- Pollutants Thallium and Benz(a) pyrene were added based upon the sampling results from the NPDES permit application. Upon favorable re-sampling results from the facility, these pollutants may be dropped from the final permit.

7.1.1 Conventional Pollutants and Disinfection

Summary of Proposed NPDES Parameter Details for Conventional Pollutants and Disinfection			
Carpenter Technology Corporation; PA0013129; Outall 901			
Parameter	**Permit Limitation**	**Recommendation**	
pH (S.U.)	ELG / Chapter 95.2(1)	Monitoring:	The monitoring frequency shall be 1x/day
		Rationale:	Effluent limit established by ELG and Chaptyer 95.2(1)
Oil and Grease	TBEL / Chapter 95.2(2)	Monitoring:	The monitoring frequency shall be 2x/month
		Rationale:	Effluent limits established by Chapter 95.2(2)
TSS	TBEL (Chapter 92a.47(1)	Monitoring:	The monitoring frequency shall be 2x/month
		Rationale:	Effluent limits established by Chapter 92a.47(1)
Notes:			
- ELG: Effluent Limit Guideline			
- ELG-MLC: Effluent Limit Guideline- Mass Limit Concentration: Limits calculated by ELG- MLC = ELG Mass / 8.34 / 0.92 MGD			
- Table 5-2			
- TBEL: Technology Based Effluent Limit			
- WQBEL: Water Quality Based Effluent Limit			

7.1.2 Nitrogen Species and Phosphorus

Summary of Proposed NPDES Parameter Details for Nitrogen and Phosphorus				
Carpenter Technology Corporation; PA0013129; Outall 901				
Parameter	**Permit Limitation**		**Recommendation**	
Ammonia-Nitrogen	**Concentration**	WQBEL	Monitoring:	The monitoring frequency shall be 2x/month as a composite sample
	Mass	WQBEL	Rationale:	Since this parameter is known to be presnet in the effluent, this parameter shall continue to be monitored
Total Nitrogen	**Concentration**	-----	Monitoring:	The monitoring frequency shall be 1x/quarter as a composite sample
	Mass	SOP	Rationale:	The current permit includes this parameter as it was justified that the total loading was significant. Continue to monitor to the proposed permit.
Notes:				
- ELG: Effluent Limit Guideline				
- ELG-MLC: Effluent Limit Guideline- Mass Limit Concentration: Limits calculated by ELG- MLC = ELG Mass / 8.34 / 0.92 MGD				
- TBEL: Technology Based Effluent Limit				
- WQBEL: Water Quality Based Effluent Limit				

7.1.3 Toxics

Summary of Proposed NPDES Parameter Details for Toxics (Metals)				
Carpenter Technology Corporation; PA0013129; Outall 901				
Parameter	**Permit Limitation**		**Recommendation**	
Total Cadmium	**Concentration**	ELG-MLC	Monitoring:	The monitoring frequency shall be 1x/quarter as a composite sample
	Mass	ELG	Rationale:	The parameter is not used in the raw material. It is an impurity in the process.
Total Copper	**Concentration**	WQBEL	Monitoring:	The monitoring frequency shall be 2x/month as a composite sample
	Mass	WQBEL	Rationale:	The WQBEL is more stringent than the ELG
Hexavalent Chromium	**Concentration**	WQBEL/AntiBacksliding	Monitoring:	The monitoring frequency shall be 2x/month as a composite sample
	Mass	WQBEL/AntiBacksliding	Rationale:	This parameter has been included in previous permit and the current permit due to antibacksliding
Total Chromium	**Concentration**	ELG-MLC	Monitoring:	The monitoring frequency shall be 2x/month as a composite sample
	Mass	ELG	Rationale:	Effluent limits established by ELG
Cyanide	**Concentration**	ELG-MLC	Monitoring:	The monitoring frequency shall be 2x/month as a grab sample
	Mass	ELG	Rationale:	Effluent limits established by ELG
Total Lead	**Concentration**	ELG-MLC	Monitoring:	The monitoring frequency shall be 1x/quarter as a composite sample
	Mass	ELG	Rationale:	The parameter is not used in the raw material. It is an impurity in the process.
Total Nickel	**Concentration**	ELG-MLC	Monitoring:	The monitoring frequency shall be 2x/month as a composite sample
	Mass	ELG	Rationale:	Effluent limits established by ELG
Total Silver	**Concentration**	ELG-MLC	Monitoring:	The monitoring frequency shall be 1x/quarter as a composite sample
	Mass	ELG	Rationale:	The parameter is not used in the raw material. It is an impurity in the process.
Total Zinc	**Concentration**	ELG-MLC	Monitoring:	The monitoring frequency shall be 1x/quarter as a composite sample
	Mass	ELG	Rationale:	The parameter is not used in the raw material. It is an impurity in the process.
Notes:				
- ELG: Effluent Limit Guideline				
- ELG-MLC: Effluent Limit Guideline- Mass Limit Concentration: Limits calculated by ELG- MLC = ELG Mass / 8.34 / 0.92 MGD				
- TBEL: Technology Based Efflluent Limit				
- WQBEL: Water Quality Based Effluent Limit				

Summary of Proposed NPDES Parameter Details for Toxics (Volatiles/Semi-Volatiles)				
Carpenter Technology Corporation; PA0013129; Outall 901				
Parameter	**Permit Limitation**		**Recommendation**	
Napthalene	**Concentration**	ELG-MLC	Monitoring:	The monitoring frequency shall be 1x/quarter as a composite sample
	Mass	-----	Rationale:	Effluent limits established by ELG. DEP recommends monitor and reporting
TTO	**Concentration**	ELG-MLC	Monitoring:	The monitoring frequency shall be 1x/year
	Mass	ELG	Rationale:	ELG requires effluent limit for mass.
1,1-Dichloroethylene (1,1-DCE)	**Concentration**	-----	Monitoring:	The monitoring frequency shall be 1x/year as a grab sample
	Mass	-----	Rationale:	This pollutant is presently treated by the groundwater remediation system and the facility's wastewater treatment plant
Cis 1,2-Dichloroethylene (cis 1,2-DCE)	**Concentration**	-----	Monitoring:	The monitoring frequency shall be 1x/year as a grab sample
	Mass	-----	Rationale:	This pollutant is presently treated by the groundwater remediation system and the facility's wastewater treatment plant
1,1,1-Trichloroethane (1,1,1-TCA)	**Concentration**	-----	Monitoring:	The monitoring frequency shall be 1x/year as a grab sample
	Mass	-----	Rationale:	This pollutant is presently treated by the groundwater remediation system and the facility's wastewater treatment plant
Trichloroethylene (TCE)	**Concentration**	-----	Monitoring:	The monitoring frequency shall be 1x/year as a grab sample
	Mass	-----	Rationale:	This pollutant is presently treated by the groundwater remediation system and the facility's wastewater treatment plant
Tetrachloroethylene (PCE)	**Concentration**	ELG-MLC	Monitoring:	The monitoring frequency shall be 1x/quarter as a grab sample
	Mass	-----	Rationale:	This pollutant is presently treated by the groundwater remediation system and the facility's wastewater treatment plant. This pollutant is also regulated by ELG. DEP recommends monitor and reporting only. See discussion in Section 7.1 f Fact Sheet.
Notes:				
- ELG: Effluent Limit Guideline				
- ELG-MLC: Effluent Limit Guideline- Mass Limit Concentration: Limits calculated by ELG- MLC = ELG Mass / 8.34 / 0.92 MGD				
- TBEL: Technology Based Efflluent Limit				
- WQBEL: Water Quality Based Effluent Limit				

7.1.4 Stormwater Outfalls

The permittee must monitor and report analytical results for the pollutants on the NPDES permit table for representative outfalls. Benchmark values are not effluent limitations. Exceedances do not constitute permit violations. However, if the permittee's sampling demonstrates exceedances of benchmark values for two or more consecutive monitoring periods, the permittee shall take action in accordance with Part C V.I of the General Permit.

7.2 Summary of Changes From Existing Permit to Proposed Permit

A summary of how the proposed NPDES permit differs from the existing NPDES permit is summarized as follows.

- Sulfate, bromide, and chloride have been eliminated.
- Cadmium has been included for stormwater monitoring
- Changes to permit limits occurred for many of the existing parameters. This is due to use of 0.92 MGD as the average flow rate and due to different production levels.
- Chemical additive usage limits are included in the NPDES permit.
- Monitoring for all groundwater pollutants

7.3.1 Summary of Proposed NPDES Effluent Limits

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.

The proposed NPDES effluent limitations are summarized in the table below.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. L. For Outfall 901 , **Latitude** 40° 21' 27.00" , **Longitude** 75° 56' 18.00" , **River Mile Index** 1.1400 , **Stream Code** _____

Receiving Waters: Schuylkill River (WWF, MF)

Type of Effluent: _____

1. The permittee is authorized to discharge during the period from **Permit Effective Date** through **Permit Expiration Date**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Temperature (deg F) (°F)	XXX	XXX	XXX	Report	Report	XXX	2/month	I-S
Total Suspended Solids	230	460	XXX	30.0	60.0	75	2/month	24-Hr Composite
Total Dissolved Solids	Report	XXX	XXX	Report	XXX	XXX	1/month	Grab
Oil and Grease	115	230	XXX	15.0	30.0	30	2/month	Grab
Total Nitrogen	XXX	Report	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Ammonia-Nitrogen	235	470	XXX	30.0	60.0	75	2/month	24-Hr Composite
Nitrate as N	XXX	Report	XXX	XXX	Report	XXX	1/month	24-Hr Composite
Cadmium, Total	0.5 Avg Qrtly	1.3	XXX	XXX	0.17	XXX	1/quarter	Composite
Chromium, Hexavalent	0.67	1.05	XXX	0.088	0.137	0.21	2/month	24-Hr Composite

Outfall 901, 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	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Chromium, Total	5.3	10.5	XXX	0.69	1.37	1.72	2/month	24-Hr Composite
Copper, Total	3.9	6.3	XXX	0.5	0.82	1.25	2/month	Composite
Cyanide, Total	1.4	2.7	XXX	0.18	0.35	0.45	2/month	24-Hr Composite
Lead, Total	0.9 Avg Qrtly	1.6	XXX	XXX	0.21	XXX	1/quarter	24-Hr Composite
Nickel, Total	6.0	12.2	XXX	0.79	1.59	1.97	2/month	24-Hr Composite
Silver, Total	0.4 Avg Qrtly	0.8	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Zinc, Total	2.8 Avg Qrtly	5.1	XXX	XXX	0.66	XXX	1/quarter	24-Hr Composite
Total Toxic Organics	XXX	4.0	XXX	0.52 Daily Max	XXX	XXX	1/year	See Permit
1,1,1-Trichloroethane	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Naphthalene	XXX	Report	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
1,1-Dichloroethylene	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
1,2-Dichloroethene	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Tetrachloroethylene	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Tetrachloroethylene	XXX	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	1/quarter	24-Hr Composite
Trichloroethylene	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
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

Outfall 901, 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	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
HFPO-DA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Outfall 901

The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS 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, permittees must enter a No Discharge Indicator (NODI) Code of "GG" on DMRs

7.3.2 Summary of Proposed Permit Part C Conditions

The subject facility has the following Part C conditions.

- Stormwater Requirements
- Representative stormwater monitoring outfalls
    - Monitoring requirements and effluent limitations are specified in Part A of this permit for outfalls 015, 016, and 017 which shall serve as representative outfalls for the other stormwater-only outfalls. Part A also includes a monitoring requirement for outfall 018, another stormwater-only outfall, but only for PCBs as discussed in Part C.V.
- Chemical Additive Usage Limits

Summary of Allowable Usages for Chemical Additives

Additive/Chemical	Maximum Allowable Usage (lbs/day) w/ 0.008 MGD flow rate
Continuum AT3203	117
Corrshield MD4103	127
Gengard GN8113	617
Gemgard GN8203	958
Spectrus NX1103	1.07
Spectrus NX1106	11.8

- TMDL PCB
- PFOS monitoring

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☒	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: New and Reissuance Industrial Waste and Industrial Stormwater, rev October 11, 2013
☐	Other:

Attachment A

Stream Stats/Gauge Data

10 Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania

Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

[Latitude and Longitude in decimal degrees; mi², square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi²)	Regulated[1]
01465780	Poquessing Creek above Byberry Creek at Phila., Pa.	40.070	-74.975	13.2	N
01465798	Poquessing Creek at Grant Ave. at Philadelphia, Pa.	40.057	-74.985	21.4	N
01465850	South Branch Rancocas Creek at Vincentown, N.J.	39.94	-74.763	64.5	N
01466500	McDonalds Branch in Byrne State Forest, N.J.	39.885	-74.505	2.35	N
01467000	North Branch Rancocas Creek at Pemberton, N.J.	39.97	-74.684	118	N
01467042	Pennypack Creek at Pine Road, at Philadelphia, Pa.	40.090	-75.069	37.9	N
01467048	Pennypack Creek at Lower Rhawn St Bdg, Phila., Pa.	40.050	-75.033	49.8	N
01467050	Wooden Bridge Run at Philadelphia, Pa.	40.055	-75.022	3.35	N
01467081	South Branch Pennsauken Creek at Cherry Hill, N.J.	39.942	-75.001	8.98	N
01467086	Tacony Creek ab Adams Avenue, Philadelphia, Pa.	40.047	-75.111	16.7	N
01467087	Frankford Creek at Castor Ave, Philadelphia, Pa.	40.016	-75.097	30.4	N
01467089	Frankford Creek at Torresdale Ave., Phila., Pa.	40.007	-75.092	33.8	N
01467150	Cooper River at Haddonfield, N.J.	39.903	-75.021	17.0	N
01467500	Schuylkill River at Pottsville, Pa.	40.684	-76.186	53.4	N
01468500	Schuylkill River at Landingville, Pa.	40.629	-76.125	133	N
01469500	Little Schuylkill River at Tamaqua, Pa.	40.807	-75.972	42.9	N
01470500	Schuylkill River at Berne, Pa.	40.523	-75.998	355	N
01470756	Maiden Creek at Virginville, Pa.	40.514	-75.883	159	N
01470779	Tulpehocken Creek near Bernville, Pa.	40.413	-76.172	66.5	N
01470853	Furnace Creek at Robesonia, Pa.	40.340	-76.143	4.18	N
01470960	Tulpehocken Creek at Blue Marsh Damsite near Reading, Pa.	40.371	-76.025	175	Y
01471000	Tulpehocken Creek near Reading, Pa.	40.369	-75.979	211	Y
01471510	Schuylkill River at Reading, Pa.	40.335	-75.936	880	Y
01471875	Manatawny Creek near Spangsville, Pa.	40.340	-75.742	56.9	N
01471980	Manatawny Creek near Pottstown, Pa.	40.273	-75.680	85.5	N
01472000	Schuylkill River at Pottstown, Pa.	40.242	-75.652	1,147	Y
01472157	French Creek near Phoenixville, Pa.	40.151	-75.601	59.1	N
01472174	Pickering Creek near Chester Springs, Pa.	40.090	-75.630	5.98	N
01472198	Perkiomen Creek at East Greenville, Pa.	40.394	-75.515	38.0	N
01472199	West Branch Perkiomen Creek at Hillegass, Pa.	40.374	-75.522	23.0	N
01472500	Perkiomen Creek near Frederick, Pa.	40.275	-75.455	152	N
01472620	East Branch Perkiomen Creek near Dublin, Pa.	40.404	-75.234	4.05	LF
01472810	East Branch Perkiomen Creek near Schwenksville, Pa.	40.259	-75.429	58.7	LF
01473000	Perkiomen Creek at Graterford, Pa.	40.230	-75.452	279	LF
01473120	Skippack Creek near Collegeville, Pa.	40.165	-75.433	53.7	N
01473169	Valley Creek at Pa. Turnpike Br near Valley Forge, Pa.	40.079	-75.461	20.8	N
01473500	Schuylkill River at Norristown, Pa.	40.111	-75.347	1,760	N
01473900	Wissahickon Creek at Fort Washington, Pa.	40.124	-75.220	40.8	N
01473950	Wissahickon Creek at Bells Mill Rd, Phila., Pa.	40.080	-75.226	53.6	N
01473980	Wissahickon Creek at Livezey Lane, Phila., Pa.	40.050	-75.214	59.2	N
01474000	Wissahickon Creek at Mouth, Philadelphia, Pa.	40.015	-75.207	64.0	N
01474500	Schuylkill River at Philadelphia, Pa.	39.968	-75.189	1,893	N
01475000	Mantua Creek at Pitman, N.J.	39.737	-75.113	6.05	N
01475300	Darby Creek at Waterloo Mills near Devon, Pa.	40.023	-75.422	5.15	N
01475510	Darby Creek near Darby, Pa.	39.929	-75.272	37.4	N

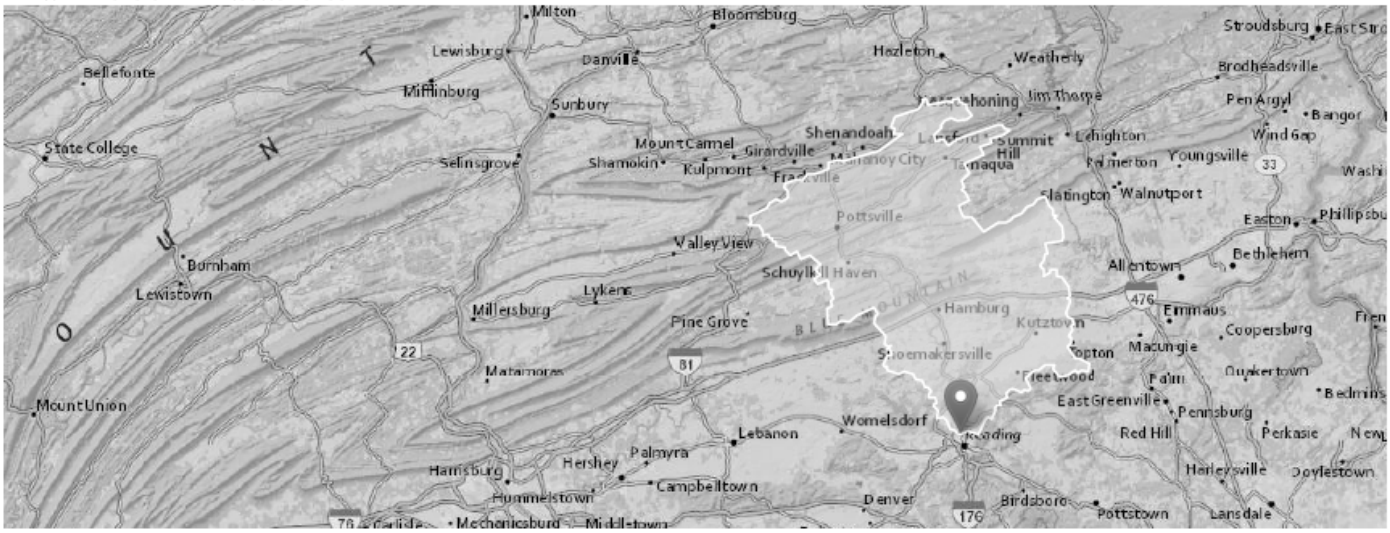
Table 2. Selected low-flow statistics for streamgage locations in and near Pennsylvania.—Continued

[ft³/s; cubic feet per second; —, statistic not computed; <, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	1-day, 10-year (ft³/s)	7-day, 10-year (ft³/s)	7-day, 2-year (ft³/s)	30-day, 10-year (ft³/s)	30-day, 2-year (ft³/s)	90-day, 10-year (ft³/s)
01453000	[3]1904–1927	18	237	312	447	378	546	472
01454700	1968–2005	38	471	510	745	600	902	760
01455500	1930–2008	52	0	.4	7.8	—	—	6.0
01457000	1905–2008	89	40.6	45.6	70.5	52.2	81.7	62.5
01459500	[2]1975–2008	34	1.9	2.1	4.1	2.9	7.1	5.7
01459500	[3]1937–1973	37	.4	.9	2.1	1.3	3.6	2.9
01463500	1914–2008	95	1,540	1,720	2,700	1,960	3,120	2,430
01463620	1974–2008	19	2.4	2.7	7.6	4.8	10.6	8.6
01464000	1925–2008	84	9.4	14.2	25.7	18.7	34.2	29.3
01464500	1942–2008	65	16.4	18.9	34.0	24.4	42.3	37.3
01464645	1987–2008	22	3.3	3.6	12.3	4.4	13.6	5.4
01464720	1992–2008	17	3.0	3.6	5.8	4.5	7.3	6.2
01465000	1886–1934	28	—	3.4	10.1	4.9	15.0	12.9
01465500	1936–2008	73	9.0	12.7	26.4	17.3	37.4	28.6
01465770	1966–1982	16	.3	.4	1.2	.8	1.7	1.7
01465798	1967–2008	42	1.0	1.2	3.6	3.0	6.8	7.9
01465850	1963–2008	19	5.2	8.5	13.2	12.1	19.5	17.1
01466500	1955–2008	54	.8	.8	1.1	.9	1.2	.9
01467000	1923–2008	86	26.2	34.2	51.8	41.6	63.2	53.2
01467042	1966–1981	16	8.6	9.3	16.8	11.3	21.5	17.0
01467048	1967–2008	42	10.7	12.1	18.9	16.6	27.2	26.6
01467050	1967–1981	15	.3	.4	.8	.7	1.3	1.6
01467081	1969–2008	38	2.4	2.9	4.1	3.9	6.0	6.3
01467086	1967–1988	23	3.3	4.4	6.9	6.6	9.9	10.4
01467087	1984–2008	25	1.6	2.1	6.1	4.8	10.1	12.0
01467089	1968–1982	15	4.8	6.6	9.6	10.3	16.0	20.1
01467150	1965–2008	44	3.9	5.4	10.1	7.3	13.2	11.5
01467500	1945–1969	25	14.6	17.2	24.5	19.8	28.5	23.4
01468500	1949–2008	40	40.8	44.5	70.6	52.1	82.4	65.0
01469500	1921–2008	88	4.8	5.5	10.9	7.3	14.4	10.1
01470500	1949–2008	60	69.2	82.3	137	102	164	133
01470756	1974–1995	22	14.8	16.7	30.5	23.4	43.9	35.5
01470779	1976–2008	33	21.9	24.6	39.3	29.4	45.2	34.8
01470853	1984–2005	22	.2	.4	1.2	.8	1.6	1.1
01470960	[2]1980–2008	29	29.4	31.8	52.4	47.0	74.7	66.3
01470960	[3]1967–1978	12	32.7	38.2	74.0	47.6	88.3	59.5
01471000	[2]1980–2008	29	36.9	43.4	69.4	58.9	93.9	81.0
01471000	[3]1952–1978	27	41.8	47.6	77.1	55.3	91.2	68.6
01471510	[2]1980–2008	29	222	244	347	274	422	340
01471510	[3]1916–1930	10	142	173	279	206	337	245
01471875	1995–2008	14	10.9	11.8	21.2	14.1	25.3	19.0
01471980	1976–2004	29	16.5	17.8	29.2	21.7	34.9	29.7
01472000	[2]1980–2008	29	276	301	432	349	527	453
01472000	[3]1929–1978	50	228	258	411	298	486	374
01472157	1970–2008	39	9.5	10.2	17.2	12.5	21.8	17.0

StreamStats Report

Region ID: PA
Workspace ID: PA20230712183832878000
Clicked Point (Latitude, Longitude): 40.35724, -75.93864
Time: 2023-07-12 14:38:59 -0400



Carpenter Technology Corporation PA0013129 Modeling Point #1 July 2023

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	10.91	percent
DRNAREA	Area that drains to a point on a stream	665	square miles
PRECIP	Mean Annual Precipitation	48	inches
ROCKDEP	Depth to rock	4.3	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.3	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (665 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	665	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	48	inches	35	50.4
STRDEN	Stream Density	1.3	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.3	feet	3.32	5.65
CARBON	Percent Carbonate	10.91	percent	0	99

Low-Flow Statistics Flow Report [100.0 Percent (665 square miles) Low Flow Region 2]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	268	ft^3/s	38	38

Statistic	Value	Unit	SE	ASEp
30 Day 2 Year Low Flow	323	ft^3/s	33	33
7 Day 10 Year Low Flow	162	ft^3/s	51	51
30 Day 10 Year Low Flow	197	ft^3/s	46	46
90 Day 10 Year Low Flow	252	ft^3/s	36	36

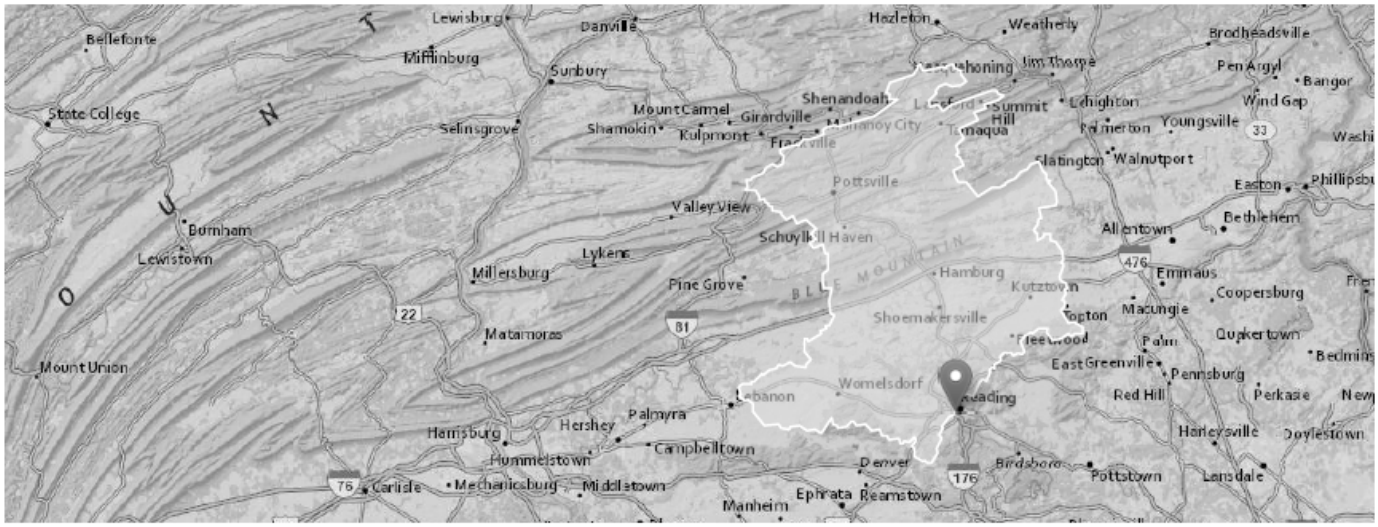
Low-Flow Statistics Citations

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

Application Version: 4.16.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report

Region ID: PA
Workspace ID: PA20230712184233120000
Clicked Point (Latitude, Longitude): 40.32952, -75.93795
Time: 2023-07-12 14:42:59 -0400



Carpenter Technology Corporation PA0013129 Modeling Point #2 July 2023

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	19.29	percent
DRNAREA	Area that drains to a point on a stream	903	square miles
PRECIP	Mean Annual Precipitation	47	inches
ROCKDEP	Depth to rock	4.3	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.3	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [99.9 Percent (903 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	903	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	47	inches	35	50.4
STRDEN	Stream Density	1.3	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.3	feet	3.32	5.65
CARBON	Percent Carbonate	19.29	percent	0	99

Low-Flow Statistics Flow Report [99.9 Percent (903 square miles) Low Flow Region 2]

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	385	ft^3/s	38	38

Statistic	Value	Unit	SE	ASEp
30 Day 2 Year Low Flow	456	ft^3/s	33	33
7 Day 10 Year Low Flow	242	ft^3/s	51	51
30 Day 10 Year Low Flow	290	ft^3/s	46	46
90 Day 10 Year Low Flow	358	ft^3/s	36	36

Low-Flow Statistics Citations

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

Application Version: 4.16.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report

Region ID: PA
Workspace ID: PA20240110181939443000
Clicked Point (Latitude, Longitude): 40.30496, -75.92048
Time: 2024-01-10 13:20:01 -0500

Carpenter Technology PA0013129 Modeling Point #3 (Reading WWTP) January 2024

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	6.5315	degrees
CARBON	Percentage of area of carbonate rock	19.72	percent
DRNAREA	Area that drains to a point on a stream	919	square miles
PRECIP	Mean Annual Precipitation	47	inches
ROCKDEP	Depth to rock	4.4	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.29	miles per square mile
URBAN	Percentage of basin with urban development	6.4842	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [1.0 Percent (13.3 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	919	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	6.5315	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.4	feet	4.13	5.21
URBAN	Percent Urban	6.4842	percent	0	89

Low-Flow Statistics Parameters [99.0 Percent (905 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	919	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	47	inches	35	50.4
STRDEN	Stream Density	1.29	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.4	feet	3.32	5.65
CARBON	Percent Carbonate	19.72	percent	0	99

Low-Flow Statistics Disclaimers [1.0 Percent (13.3 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 [1.0 Percent (13.3 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	236	ft^3/s
30 Day 2 Year Low Flow	286	ft^3/s
7 Day 10 Year Low Flow	146	ft^3/s
30 Day 10 Year Low Flow	174	ft^3/s
90 Day 10 Year Low Flow	222	ft^3/s

Low-Flow Statistics Flow Report [99.0 Percent (905 square miles) Low Flow Region 2]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	415	ft^3/s	38	38
30 Day 2 Year Low Flow	486	ft^3/s	33	33
7 Day 10 Year Low Flow	269	ft^3/s	51	51

Statistic	Value	Unit	SE	ASEp
30 Day 10 Year Low Flow	317	ft^3/s	46	46
90 Day 10 Year Low Flow	385	ft^3/s	36	36

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	413	ft^3/s
30 Day 2 Year Low Flow	484	ft^3/s
7 Day 10 Year Low Flow	268	ft^3/s
30 Day 10 Year Low Flow	316	ft^3/s
90 Day 10 Year Low Flow	383	ft^3/s

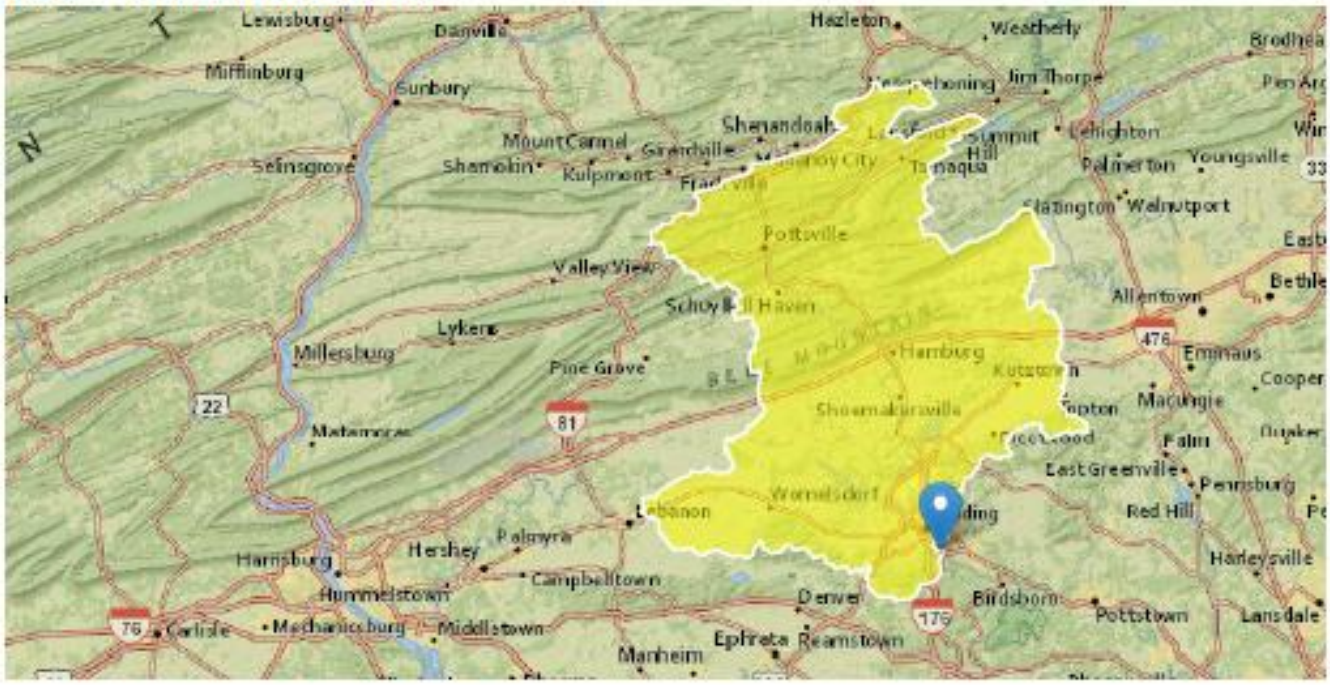
Low-Flow Statistics Citations

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

Application Version: 4.19.3
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report

Region ID: PA
Workspace ID: PA20240110122401191000
Clicked Point (Latitude, Longitude): 40.30630, -75.90632
Time: 2024-01-10 07:24:23 -0500



Carpenter Technology PA0013129 Modeling Point #4 (Point downstream) January 2024

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	6.541	degrees
CARBON	Percentage of area of carbonate rock	19.63	percent
DRNAREA	Area that drains to a point on a stream	923	square miles
PRECIP	Mean Annual Precipitation	47	inches
ROCKDEP	Depth to rock	4.4	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.3	miles per square mile
URBAN	Percentage of basin with urban development	6.4817	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [2.0 Percent (17.9 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	923	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	6.541	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.4	feet	4.13	5.21
URBAN	Percent Urban	6.4817	percent	0	89

Low-Flow Statistics Parameters [98.0 Percent (905 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	923	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	47	inches	35	50.4
STRDEN	Stream Density	1.3	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.4	feet	3.32	5.65
CARBON	Percent Carbonate	19.63	percent	0	99

Low-Flow Statistics Disclaimers [2.0 Percent (17.9 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 [2.0 Percent (17.9 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	238	ft^3/s
30 Day 2 Year Low Flow	288	ft^3/s
7 Day 10 Year Low Flow	147	ft^3/s
30 Day 10 Year Low Flow	175	ft^3/s
90 Day 10 Year Low Flow	223	ft^3/s

Low-Flow Statistics Flow Report [98.0 Percent (905 square miles) Low Flow Region 2]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	414	ft^3/s	38	38
30 Day 2 Year Low Flow	484	ft^3/s	33	33
7 Day 10 Year Low Flow	268	ft^3/s	51	51

Statistic	Value	Unit	SE	ASEp
30 Day 10 Year Low Flow	316	ft^3/s	46	46
90 Day 10 Year Low Flow	384	ft^3/s	36	36

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	410	ft^3/s
30 Day 2 Year Low Flow	480	ft^3/s
7 Day 10 Year Low Flow	266	ft^3/s
30 Day 10 Year Low Flow	313	ft^3/s
90 Day 10 Year Low Flow	381	ft^3/s

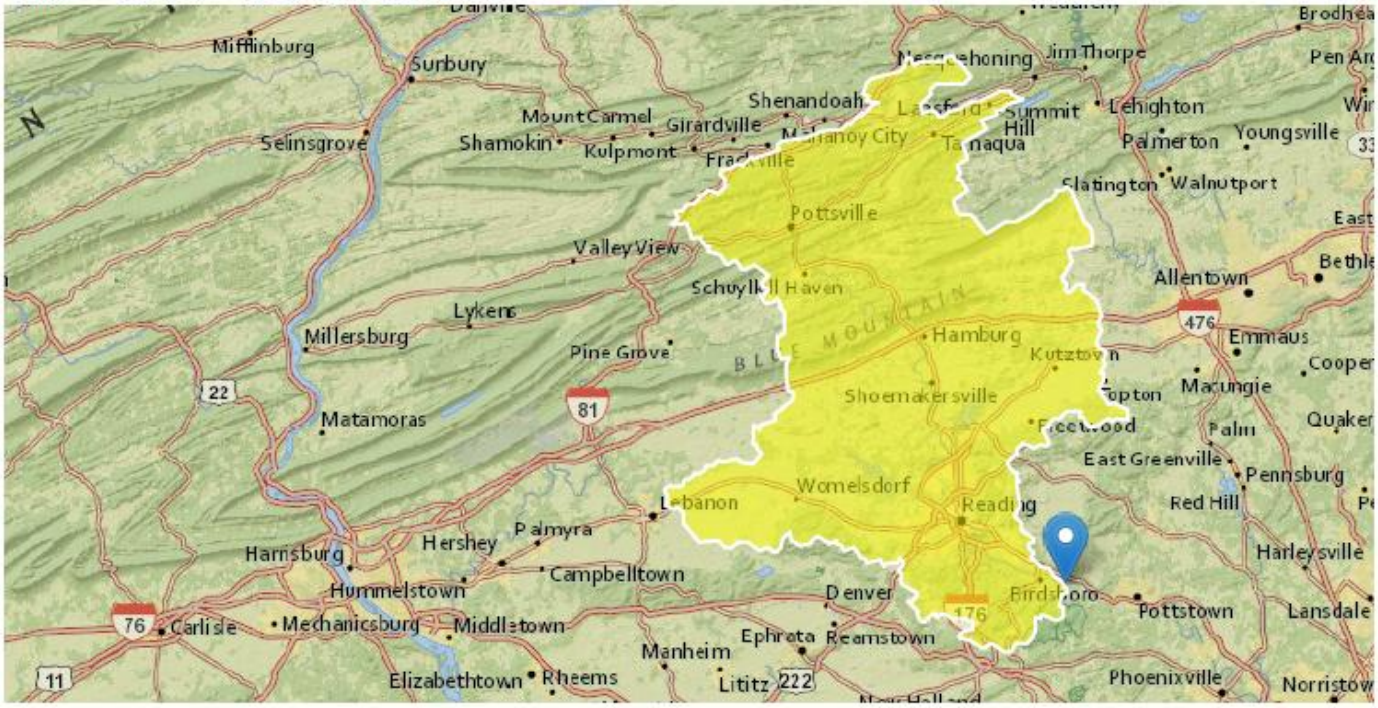
Low-Flow Statistics Citations

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

Application Version: 4.19.3
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report

Region ID: PA
Workspace ID: PA20241118185626423000
Clicked Point (Latitude, Longitude): 40.25934, -75.76515
Time: 2024-11-18 13:56:52 -0500



Carpenter Technology PA0013129 Modeling Point #5 November 2024

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	6.5823	degrees
CARBON	Percentage of area of carbonate rock	18.45	percent
DRNAREA	Area that drains to a point on a stream	1010	square miles
PRECIP	Mean Annual Precipitation	47	inches
ROCKDEP	Depth to rock	4.4	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.32	miles per square mile
URBAN	Percentage of basin with urban development	6.6649	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [10.0 Percent (101 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1010	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	6.5823	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.4	feet	4.13	5.21
URBAN	Percent Urban	6.6649	percent	0	89

Low-Flow Statistics Parameters [90.0 Percent (905 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1010	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	47	inches	35	50.4
STRDEN	Stream Density	1.32	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.4	feet	3.32	5.65
CARBON	Percent Carbonate	18.45	percent	0	99

Low-Flow Statistics Disclaimers [10.0 Percent (101 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 [10.0 Percent (101 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	263	ft^3/s
30 Day 2 Year Low Flow	318	ft^3/s
7 Day 10 Year Low Flow	164	ft^3/s
30 Day 10 Year Low Flow	195	ft^3/s
90 Day 10 Year Low Flow	247	ft^3/s

Low-Flow Statistics Flow Report [90.0 Percent (905 square miles) Low Flow Region 2]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	444	ft^3/s	38	38
30 Day 2 Year Low Flow	521	ft^3/s	33	33
7 Day 10 Year Low Flow	288	ft^3/s	51	51

Statistic	Value	Unit	SE	ASEp
30 Day 10 Year Low Flow	340	ft^3/s	46	46
90 Day 10 Year Low Flow	413	ft^3/s	36	36

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	426	ft^3/s
30 Day 2 Year Low Flow	501	ft^3/s
7 Day 10 Year Low Flow	276	ft^3/s
30 Day 10 Year Low Flow	326	ft^3/s
90 Day 10 Year Low Flow	396	ft^3/s

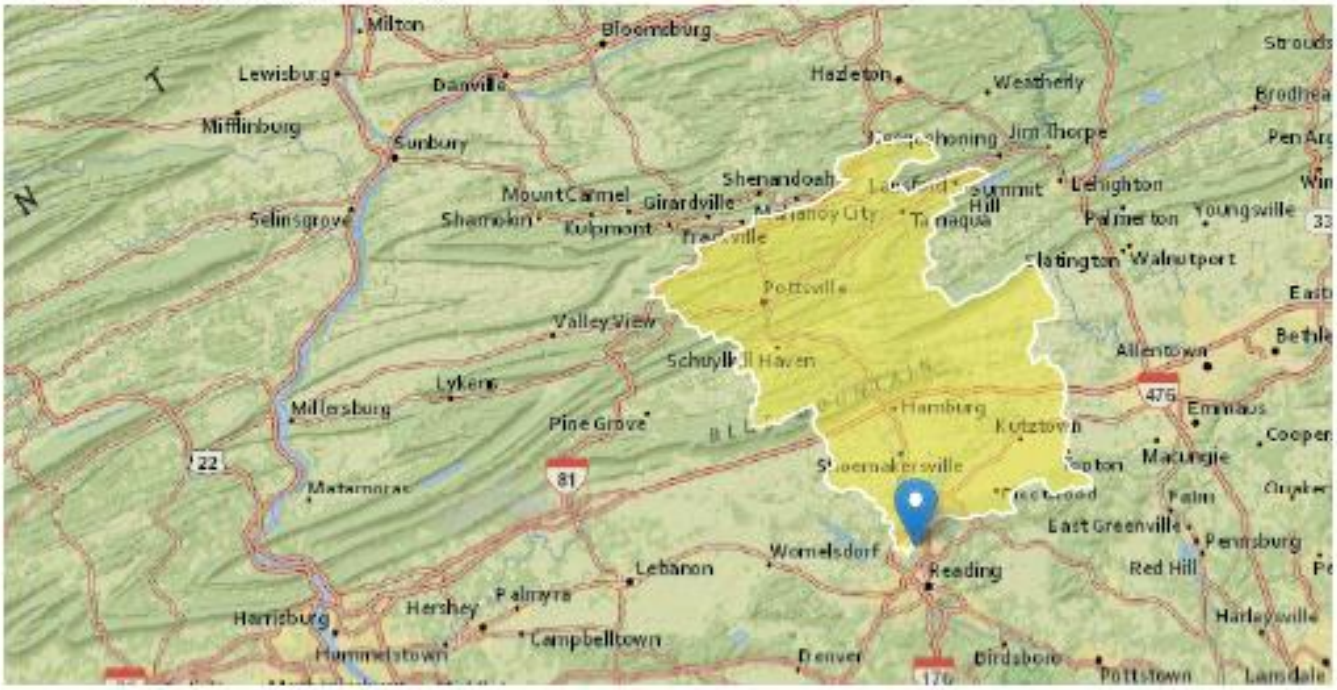
Low-Flow Statistics Citations

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

Application Version: 4.24.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report

Region ID: PA
Workspace ID: PA20240110181523749000
Clicked Point (Latitude, Longitude): 40.38246, -75.95233
Time: 2024-01-10 13:15:46 -0500



Carpenter Technology PA0013129 Modeling Point #A January 2023

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	9.77	percent
DRNAREA	Area that drains to a point on a stream	648	square miles
PRECIP	Mean Annual Precipitation	48	inches
ROCKDEP	Depth to rock	4.3	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.31	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	648	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	48	inches	35	50.4
STRDEN	Stream Density	1.31	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.3	feet	3.32	5.65
CARBON	Percent Carbonate	9.77	percent	0	99

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

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

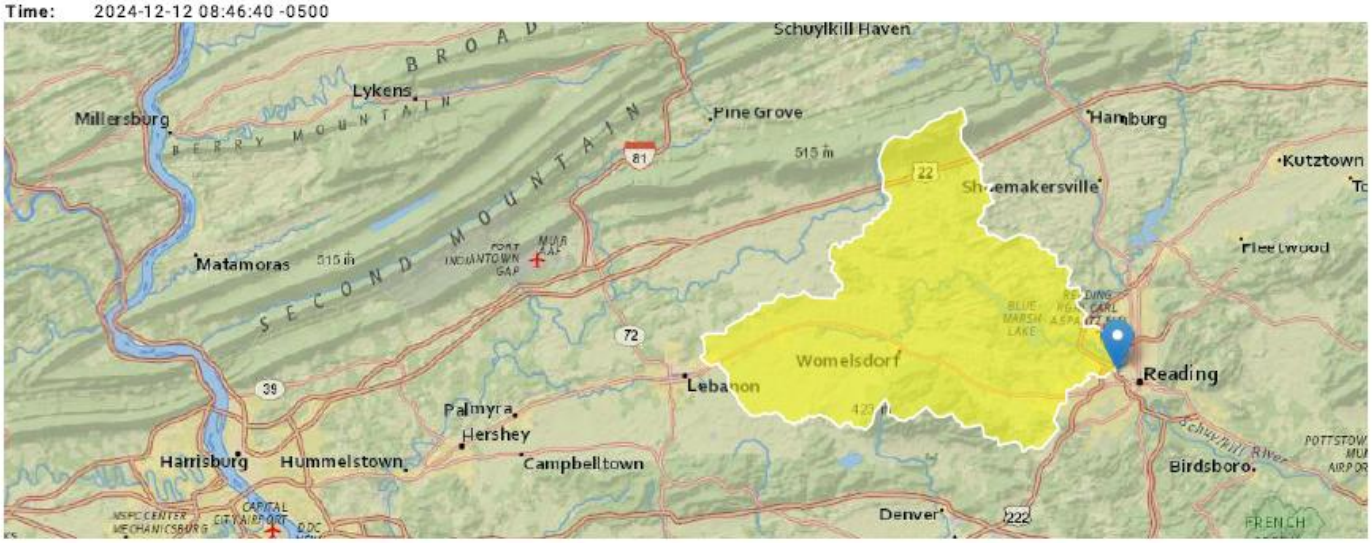
Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	255	ft^3/s	38	38
30 Day 2 Year Low Flow	309	ft^3/s	33	33
7 Day 10 Year Low Flow	153	ft^3/s	51	51
30 Day 10 Year Low Flow	187	ft^3/s	46	46
90 Day 10 Year Low Flow	240	ft^3/s	36	36

Low-Flow Statistics Citations

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

StreamStats Report

Region ID: PA
Workspace ID: PA20241212134616739000
Clicked Point (Latitude, Longitude): 40.34491, -75.95098
Time: 2024-12-12 08:46:40 -0500



Carpenter Technology Corporation PA0013129 Tulpehocken End of Stream December 2024

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	42.59	percent
DRNAREA	Area that drains to a point on a stream	220	square miles
PRECIP	Mean Annual Precipitation	45	inches
ROCKDEP	Depth to rock	4.4	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.3	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	220	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	45	inches	35	50.4
STRDEN	Stream Density	1.3	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.4	feet	3.32	5.65
CARBON	Percent Carbonate	42.59	percent	0	99

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

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	92.9	ft^3/s	38	38
30 Day 2 Year Low Flow	108	ft^3/s	33	33
7 Day 10 Year Low Flow	58	ft^3/s	51	51
30 Day 10 Year Low Flow	68.4	ft^3/s	46	46
90 Day 10 Year Low Flow	81.6	ft^3/s	36	36

Low-Flow Statistics Citations

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

Application Version: 4.24.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment B

WQM Outputs
Toxics Management Spreadsheet Output Values

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)
79.100	Reading Airport	PA0028720-24	0.420	CBOD5	25		
				NH3-N	13.17	26.34	
				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)
76.760	Carpenter	PA0013129-24	0.920	CBOD5	25		
				NH3-N	15	30	
				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)
74.130	Wyomissing	PA0026638-24	4.000	CBOD5	16		
				NH3-N	2.64	5.28	
				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)
71.840	Reading WWTP	PA0026549	20.500	CBOD5	10.17		
				NH3-N	3.05	6.1	
				Dissolved Oxygen			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
79.100	Reading Airport	3.1	40	3.1	40	0	0
76.760	Carpenter	3.5	50	3.82	50	0	0
74.130	Wyomissing	4.8	6	5.29	6	0	0
71.840	Reading WWTP	9.46	10.2	9.85	10.2	0	0
70.350		NA	NA	9.82	NA	NA	NA

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
79.100	Reading Airport	.64	20	.64	16.73	2	16
76.760	Carpenter	.69	22.55	.73	18.86	2	16
74.130	Wyomissing	.85	3	.9	2.64	4	12
71.840	Reading WWTP	1.3	3.94	1.33	3.47	4	12
70.350		NA	NA	1.33	NA	NA	NA

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)		
79.10	Reading Airport	25	25	16.73	13.17	5	5	5	14
76.76	Carpenter	25	25	18.86	15	5	5	5	14
74.13	Wyomissing	20	16	2.64	2.64	5	5	5	14
71.84	Reading WWTP	11.87	10.17	3.56	3.05	5	5	5	14
70.35		NA	NA	NA	NA	NA	NA	NA	NA

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	**79.100**	230.00	648.00	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	0.059	0.00	0.00	0.000	0.000	0.0	0.00	0.00	23.30	8.05	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
Reading Airport	PA0028720-24	0.4200	0.4200	0.4200	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	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	**76.760**	202.00	665.00	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	0.122	0.00	0.00	0.000	0.000	0.0	0.00	0.00	23.30	8.05	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
Carpenter	PA0013129-24	0.9200	0.9200	0.9200	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	0.70
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	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	**74.130**	187.00	903.00	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	0.067	0.00	0.00	0.000	0.000	0.0	0.00	0.00	23.30	8.05	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
Wyomissing	PA0026638-24	4.0000	4.0000	4.0000	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	20.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	3.00	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	**71.840**	182.00	919.00	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	0.073	0.00	0.00	0.000	0.000	0.0	0.00	0.00	23.30	8.05	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
Reading WWTP	PA0026549	20.5000	20.5000	20.5000	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	17.30	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	5.10	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	**70.350**	169.00	923.00	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	0.144	0.00	0.00	0.000	0.000	0.0	0.00	0.00	23.30	8.05	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

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	**60.200**	136.00	1010.00	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	0.137	0.00	0.00	0.000	0.000	0.0	0.00	0.00	23.30	8.05	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 D.O.Simulation

SWP Basin	Stream Code	Stream Name
03F	833	SCHUYLKILL RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
79.100	0.420	23.328	7.982
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
110.615	1.040	106.330	0.338
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.38	0.195	0.22	0.904
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.189	3.865	Tsivoglou	5
Reach Travel Time (days)			
0.423			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.042	2.36	0.21	7.76
0.085	2.34	0.20	7.76
0.127	2.32	0.20	7.76
0.169	2.29	0.19	7.76
0.212	2.27	0.18	7.76
0.254	2.25	0.17	7.76
0.296	2.23	0.17	7.76
0.339	2.21	0.16	7.76
0.381	2.19	0.16	7.76
0.423	2.17	0.15	7.76

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
76.760	1.340	23.383	7.874
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
118.701	1.053	112.744	0.339
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.92	0.246	0.64	0.908
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.691	1.851	Tsivoglou	5
Reach Travel Time (days)			
0.474			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.047	2.89	0.61	7.59
0.095	2.85	0.59	7.51
0.142	2.81	0.56	7.44
0.190	2.77	0.54	7.38
0.237	2.73	0.52	7.33
0.284	2.69	0.50	7.29
0.332	2.66	0.47	7.26
0.379	2.62	0.45	7.23
0.427	2.59	0.44	7.21
0.474	2.55	0.42	7.20

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
74.130	5.340	23.518	7.687
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
149.236	1.112	134.204	0.389
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.71	0.520	0.53	0.918
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.247	0.815	Tsivoglou	5
Reach Travel Time (days)			
0.360			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.036	3.62	0.51	7.09
0.072	3.55	0.49	6.94
0.108	3.47	0.48	6.80
0.144	3.39	0.46	6.67
0.180	3.32	0.45	6.55
0.216	3.25	0.43	6.44
0.252	3.18	0.42	6.33
0.288	3.11	0.41	6.24
0.324	3.04	0.39	6.14
0.360	2.97	0.38	6.06

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
71.840	25.840	22.370	7.334
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
166.468	1.110	149.940	0.527
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.31	0.703	1.24	0.840
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.741	4.297	Tsivoglou	5
Reach Travel Time (days)			
0.173			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.017	5.23	1.23	5.78
0.035	5.16	1.21	5.81
0.052	5.10	1.19	5.85
0.069	5.03	1.17	5.88
0.086	4.96	1.16	5.91
0.104	4.89	1.14	5.95
0.121	4.83	1.12	5.98
0.138	4.76	1.11	6.02
0.156	4.70	1.09	6.05
0.173	4.63	1.08	6.09

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
70.350	25.840	22.375	7.337
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
174.333	1.123	155.247	0.500
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.62	0.535	1.07	0.840
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.098	1.521	Tsivoglou	5
Reach Travel Time (days)			
1.239			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.124	4.29	0.96	5.67
0.248	3.98	0.87	5.39
0.372	3.70	0.78	5.22
0.496	3.44	0.71	5.15
0.620	3.19	0.64	5.15
0.744	2.96	0.57	5.20
0.868	2.75	0.52	5.29
0.992	2.56	0.47	5.40
1.115	2.37	0.42	5.54
1.239	2.21	0.38	5.69

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												
79.100	38.23	0.00	38.23	.6497	0.00227	1.04	110.61	106.33	0.34	0.423	23.33	7.98
76.760	40.31	0.00	40.31	2.073	0.00108	1.053	118.7	112.74	0.34	0.474	23.38	7.87
74.130	56.25	0.00	56.25	8.261	0.00041	1.112	149.24	134.2	0.39	0.360	23.52	7.69
71.840	57.42	0.00	57.42	39.9745	0.00165	1.11	166.47	149.94	0.53	0.173	22.37	7.33
70.350	58.00	0.00	58.00	39.9745	0.00062	1.123	174.33	155.25	0.50	1.239	22.38	7.34
Q1-10 Flow												
79.100	34.79	0.00	34.79	.6497	0.00227	NA	NA	NA	0.32	0.446	23.33	7.98
76.760	36.68	0.00	36.68	2.073	0.00108	NA	NA	NA	0.32	0.498	23.39	7.86
74.130	51.19	0.00	51.19	8.261	0.00041	NA	NA	NA	0.37	0.377	23.54	7.67
71.840	52.25	0.00	52.25	39.9745	0.00165	NA	NA	NA	0.51	0.178	22.32	7.32
70.350	52.78	0.00	52.78	39.9745	0.00062	NA	NA	NA	0.49	1.278	22.32	7.32
Q30-10 Flow												
79.100	42.82	0.00	42.82	.6497	0.00227	NA	NA	NA	0.36	0.398	23.33	7.99
76.760	45.14	0.00	45.14	2.073	0.00108	NA	NA	NA	0.36	0.446	23.37	7.89
74.130	63.00	0.00	63.00	8.261	0.00041	NA	NA	NA	0.41	0.340	23.50	7.71
71.840	64.31	0.00	64.31	39.9745	0.00165	NA	NA	NA	0.55	0.166	22.43	7.36
70.350	64.96	0.00	64.96	39.9745	0.00062	NA	NA	NA	0.52	1.193	22.44	7.36

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	0.91	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.12	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

TMS Run #1- Sample results from NPDES application

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: Carpenter Technology Corp. NPDES Permit No.: PA0013129 Outfall No.: 901

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: 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
0.92	1457	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		3916									
	Chloride (PWS)	mg/L		1610									
	Bromide	mg/L	<	2.5									
	Sulfate (PWS)	mg/L		136									
	Fluoride (PWS)	mg/L		10.9									
Group 2	Total Aluminum	µg/L		23									
	Total Antimony	µg/L	<	22									
	Total Arsenic	µg/L	<	22									
	Total Barium	µg/L		44									
	Total Beryllium	µg/L	<	6									
	Total Boron	µg/L		480									
	Total Cadmium	µg/L	<	6									
	Total Chromium (III)	µg/L		51									
	Hexavalent Chromium	µg/L		26									
	Total Cobalt	µg/L	<	6									
	Total Copper	µg/L		54									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	14									
	Dissolved Iron	µg/L	<	22									
	Total Iron	µg/L		163									
	Total Lead	µg/L	<	22									
	Total Manganese	µg/L	<	6									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		118									
	Total Phenols (Phenolics) (PWS)	µg/L	<	20									
	Total Selenium	µg/L	<	22									
	Total Silver	µg/L	<	6									
	Total Thallium	µg/L	<	22									
	Total Zinc	µg/L	<	6									
	Total Molybdenum	µg/L		1180									
	Acrolein	µg/L	<	100									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	1									
	Benzene	µg/L	<	1									
	Bromoform	µg/L	<	1									
	Carbon Tetrachloride	µg/L	<	1									
	Chlorobenzene	µg/L	<	1									
	Chlorodibromomethane	µg/L	<	1									
	Chloroethane	µg/L	<	1									
	2-Chloroethyl Vinyl Ether	µg/L	<	1									

Group 3	Chloroform	µg/L		1.7										
	Dichlorobromomethane	µg/L	<	1										
	1,1-Dichloroethane	µg/L	<	1										
	1,2-Dichloroethane	µg/L	<	1										
	1,1-Dichloroethylene	µg/L	<	1										
	1,2-Dichloropropane	µg/L	<	1										
	1,3-Dichloropropylene	µg/L	<	1										
	1,4-Dioxane	µg/L	<	250										
	Ethylbenzene	µg/L	<	1										
	Methyl Bromide	µg/L	<	1										
	Methyl Chloride	µg/L	<	1										
	Methylene Chloride	µg/L	<	1										
	1,1,2,2-Tetrachloroethane	µg/L	<	1										
	Tetrachloroethylene	µg/L	<	1										
	Toluene	µg/L	<	1										
	1,2-trans-Dichloroethylene	µg/L	<	1										
	1,1,1-Trichloroethane	µg/L	<	1										
	1,1,2-Trichloroethane	µg/L	<	1										
	Trichloroethylene	µg/L	<	1										
	Vinyl Chloride	µg/L	<	1										
Group 4	2-Chlorophenol	µg/L	<	5										
	2,4-Dichlorophenol	µg/L	<	5										
	2,4-Dimethylphenol	µg/L	<	10										
	4,6-Dinitro-o-Cresol	µg/L	<	10										
	2,4-Dinitrophenol	µg/L	<	5										
	2-Nitrophenol	µg/L	<	5										
	4-Nitrophenol	µg/L	<	5										
	p-Chloro-m-Cresol	µg/L	<	5										
	Pentachlorophenol	µg/L	<	5										
	Phenol	µg/L	<	1.1										
	2,4,6-Trichlorophenol	µg/L	<	5										
Group 5	Acenaphthene	µg/L	<	5										
	Acenaphthylene	µg/L	<	5										
	Anthracene	µg/L	<	5										
	Benzidine	µg/L	<	63										
	Benzo(a)Anthracene	µg/L	<	5										
	Benzo(a)Pyrene	µg/L	<	5										
	3,4-Benzofluoranthene	µg/L	<	5										
	Benzo(ghi)Perylene	µg/L	<	5										
	Benzo(k)Fluoranthene	µg/L	<	5										
	Bis(2-Chloroethoxy)Methane	µg/L	<	5										
	Bis(2-Chloroethyl)Ether	µg/L	<	5										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5										
	4-Bromophenyl Phenyl Ether	µg/L	<	5										
	Butyl Benzyl Phthalate	µg/L	<	5										
	2-Chloronaphthalene	µg/L	<	5										
	4-Chlorophenyl Phenyl Ether	µg/L	<	5										
	Chrysene	µg/L	<	5										
	Dibenzo(a,h)Anthrancene	µg/L	<	5										
	1,2-Dichlorobenzene	µg/L	<	5										
	1,3-Dichlorobenzene	µg/L	<	5										
	1,4-Dichlorobenzene	µg/L	<	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	<	2.1										
	Hexachlorocyclopentadiene	µg/L	<	15										
	Hexachloroethane	µg/L	<	2.1										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	5										

	Isophorone	µg/L	<	5										
	Naphthalene	µg/L	<	2.1										
	Nitrobenzene	µg/L	<	5										
	n-Nitrosodimethylamine	µg/L	<	5										
	n-Nitrosodi-n-Propylamine	µg/L	<	5										
	n-Nitrosodiphenylamine	µg/L	<	5										
	Phenanthrene	µg/L	<	5										
	Pyrene	µg/L	<	5										
	1,2,4-Trichlorobenzene	µg/L	<	1										
Group 6	Aldrin	µg/L	<											
	alpha-BHC	µg/L	<											
	beta-BHC	µg/L	<											
	gamma-BHC	µg/L	<											
	delta BHC	µg/L	<											
	Chlordane	µg/L	<											
	4,4-DDT	µg/L	<											
	4,4-DDE	µg/L	<											
	4,4-DDD	µg/L	<											
	Dieldrin	µg/L	<											
	alpha-Endosulfan	µg/L	<											
	beta-Endosulfan	µg/L	<											
	Endosulfan Sulfate	µg/L	<											
	Endrin	µg/L	<											
	Endrin Aldehyde	µg/L	<											
	Heptachlor	µg/L	<											
	Heptachlor Epoxide	µg/L	<											
	PCB-1016	µg/L	<											
	PCB-1221	µg/L	<											
	PCB-1232	µg/L	<											
	PCB-1242	µg/L	<											
	PCB-1248	µg/L	<											
	PCB-1254	µg/L	<											
	PCB-1260	µg/L	<											
	PCBs, Total	µg/L	<											
	Toxaphene	µg/L	<											
	2,3,7,8-TCDD	ng/L	<											
Group 7	Gross Alpha	pCi/L												
	Total Beta	pCi/L	<											
	Radium 226/228	pCi/L	<											
	Total Strontium	µg/L	<											
	Total Uranium	µg/L	<											
	Osmotic Pressure	mOs/kg												

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Carpenter Technology Corp., NPDES Permit No. PA0013129, Outfall 901

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	76.76	202.11	665			Yes
End of Reach 1	000833	70.35	169.58	923			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	76.76	0.122										133	8.05		
End of Reach 1	70.35	0.144										133	8.05		

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	76.76														
End of Reach 1	70.35														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Carpenter Technology Corp., NPDES Permit No. PA0013129, Outfall 901

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.130 Analysis Hardness (mg/l): 290.75 Analysis pH: 7.70

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	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	6,295	
Total Antimony	0	0		0	1,100	1,100	9,232	
Total Arsenic	0	0		0	340	340	2,854	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	176,248	
Total Boron	0	0		0	8,100	8,100	67,981	
Total Cadmium	0	0		0	5.678	6.31	53.0	Chem Translator of 0.899 applied
Total Chromium (III)	0	0		0	1365.599	4,322	36,269	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	137	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	797	
Total Copper	0	0		0	36.737	38.3	321	Chem Translator of 0.96 applied
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	201.884	318	2,666	Chem Translator of 0.635 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	13.8	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1155.070	1,157	9,714	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	20.169	23.7	199	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	546	
Total Zinc	0	0		0	289.469	296	2,484	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	25.2	
Acrylonitrile	0	0		0	650	650	5,455	
Benzene	0	0		0	640	640	5,371	

Bromoform	0	0		0	1,800	1,800	15,107	
Carbon Tetrachloride	0	0		0	2,800	2,800	23,500	
Chlorobenzene	0	0		0	1,200	1,200	10,071	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	151,070	
Chloroform	0	0		0	1,900	1,900	15,946	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	125,891	
1,1-Dichloroethylene	0	0		0	7,500	7,500	62,946	
1,2-Dichloropropane	0	0		0	11,000	11,000	92,320	
1,3-Dichloropropylene	0	0		0	310	310	2,602	
Ethylbenzene	0	0		0	2,900	2,900	24,339	
Methyl Bromide	0	0		0	550	550	4,616	
Methyl Chloride	0	0		0	28,000	28,000	234,997	
Methylene Chloride	0	0		0	12,000	12,000	100,713	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	8,393	
Tetrachloroethylene	0	0		0	700	700	5,875	
Toluene	0	0		0	1,700	1,700	14,268	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	57,071	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	25,178	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	28,535	
Trichloroethylene	0	0		0	2,300	2,300	19,303	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	4,700	
2,4-Dichlorophenol	0	0		0	1,700	1,700	14,268	
2,4-Dimethylphenol	0	0		0	660	660	5,539	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	671	
2,4-Dinitrophenol	0	0		0	660	660	5,539	
2-Nitrophenol	0	0		0	8,000	8,000	67,142	
4-Nitrophenol	0	0		0	2,300	2,300	19,303	
p-Chloro-m-Cresol	0	0		0	160	160	1,343	
Pentachlorophenol	0	0		0	17.701	17.7	149	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	3,861	
Acenaphthene	0	0		0	83	83.0	697	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	2,518	
Benzo(a)Anthracene	0	0		0	0.5	0.5	4.2	
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	251,783	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	37,767	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	2,266	
Butyl Benzyl Phthalate	0	0		0	140	140	1,175	
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	6,882	
1,3-Dichlorobenzene	0	0		0	350	350	2,937	
1,4-Dichlorobenzene	0	0		0	730	730	6,127	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	33,571	
Dimethyl Phthalate	0	0		0	2,500	2,500	20,982	
Di-n-Butyl Phthalate	0	0		0	110	110	923	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	13,428	
2,6-Dinitrotoluene	0	0		0	990	990	8,309	
1,2-Diphenylhydrazine	0	0		0	15	15.0	126	
Fluoranthene	0	0		0	200	200	1,679	
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	83.9	
Hexachlorocyclopentadiene	0	0		0	5	5.0	42.0	
Hexachloroethane	0	0		0	60	60.0	504	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	83,928	
Naphthalene	0	0		0	140	140	1,175	
Nitrobenzene	0	0		0	4,000	4,000	33,571	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	142,677	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	2,518	
Phenanthrene	0	0		0	5	5.0	42.0	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	1,091	

☑ ***CFC*** CCT (min): 720 PMF: 0.899 Analysis Hardness (mg/l): 158.35 Analysis pH: 7.97

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	
Fluoride (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	11,488	
Total Arsenic	0	0		0	150	150	7,833	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	214,096	
Total Boron	0	0		0	1,600	1,600	83,550	
Total Cadmium	0	0		0	0.338	0.38	19.9	Chem Translator of 0.89 applied
Total Chromium (III)	0	0		0	107.995	126	6,557	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	543	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	992	
Total Copper	0	0		0	13.264	13.8	722	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	

Total Iron	0	0		0	1,500	1,500	87,006	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	4.135	5.71	298	Chem Translator of 0.724 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	47.3	Chem Translator of 0.85 applied
Total Nickel	0	0		0	76.727	77.0	4,019	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	261	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	679	
Total Zinc	0	0		0	174.398	177	9,236	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	157	
Acrylonitrile	0	0		0	130	130	6,788	
Benzene	0	0		0	130	130	6,788	
Bromoform	0	0		0	370	370	19,321	
Carbon Tetrachloride	0	0		0	560	560	29,242	
Chlorobenzene	0	0		0	240	240	12,532	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	182,765	
Chloroform	0	0		0	390	390	20,365	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	161,878	
1,1-Dichloroethylene	0	0		0	1,500	1,500	78,328	
1,2-Dichloropropane	0	0		0	2,200	2,200	114,881	
1,3-Dichloropropylene	0	0		0	61	61.0	3,185	
Ethylbenzene	0	0		0	580	580	30,287	
Methyl Bromide	0	0		0	110	110	5,744	
Methyl Chloride	0	0		0	5,500	5,500	287,202	
Methylene Chloride	0	0		0	2,400	2,400	125,325	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	10,966	
Tetrachloroethylene	0	0		0	140	140	7,311	
Toluene	0	0		0	330	330	17,232	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	73,106	
1,1,1-Trichloroethane	0	0		0	610	610	31,853	
1,1,2-Trichloroethane	0	0		0	680	680	35,509	
Trichloroethylene	0	0		0	450	450	23,498	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	5,744	
2,4-Dichlorophenol	0	0		0	340	340	17,754	
2,4-Dimethylphenol	0	0		0	130	130	6,788	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	835	
2,4-Dinitrophenol	0	0		0	130	130	6,788	
2-Nitrophenol	0	0		0	1,600	1,600	83,550	
4-Nitrophenol	0	0		0	470	470	24,543	
p-Chloro-m-Cresol	0	0		0	500	500	26,109	
Pentachlorophenol	0	0		0	13.580	13.6	709	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	4,752	
Acenaphthene	0	0		0	17	17.0	888	
Anthracene	0	0		0	N/A	N/A	N/A	

Benzidine	0	0		0	59	59.0	3,081	
Benzo(a)Anthracene	0	0		0	0.1	0.1	5.22	
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	313,312	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	47,519	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	2,820	
Butyl Benzyl Phthalate	0	0		0	35	35.0	1,828	
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	8,355	
1,3-Dichlorobenzene	0	0		0	69	69.0	3,603	
1,4-Dichlorobenzene	0	0		0	150	150	7,833	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	41,775	
Dimethyl Phthalate	0	0		0	500	500	26,109	
Di-n-Butyl Phthalate	0	0		0	21	21.0	1,097	
2,4-Dinitrotoluene	0	0		0	320	320	16,710	
2,6-Dinitrotoluene	0	0		0	200	200	10,444	
1,2-Diphenylhydrazine	0	0		0	3	3.0	157	
Fluoranthene	0	0		0	40	40.0	2,089	
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	104	
Hexachlorocyclopentadiene	0	0		0	1	1.0	52.2	
Hexachloroethane	0	0		0	12	12.0	627	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	109,659	
Naphthalene	0	0		0	43	43.0	2,245	
Nitrobenzene	0	0		0	810	810	42,297	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	177,543	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	3,081	
Phenanthrene	0	0		0	1	1.0	52.2	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	1,358	

☑ ***THH*** CCT (min): 720 PMF: 0.899 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	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	

Total Antimony	0	0		0	5.6	5.6	292	
Total Arsenic	0	0		0	10	10.0	522	
Total Barium	0	0		0	2,400	2,400	125,325	
Total Boron	0	0		0	3,100	3,100	161,878	
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	
Dissolved Iron	0	0		0	300	300	15,666	
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	52,219	
Total Mercury	0	0		0	0.050	0.05	2.61	
Total Nickel	0	0		0	610	610	31,853	
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	12.5	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	157	
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	5,222	
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	298	
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	1,723	
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	3,551	
Methyl Bromide	0	0		0	100	100.0	5,222	
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	2,976	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	5,222	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	522,186	
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	1,567	
2,4-Dichlorophenol	0	0		0	10	10.0	522	
2,4-Dimethylphenol	0	0		0	100	100.0	5,222	

4,6-Dinitro-o-Cresol	0	0		0	2	2.0	104	
2,4-Dinitrophenol	0	0		0	10	10.0	522	
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	208,874	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	3,655	
Anthracene	0	0		0	300	300	15,666	
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	10,444	
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	5.22	
2-Chloronaphthalene	0	0		0	800	800	41,775	
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	52,219	
1,3-Dichlorobenzene	0	0		0	7	7.0	366	
1,4-Dichlorobenzene	0	0		0	300	300	15,666	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	31,331	
Dimethyl Phthalate	0	0		0	2,000	2,000	104,437	
Di-n-Butyl Phthalate	0	0		0	20	20.0	1,044	
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	1,044	
Fluorene	0	0		0	50	50.0	2,611	
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	209	
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	1,775	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	522	
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	1,044	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	3.66	

☑ ***CRL*** CCT (min): ###### PMF: 1 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	
Fluoride (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	
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	14.7	
Benzene	0	0		0	0.58	0.58	142	
Bromoform	0	0		0	7	7.0	1,711	
Carbon Tetrachloride	0	0		0	0.4	0.4	97.8	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	196	
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	232	
1,2-Dichloroethane	0	0		0	9.9	9.9	2,420	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	220	
1,3-Dichloropropylene	0	0		0	0.27	0.27	66.0	
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	4,888	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	48.9	

Tetrachloroethylene	0	0		0	10	10.0	2,444	
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	134	
Trichloroethylene	0	0		0	0.6	0.6	147	
Vinyl Chloride	0	0		0	0.02	0.02	4.89	
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	7.33	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	367	
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	0.024	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.24	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.024	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.24	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	2.44	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	7.33	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	78.2	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	29.3	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.024	
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	12.2	
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	12.2	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	12.2	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	7.33	
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	0.02	
Hexachlorobutadiene	0	0		0	0.01	0.01	2.44	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	24.4	

Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.24	
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	0.17	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	1.22	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	807	
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 Cadmium	Report	Report	Report	Report	Report	µg/L	19.9	CFC	Discharge Conc > 10% WQBEL (no RP)
Hexavalent Chromium	Report	Report	Report	Report	Report	µg/L	87.6	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	206	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Thallium	0.096	0.15	12.5	19.6	31.3	µg/L	12.5	THH	Discharge Conc ≥ 50% WQBEL (RP)
Acrolein	0.12	0.19	16.1	25.2	40.3	µg/L	16.1	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Benzidine	0.0002	0.0003	0.024	0.038	0.061	µg/L	0.024	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(a)Anthracene	0.002	0.003	0.24	0.38	0.61	µg/L	0.24	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(a)Pyrene	0.0002	0.0003	0.024	0.038	0.061	µg/L	0.024	CRL	Discharge Conc ≥ 50% WQBEL (RP)
3,4-Benzofluoranthene	0.002	0.003	0.24	0.38	0.61	µg/L	0.24	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(k)Fluoranthene	0.019	0.029	2.44	3.81	6.11	µg/L	2.44	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Dibenzo(a,h)Anthrancene	0.0002	0.0003	0.024	0.038	0.061	µg/L	0.024	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Hexachlorobutadiene	0.019	0.029	2.44	3.81	6.11	µg/L	2.44	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Hexachlorocyclopentadiene	0.21	0.32	26.9	42.0	67.2	µg/L	26.9	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Indeno(1,2,3-cd)Pyrene	0.002	0.003	0.24	0.38	0.61	µg/L	0.24	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,2,4-Trichlorobenzene	Report	Report	Report	Report	Report	µg/L	3.66	THH	Discharge Conc > 25% 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
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	4,035	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	292	µg/L	Discharge Conc ≤ 10% WQBEL

Total Arsenic	522	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	112,968	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	43,573	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	6,557	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	511	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	15,666	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	87,006	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	298	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	52,219	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	2.61	µg/L	Discharge Conc < TQL
Total Nickel	4,019	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	261	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	128	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	1,592	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrylonitrile	14.7	µg/L	Discharge Conc < TQL
Benzene	142	µg/L	Discharge Conc ≤ 25% WQBEL
Bromoform	1,711	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	97.8	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	5,222	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	196	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	96,830	µg/L	Discharge Conc < TQL
Chloroform	298	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	232	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	2,420	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethylene	1,723	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-Dichloropropane	220	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichloropropylene	66.0	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	3,551	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Bromide	2,959	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	150,624	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	4,888	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	48.9	µg/L	Discharge Conc ≤ 25% WQBEL
Tetrachloroethylene	2,444	µg/L	Discharge Conc ≤ 25% WQBEL
Toluene	2,976	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	5,222	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	16,138	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2-Trichloroethane	134	µg/L	Discharge Conc ≤ 25% WQBEL
Trichloroethylene	147	µg/L	Discharge Conc ≤ 25% WQBEL
Vinyl Chloride	4.89	µg/L	Discharge Conc ≤ 25% WQBEL
2-Chlorophenol	1,567	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	522	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	3,550	µg/L	Discharge Conc < TQL

4,6-Dinitro-o-Cresol	104	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	522	µg/L	Discharge Conc < TQL
2-Nitrophenol	43,035	µg/L	Discharge Conc < TQL
4-Nitrophenol	12,373	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	861	µg/L	Discharge Conc < TQL
Pentachlorophenol	7.33	µg/L	Discharge Conc < TQL
Phenol	208,874	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	367	µg/L	Discharge Conc < TQL
Acenaphthene	446	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	15,666	µg/L	Discharge Conc ≤ 25% WQBEL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	7.33	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	10,444	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	78.2	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	1,452	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	5.22	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	41,775	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	29.3	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-Dichlorobenzene	4,411	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	366	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	3,927	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	12.2	µg/L	Discharge Conc < TQL
Diethyl Phthalate	21,518	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	13,449	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	592	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	12.2	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	12.2	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	7.33	µg/L	Discharge Conc < TQL
Fluoranthene	1,044	µg/L	Discharge Conc ≤ 25% WQBEL
Fluorene	2,611	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorobenzene	0.02	µg/L	Discharge Conc < TQL
Hexachloroethane	24.4	µg/L	Discharge Conc < TQL
Isophorone	1,775	µg/L	Discharge Conc < TQL
Naphthalene	753	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	522	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.17	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	1.22	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	807	µg/L	Discharge Conc < TQL
Phenanthrene	26.9	µg/L	Discharge Conc ≤ 25% WQBEL
Pyrene	1,044	µg/L	Discharge Conc ≤ 25% WQBEL

TMS Run #2- Resampled data for NPDES renewal application

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: Carpenter Technology Corp. NPDES Permit No.: PA0013129 Outfall No.: 901

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: 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
0.92	1457	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		3916									
	Chloride (PWS)	mg/L		1610									
	Bromide	mg/L	<	2.5									
	Sulfate (PWS)	mg/L		136									
	Fluoride (PWS)	mg/L		10.9									
Group 2	Total Aluminum	µg/L		23									
	Total Antimony	µg/L	<	22									
	Total Arsenic	µg/L	<	22									
	Total Barium	µg/L		44									
	Total Beryllium	µg/L	<	6									
	Total Boron	µg/L		480									
	Total Cadmium	µg/L	<	6									
	Total Chromium (III)	µg/L		51									
	Hexavalent Chromium	µg/L		26									
	Total Cobalt	µg/L	<	6									
	Total Copper	µg/L		54									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	14									
	Dissolved Iron	µg/L	<	22									
	Total Iron	µg/L		163									
	Total Lead	µg/L	<	22									
	Total Manganese	µg/L	<	6									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		118									
	Total Phenols (Phenolics) (PWS)	µg/L	<	20									
	Total Selenium	µg/L	<	22									
	Total Silver	µg/L	<	6									
	Total Thallium	µg/L	<	22									
	Total Zinc	µg/L	<	6									
	Total Molybdenum	µg/L		1180									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	1									
	Benzene	µg/L	<	1									
	Bromoform	µg/L	<	1									
	Carbon Tetrachloride	µg/L	<	1									
	Chlorobenzene	µg/L	<	1									
	Chlorodibromomethane	µg/L	<	1									
	Chloroethane	µg/L	<	1									
	2-Chloroethyl Vinyl Ether	µg/L	<	1									

Group 3	Chloroform	µg/L		1.7										
	Dichlorobromomethane	µg/L	<	1										
	1,1-Dichloroethane	µg/L	<	1										
	1,2-Dichloroethane	µg/L	<	1										
	1,1-Dichloroethylene	µg/L	<	1										
	1,2-Dichloropropane	µg/L	<	1										
	1,3-Dichloropropylene	µg/L	<	1										
	1,4-Dioxane	µg/L	<	250										
	Ethylbenzene	µg/L	<	1										
	Methyl Bromide	µg/L	<	1										
	Methyl Chloride	µg/L	<	1										
	Methylene Chloride	µg/L	<	1										
	1,1,2,2-Tetrachloroethane	µg/L	<	1										
	Tetrachloroethylene	µg/L	<	1										
	Toluene	µg/L	<	1										
	1,2-trans-Dichloroethylene	µg/L	<	1										
	1,1,1-Trichloroethane	µg/L	<	1										
	1,1,2-Trichloroethane	µg/L	<	1										
	Trichloroethylene	µg/L	<	1										
	Vinyl Chloride	µg/L	<	0.5										
Group 4	2-Chlorophenol	µg/L	<	5										
	2,4-Dichlorophenol	µg/L	<	5										
	2,4-Dimethylphenol	µg/L	<	10										
	4,6-Dinitro-o-Cresol	µg/L	<	10										
	2,4-Dinitrophenol	µg/L	<	5										
	2-Nitrophenol	µg/L	<	5										
	4-Nitrophenol	µg/L	<	5										
	p-Chloro-m-Cresol	µg/L	<	5										
	Pentachlorophenol	µg/L	<	5										
	Phenol	µg/L	<	1.1										
	2,4,6-Trichlorophenol	µg/L	<	5										
Group 5	Acenaphthene	µg/L	<	5										
	Acenaphthylene	µg/L	<	5										
	Anthracene	µg/L	<	5										
	Benzidine	µg/L	<	50										
	Benzo(a)Anthracene	µg/L	<	2										
	Benzo(a)Pyrene	µg/L	<	5										
	3,4-Benzofluoranthene	µg/L	<	2										
	Benzo(ghi)Perylene	µg/L	<	2										
	Benzo(k)Fluoranthene	µg/L	<	2										
	Bis(2-Chloroethoxy)Methane	µg/L	<	5										
	Bis(2-Chloroethyl)Ether	µg/L	<	5										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5										
	4-Bromophenyl Phenyl Ether	µg/L	<	5										
	Butyl Benzyl Phthalate	µg/L	<	5										
	2-Chloronaphthalene	µg/L	<	5										
	4-Chlorophenyl Phenyl Ether	µg/L	<	5										
	Chrysene	µg/L	<	2										
	Dibenzo(a,h)Anthrancene	µg/L	<	2										
	1,2-Dichlorobenzene	µg/L	<	5										
	1,3-Dichlorobenzene	µg/L	<	5										
	1,4-Dichlorobenzene	µg/L	<	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	<	2.1										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2										

	Isophorone	µg/L	<	5										
	Naphthalene	µg/L	<	2.1										
	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										
	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												

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Carpenter Technology Corp., NPDES Permit No. PA0013129, Outfall 901

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	76.76	202.11	665			Yes
End of Reach 1	000833	70.35	169.58	923			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	76.76	0.122										133	8.05		
End of Reach 1	70.35	0.144										133	8.05		

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	76.76														
End of Reach 1	70.35														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Carpenter Technology Corp., NPDES Permit No. PA0013129, Outfall 901

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

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ *AFC* CCT (min): 15 PMF: 0.130 Analysis Hardness (mg/l): 290.75 Analysis pH: 7.70

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	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	6,295	
Total Antimony	0	0		0	1,100	1,100	9,232	
Total Arsenic	0	0		0	340	340	2,854	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	176,248	
Total Boron	0	0		0	8,100	8,100	67,981	
Total Cadmium	0	0		0	5.678	6.31	53.0	Chem Translator of 0.899 applied
Total Chromium (III)	0	0		0	1365.599	4,322	36,269	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	137	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	797	
Total Copper	0	0		0	36.737	38.3	321	Chem Translator of 0.96 applied
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	201.884	318	2,666	Chem Translator of 0.635 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	13.8	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1155.070	1,157	9,714	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	20.169	23.7	199	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	546	
Total Zinc	0	0		0	289.469	296	2,484	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	25.2	
Acrylonitrile	0	0		0	650	650	5,455	
Benzene	0	0		0	640	640	5,371	

Bromoform	0	0		0	1,800	1,800	15,107	
Carbon Tetrachloride	0	0		0	2,800	2,800	23,500	
Chlorobenzene	0	0		0	1,200	1,200	10,071	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	151,070	
Chloroform	0	0		0	1,900	1,900	15,946	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	125,891	
1,1-Dichloroethylene	0	0		0	7,500	7,500	62,946	
1,2-Dichloropropane	0	0		0	11,000	11,000	92,320	
1,3-Dichloropropylene	0	0		0	310	310	2,602	
Ethylbenzene	0	0		0	2,900	2,900	24,339	
Methyl Bromide	0	0		0	550	550	4,616	
Methyl Chloride	0	0		0	28,000	28,000	234,997	
Methylene Chloride	0	0		0	12,000	12,000	100,713	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	8,393	
Tetrachloroethylene	0	0		0	700	700	5,875	
Toluene	0	0		0	1,700	1,700	14,268	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	57,071	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	25,178	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	28,535	
Trichloroethylene	0	0		0	2,300	2,300	19,303	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	4,700	
2,4-Dichlorophenol	0	0		0	1,700	1,700	14,268	
2,4-Dimethylphenol	0	0		0	660	660	5,539	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	671	
2,4-Dinitrophenol	0	0		0	660	660	5,539	
2-Nitrophenol	0	0		0	8,000	8,000	67,142	
4-Nitrophenol	0	0		0	2,300	2,300	19,303	
p-Chloro-m-Cresol	0	0		0	160	160	1,343	
Pentachlorophenol	0	0		0	17.701	17.7	149	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	3,861	
Acenaphthene	0	0		0	83	83.0	697	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	2,518	
Benzo(a)Anthracene	0	0		0	0.5	0.5	4.2	
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	251,783	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	37,767	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	2,266	
Butyl Benzyl Phthalate	0	0		0	140	140	1,175	
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	6,882	
1,3-Dichlorobenzene	0	0		0	350	350	2,937	
1,4-Dichlorobenzene	0	0		0	730	730	6,127	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	33,571	
Dimethyl Phthalate	0	0		0	2,500	2,500	20,982	
Di-n-Butyl Phthalate	0	0		0	110	110	923	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	13,428	
2,6-Dinitrotoluene	0	0		0	990	990	8,309	
1,2-Diphenylhydrazine	0	0		0	15	15.0	126	
Fluoranthene	0	0		0	200	200	1,679	
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	83.9	
Hexachlorocyclopentadiene	0	0		0	5	5.0	42.0	
Hexachloroethane	0	0		0	60	60.0	504	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	83,928	
Naphthalene	0	0		0	140	140	1,175	
Nitrobenzene	0	0		0	4,000	4,000	33,571	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	142,677	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	2,518	
Phenanthrene	0	0		0	5	5.0	42.0	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	1,091	

☑ ***CFC*** CCT (min): 720 PMF: 0.899 Analysis Hardness (mg/l): 158.35 Analysis pH: 7.97

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	
Fluoride (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	11,488	
Total Arsenic	0	0		0	150	150	7,833	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	214,096	
Total Boron	0	0		0	1,600	1,600	83,550	
Total Cadmium	0	0		0	0.338	0.38	19.9	Chem Translator of 0.89 applied
Total Chromium (III)	0	0		0	107.995	126	6,557	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	543	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	992	
Total Copper	0	0		0	13.264	13.8	722	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	

Total Iron	0	0		0	1,500	1,500	87,006	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	4.135	5.71	298	Chem Translator of 0.724 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	47.3	Chem Translator of 0.85 applied
Total Nickel	0	0		0	76.727	77.0	4,019	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	261	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	679	
Total Zinc	0	0		0	174.398	177	9,236	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	157	
Acrylonitrile	0	0		0	130	130	6,788	
Benzene	0	0		0	130	130	6,788	
Bromoform	0	0		0	370	370	19,321	
Carbon Tetrachloride	0	0		0	560	560	29,242	
Chlorobenzene	0	0		0	240	240	12,532	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	182,765	
Chloroform	0	0		0	390	390	20,365	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	161,878	
1,1-Dichloroethylene	0	0		0	1,500	1,500	78,328	
1,2-Dichloropropane	0	0		0	2,200	2,200	114,881	
1,3-Dichloropropylene	0	0		0	61	61.0	3,185	
Ethylbenzene	0	0		0	580	580	30,287	
Methyl Bromide	0	0		0	110	110	5,744	
Methyl Chloride	0	0		0	5,500	5,500	287,202	
Methylene Chloride	0	0		0	2,400	2,400	125,325	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	10,966	
Tetrachloroethylene	0	0		0	140	140	7,311	
Toluene	0	0		0	330	330	17,232	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	73,106	
1,1,1-Trichloroethane	0	0		0	610	610	31,853	
1,1,2-Trichloroethane	0	0		0	680	680	35,509	
Trichloroethylene	0	0		0	450	450	23,498	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	5,744	
2,4-Dichlorophenol	0	0		0	340	340	17,754	
2,4-Dimethylphenol	0	0		0	130	130	6,788	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	835	
2,4-Dinitrophenol	0	0		0	130	130	6,788	
2-Nitrophenol	0	0		0	1,600	1,600	83,550	
4-Nitrophenol	0	0		0	470	470	24,543	
p-Chloro-m-Cresol	0	0		0	500	500	26,109	
Pentachlorophenol	0	0		0	13.580	13.6	709	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	4,752	
Acenaphthene	0	0		0	17	17.0	888	
Anthracene	0	0		0	N/A	N/A	N/A	

Benzidine	0	0		0	59	59.0	3,081	
Benzo(a)Anthracene	0	0		0	0.1	0.1	5.22	
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	313,312	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	47,519	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	2,820	
Butyl Benzyl Phthalate	0	0		0	35	35.0	1,828	
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	8,355	
1,3-Dichlorobenzene	0	0		0	69	69.0	3,603	
1,4-Dichlorobenzene	0	0		0	150	150	7,833	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	41,775	
Dimethyl Phthalate	0	0		0	500	500	26,109	
Di-n-Butyl Phthalate	0	0		0	21	21.0	1,097	
2,4-Dinitrotoluene	0	0		0	320	320	16,710	
2,6-Dinitrotoluene	0	0		0	200	200	10,444	
1,2-Diphenylhydrazine	0	0		0	3	3.0	157	
Fluoranthene	0	0		0	40	40.0	2,089	
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	104	
Hexachlorocyclopentadiene	0	0		0	1	1.0	52.2	
Hexachloroethane	0	0		0	12	12.0	627	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	109,659	
Naphthalene	0	0		0	43	43.0	2,245	
Nitrobenzene	0	0		0	810	810	42,297	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	177,543	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	3,081	
Phenanthrene	0	0		0	1	1.0	52.2	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	1,358	

☑ ***THH*** CCT (min): 720 PMF: 0.899 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	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	

Total Antimony	0	0		0	5.6	5.6	292	
Total Arsenic	0	0		0	10	10.0	522	
Total Barium	0	0		0	2,400	2,400	125,325	
Total Boron	0	0		0	3,100	3,100	161,878	
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	
Dissolved Iron	0	0		0	300	300	15,666	
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	52,219	
Total Mercury	0	0		0	0.050	0.05	2.61	
Total Nickel	0	0		0	610	610	31,853	
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	12.5	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	157	
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	5,222	
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	298	
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	1,723	
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	3,551	
Methyl Bromide	0	0		0	100	100.0	5,222	
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	2,976	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	5,222	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	522,186	
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	1,567	
2,4-Dichlorophenol	0	0		0	10	10.0	522	
2,4-Dimethylphenol	0	0		0	100	100.0	5,222	

4,6-Dinitro-o-Cresol	0	0		0	2	2.0	104	
2,4-Dinitrophenol	0	0		0	10	10.0	522	
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	208,874	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	3,655	
Anthracene	0	0		0	300	300	15,666	
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	10,444	
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	5.22	
2-Chloronaphthalene	0	0		0	800	800	41,775	
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	52,219	
1,3-Dichlorobenzene	0	0		0	7	7.0	366	
1,4-Dichlorobenzene	0	0		0	300	300	15,666	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	31,331	
Dimethyl Phthalate	0	0		0	2,000	2,000	104,437	
Di-n-Butyl Phthalate	0	0		0	20	20.0	1,044	
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	1,044	
Fluorene	0	0		0	50	50.0	2,611	
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	209	
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	1,775	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	522	
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	1,044	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	3.66	

☑ ***CRL*** CCT (min): ###### PMF: 1 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	
Fluoride (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	
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	14.7	
Benzene	0	0		0	0.58	0.58	142	
Bromoform	0	0		0	7	7.0	1,711	
Carbon Tetrachloride	0	0		0	0.4	0.4	97.8	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	196	
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	232	
1,2-Dichloroethane	0	0		0	9.9	9.9	2,420	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	220	
1,3-Dichloropropylene	0	0		0	0.27	0.27	66.0	
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	4,888	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	48.9	

Tetrachloroethylene	0	0		0	10	10.0	2,444	
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	134	
Trichloroethylene	0	0		0	0.6	0.6	147	
Vinyl Chloride	0	0		0	0.02	0.02	4.89	
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	7.33	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	367	
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	0.024	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.24	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.024	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.24	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	2.44	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	7.33	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	78.2	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	29.3	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.024	
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	12.2	
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	12.2	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	12.2	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	7.33	
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	0.02	
Hexachlorobutadiene	0	0		0	0.01	0.01	2.44	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	24.4	

Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.24	
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	0.17	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	1.22	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	807	
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 Cadmium	Report	Report	Report	Report	Report	µg/L	19.9	CFC	Discharge Conc > 10% WQBEL (no RP)
Hexavalent Chromium	Report	Report	Report	Report	Report	µg/L	87.6	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	206	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Thallium	0.096	0.15	12.5	19.6	31.3	µg/L	12.5	THH	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(a)Pyrene	0.0002	0.0003	0.024	0.038	0.061	µg/L	0.024	CRL	Discharge Conc ≥ 50% WQBEL (RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	4,035	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	292	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	522	µg/L	Discharge Conc ≤ 10% WQBEL

Total Barium	112,968	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	43,573	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	6,557	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	511	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	15,666	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	87,006	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	298	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	52,219	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	2.61	µg/L	Discharge Conc < TQL
Total Nickel	4,019	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	261	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	128	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	1,592	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	16.1	µg/L	Discharge Conc < TQL
Acrylonitrile	14.7	µg/L	Discharge Conc < TQL
Benzene	142	µg/L	Discharge Conc ≤ 25% WQBEL
Bromoform	1,711	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	97.8	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	5,222	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	196	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	96,830	µg/L	Discharge Conc < TQL
Chloroform	298	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	232	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	2,420	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethylene	1,723	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-Dichloropropane	220	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichloropropylene	66.0	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	3,551	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Bromide	2,959	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	150,624	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	4,888	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	48.9	µg/L	Discharge Conc ≤ 25% WQBEL
Tetrachloroethylene	2,444	µg/L	Discharge Conc ≤ 25% WQBEL
Toluene	2,976	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	5,222	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	16,138	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2-Trichloroethane	134	µg/L	Discharge Conc ≤ 25% WQBEL
Trichloroethylene	147	µg/L	Discharge Conc ≤ 25% WQBEL
Vinyl Chloride	4.89	µg/L	Discharge Conc < TQL
2-Chlorophenol	1,567	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	522	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	3,550	µg/L	Discharge Conc < TQL

4,6-Dinitro-o-Cresol	104	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	522	µg/L	Discharge Conc < TQL
2-Nitrophenol	43,035	µg/L	Discharge Conc < TQL
4-Nitrophenol	12,373	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	861	µg/L	Discharge Conc < TQL
Pentachlorophenol	7.33	µg/L	Discharge Conc < TQL
Phenol	208,874	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	367	µg/L	Discharge Conc < TQL
Acenaphthene	446	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	15,666	µg/L	Discharge Conc ≤ 25% WQBEL
Benzidine	0.024	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.24	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.24	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	2.44	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	7.33	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	10,444	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	78.2	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	1,452	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	5.22	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	41,775	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	29.3	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.024	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	4,411	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	366	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	3,927	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	12.2	µg/L	Discharge Conc < TQL
Diethyl Phthalate	21,518	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	13,449	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	592	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	12.2	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	12.2	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	7.33	µg/L	Discharge Conc < TQL
Fluoranthene	1,044	µg/L	Discharge Conc ≤ 25% WQBEL
Fluorene	2,611	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorobenzene	0.02	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	2.44	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	26.9	µg/L	Discharge Conc < TQL
Hexachloroethane	24.4	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.24	µg/L	Discharge Conc < TQL
Isophorone	1,775	µg/L	Discharge Conc < TQL
Naphthalene	753	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	522	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.17	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	1.22	µg/L	Discharge Conc < TQL

n-Nitrosodiphenylamine	807	µg/L	Discharge Conc < TQL
Phenanthrene	26.9	µg/L	Discharge Conc < TQL
Pyrene	1,044	µg/L	Discharge Conc ≤ 25% WQBEL
1,2,4-Trichlorobenzene	3.66	µg/L	Discharge Conc < TQL

TMS Run #3 – Estimated concentration/mass for ELG pollutants

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Carpenter Technology Corp.** NPDES Permit No.: **PA0013129** Outfall No.: **901**

Evaluation Type **Major Sewage / Industrial Waste** Wastewater Description: **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
0.92	1457	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		3916									
	Chloride (PWS)	mg/L		1610									
	Bromide	mg/L	<	2.5									
	Sulfate (PWS)	mg/L		136									
	Fluoride (PWS)	mg/L		10.9									
Group 2	Total Aluminum	µg/L		23									
	Total Antimony	µg/L	<	22									
	Total Arsenic	µg/L	<	22									
	Total Barium	µg/L		44									
	Total Beryllium	µg/L	<	6									
	Total Boron	µg/L		480									
	Total Cadmium	µg/L		999999999									
	Total Chromium (III)	µg/L		999999999									
	Hexavalent Chromium	µg/L		999999999									
	Total Cobalt	µg/L	<	6									
	Total Copper	µg/L		999999999									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		999999999									
	Dissolved Iron	µg/L	<	22									
	Total Iron	µg/L		163									
	Total Lead	µg/L		999999999									
	Total Manganese	µg/L	<	6									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		999999999									
	Total Phenols (Phenolics) (PWS)	µg/L	<	20									
	Total Selenium	µg/L	<	22									
	Total Silver	µg/L		999999999									
	Total Thallium	µg/L	<	22									
	Total Zinc	µg/L		999999999									
	Total Molybdenum	µg/L		1180									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	1									
	Benzene	µg/L	<	1									
	Bromoform	µg/L	<	1									
	Carbon Tetrachloride	µg/L	<	1									
	Chlorobenzene	µg/L	<	1									
	Chlorodibromomethane	µg/L	<	1									
	Chloroethane	µg/L	<	1									
	2-Chloroethyl Vinyl Ether	µg/L	<	1									

Group 3	Chloroform	µg/L		1.7										
	Dichlorobromomethane	µg/L	<	1										
	1,1-Dichloroethane	µg/L	<	1										
	1,2-Dichloroethane	µg/L	<	1										
	1,1-Dichloroethylene	µg/L	<	1										
	1,2-Dichloropropane	µg/L	<	1										
	1,3-Dichloropropylene	µg/L	<	1										
	1,4-Dioxane	µg/L	<	250										
	Ethylbenzene	µg/L	<	1										
	Methyl Bromide	µg/L	<	1										
	Methyl Chloride	µg/L	<	1										
	Methylene Chloride	µg/L	<	1										
	1,1,2,2-Tetrachloroethane	µg/L	<	1										
	Tetrachloroethylene	µg/L		999999999										
	Toluene	µg/L	<	1										
	1,2-trans-Dichloroethylene	µg/L	<	1										
	1,1,1-Trichloroethane	µg/L	<	1										
	1,1,2-Trichloroethane	µg/L	<	1										
	Trichloroethylene	µg/L	<	1										
	Vinyl Chloride	µg/L	<	0.5										
Group 4	2-Chlorophenol	µg/L	<	5										
	2,4-Dichlorophenol	µg/L	<	5										
	2,4-Dimethylphenol	µg/L	<	10										
	4,6-Dinitro-o-Cresol	µg/L	<	10										
	2,4-Dinitrophenol	µg/L	<	5										
	2-Nitrophenol	µg/L	<	5										
	4-Nitrophenol	µg/L	<	5										
	p-Chloro-m-Cresol	µg/L	<	5										
	Pentachlorophenol	µg/L	<	5										
	Phenol	µg/L	<	1.1										
	2,4,6-Trichlorophenol	µg/L	<	5										
Group 5	Acenaphthene	µg/L	<	5										
	Acenaphthylene	µg/L	<	5										
	Anthracene	µg/L	<	5										
	Benzidine	µg/L	<	50										
	Benzo(a)Anthracene	µg/L	<	2										
	Benzo(a)Pyrene	µg/L	<	5										
	3,4-Benzofluoranthene	µg/L	<	2										
	Benzo(ghi)Perylene	µg/L	<	2										
	Benzo(k)Fluoranthene	µg/L	<	2										
	Bis(2-Chloroethoxy)Methane	µg/L	<	5										
	Bis(2-Chloroethyl)Ether	µg/L	<	5										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5										
	4-Bromophenyl Phenyl Ether	µg/L	<	5										
	Butyl Benzyl Phthalate	µg/L	<	5										
	2-Chloronaphthalene	µg/L	<	5										
	4-Chlorophenyl Phenyl Ether	µg/L	<	5										
	Chrysene	µg/L	<	2										
	Dibenzo(a,h)Anthrancene	µg/L	<	2										
	1,2-Dichlorobenzene	µg/L	<	5										
	1,3-Dichlorobenzene	µg/L	<	5										
	1,4-Dichlorobenzene	µg/L	<	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	<	2.1										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2										

	Isophorone	µg/L	<	5										
	Naphthalene	µg/L		999999999										
	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										
	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												

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Carpenter Technology Corp., NPDES Permit No. PA0013129, Outfall 901

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	76.76	202.11	665			Yes
End of Reach 1	000833	70.35	169.58	923			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	76.76	0.122										133	8.05		
End of Reach 1	70.35	0.144										133	8.05		

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	76.76														
End of Reach 1	70.35														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Carpenter Technology Corp., NPDES Permit No. PA0013129, Outfall 901

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.130 Analysis Hardness (mg/l): 290.75 Analysis pH: 7.70

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	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	6,295	
Total Antimony	0	0		0	1,100	1,100	9,232	
Total Arsenic	0	0		0	340	340	2,854	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	176,248	
Total Boron	0	0		0	8,100	8,100	67,981	
Total Cadmium	0	0		0	5.678	6.31	53.0	Chem Translator of 0.899 applied
Total Chromium (III)	0	0		0	1365.599	4,322	36,269	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	137	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	797	
Total Copper	0	0		0	36.737	38.3	321	Chem Translator of 0.96 applied
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	201.884	318	2,666	Chem Translator of 0.635 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	13.8	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1155.070	1,157	9,714	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	20.169	23.7	199	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	546	
Total Zinc	0	0		0	289.469	296	2,484	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	25.2	
Acrylonitrile	0	0		0	650	650	5,455	
Benzene	0	0		0	640	640	5,371	

Bromoform	0	0		0	1,800	1,800	15,107	
Carbon Tetrachloride	0	0		0	2,800	2,800	23,500	
Chlorobenzene	0	0		0	1,200	1,200	10,071	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	151,070	
Chloroform	0	0		0	1,900	1,900	15,946	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	125,891	
1,1-Dichloroethylene	0	0		0	7,500	7,500	62,946	
1,2-Dichloropropane	0	0		0	11,000	11,000	92,320	
1,3-Dichloropropylene	0	0		0	310	310	2,602	
Ethylbenzene	0	0		0	2,900	2,900	24,339	
Methyl Bromide	0	0		0	550	550	4,616	
Methyl Chloride	0	0		0	28,000	28,000	234,997	
Methylene Chloride	0	0		0	12,000	12,000	100,713	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	8,393	
Tetrachloroethylene	0	0		0	700	700	5,875	
Toluene	0	0		0	1,700	1,700	14,268	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	57,071	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	25,178	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	28,535	
Trichloroethylene	0	0		0	2,300	2,300	19,303	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	4,700	
2,4-Dichlorophenol	0	0		0	1,700	1,700	14,268	
2,4-Dimethylphenol	0	0		0	660	660	5,539	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	671	
2,4-Dinitrophenol	0	0		0	660	660	5,539	
2-Nitrophenol	0	0		0	8,000	8,000	67,142	
4-Nitrophenol	0	0		0	2,300	2,300	19,303	
p-Chloro-m-Cresol	0	0		0	160	160	1,343	
Pentachlorophenol	0	0		0	17.701	17.7	149	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	3,861	
Acenaphthene	0	0		0	83	83.0	697	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	2,518	
Benzo(a)Anthracene	0	0		0	0.5	0.5	4.2	
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	251,783	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	37,767	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	2,266	
Butyl Benzyl Phthalate	0	0		0	140	140	1,175	
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	6,882	
1,3-Dichlorobenzene	0	0		0	350	350	2,937	
1,4-Dichlorobenzene	0	0		0	730	730	6,127	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	33,571	
Dimethyl Phthalate	0	0		0	2,500	2,500	20,982	
Di-n-Butyl Phthalate	0	0		0	110	110	923	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	13,428	
2,6-Dinitrotoluene	0	0		0	990	990	8,309	
1,2-Diphenylhydrazine	0	0		0	15	15.0	126	
Fluoranthene	0	0		0	200	200	1,679	
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	83.9	
Hexachlorocyclopentadiene	0	0		0	5	5.0	42.0	
Hexachloroethane	0	0		0	60	60.0	504	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	83,928	
Naphthalene	0	0		0	140	140	1,175	
Nitrobenzene	0	0		0	4,000	4,000	33,571	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	142,677	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	2,518	
Phenanthrene	0	0		0	5	5.0	42.0	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	1,091	

☑ ***CFC*** CCT (min): 720 PMF: 0.899 Analysis Hardness (mg/l): 158.35 Analysis pH: 7.97

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	
Fluoride (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	11,488	
Total Arsenic	0	0		0	150	150	7,833	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	214,096	
Total Boron	0	0		0	1,600	1,600	83,550	
Total Cadmium	0	0		0	0.338	0.38	19.9	Chem Translator of 0.89 applied
Total Chromium (III)	0	0		0	107.995	126	6,557	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	543	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	992	
Total Copper	0	0		0	13.264	13.8	722	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	

Total Iron	0	0		0	1,500	1,500	87,006	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	4.135	5.71	298	Chem Translator of 0.724 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	47.3	Chem Translator of 0.85 applied
Total Nickel	0	0		0	76.727	77.0	4,019	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	261	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	679	
Total Zinc	0	0		0	174.398	177	9,236	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	157	
Acrylonitrile	0	0		0	130	130	6,788	
Benzene	0	0		0	130	130	6,788	
Bromoform	0	0		0	370	370	19,321	
Carbon Tetrachloride	0	0		0	560	560	29,242	
Chlorobenzene	0	0		0	240	240	12,532	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	182,765	
Chloroform	0	0		0	390	390	20,365	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	161,878	
1,1-Dichloroethylene	0	0		0	1,500	1,500	78,328	
1,2-Dichloropropane	0	0		0	2,200	2,200	114,881	
1,3-Dichloropropylene	0	0		0	61	61.0	3,185	
Ethylbenzene	0	0		0	580	580	30,287	
Methyl Bromide	0	0		0	110	110	5,744	
Methyl Chloride	0	0		0	5,500	5,500	287,202	
Methylene Chloride	0	0		0	2,400	2,400	125,325	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	10,966	
Tetrachloroethylene	0	0		0	140	140	7,311	
Toluene	0	0		0	330	330	17,232	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	73,106	
1,1,1-Trichloroethane	0	0		0	610	610	31,853	
1,1,2-Trichloroethane	0	0		0	680	680	35,509	
Trichloroethylene	0	0		0	450	450	23,498	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	5,744	
2,4-Dichlorophenol	0	0		0	340	340	17,754	
2,4-Dimethylphenol	0	0		0	130	130	6,788	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	835	
2,4-Dinitrophenol	0	0		0	130	130	6,788	
2-Nitrophenol	0	0		0	1,600	1,600	83,550	
4-Nitrophenol	0	0		0	470	470	24,543	
p-Chloro-m-Cresol	0	0		0	500	500	26,109	
Pentachlorophenol	0	0		0	13.580	13.6	709	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	4,752	
Acenaphthene	0	0		0	17	17.0	888	
Anthracene	0	0		0	N/A	N/A	N/A	

Benzidine	0	0		0	59	59.0	3,081	
Benzo(a)Anthracene	0	0		0	0.1	0.1	5.22	
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	313,312	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	47,519	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	2,820	
Butyl Benzyl Phthalate	0	0		0	35	35.0	1,828	
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	8,355	
1,3-Dichlorobenzene	0	0		0	69	69.0	3,603	
1,4-Dichlorobenzene	0	0		0	150	150	7,833	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	41,775	
Dimethyl Phthalate	0	0		0	500	500	26,109	
Di-n-Butyl Phthalate	0	0		0	21	21.0	1,097	
2,4-Dinitrotoluene	0	0		0	320	320	16,710	
2,6-Dinitrotoluene	0	0		0	200	200	10,444	
1,2-Diphenylhydrazine	0	0		0	3	3.0	157	
Fluoranthene	0	0		0	40	40.0	2,089	
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	104	
Hexachlorocyclopentadiene	0	0		0	1	1.0	52.2	
Hexachloroethane	0	0		0	12	12.0	627	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	109,659	
Naphthalene	0	0		0	43	43.0	2,245	
Nitrobenzene	0	0		0	810	810	42,297	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	177,543	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	3,081	
Phenanthrene	0	0		0	1	1.0	52.2	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	1,358	

☑ ***THH*** CCT (min): 720 PMF: 0.899 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	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	

Total Antimony	0	0		0	5.6	5.6	292	
Total Arsenic	0	0		0	10	10.0	522	
Total Barium	0	0		0	2,400	2,400	125,325	
Total Boron	0	0		0	3,100	3,100	161,878	
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	
Dissolved Iron	0	0		0	300	300	15,666	
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	52,219	
Total Mercury	0	0		0	0.050	0.05	2.61	
Total Nickel	0	0		0	610	610	31,853	
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	12.5	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	157	
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	5,222	
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	298	
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	1,723	
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	3,551	
Methyl Bromide	0	0		0	100	100.0	5,222	
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	2,976	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	5,222	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	522,186	
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	1,567	
2,4-Dichlorophenol	0	0		0	10	10.0	522	
2,4-Dimethylphenol	0	0		0	100	100.0	5,222	

4,6-Dinitro-o-Cresol	0	0		0	2	2.0	104	
2,4-Dinitrophenol	0	0		0	10	10.0	522	
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	208,874	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	3,655	
Anthracene	0	0		0	300	300	15,666	
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	10,444	
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	5.22	
2-Chloronaphthalene	0	0		0	800	800	41,775	
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	52,219	
1,3-Dichlorobenzene	0	0		0	7	7.0	366	
1,4-Dichlorobenzene	0	0		0	300	300	15,666	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	31,331	
Dimethyl Phthalate	0	0		0	2,000	2,000	104,437	
Di-n-Butyl Phthalate	0	0		0	20	20.0	1,044	
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	1,044	
Fluorene	0	0		0	50	50.0	2,611	
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	209	
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	1,775	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	522	
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	1,044	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	3.66	

☑ ***CRL*** CCT (min): ###### PMF: 1 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	
Fluoride (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	
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	14.7	
Benzene	0	0		0	0.58	0.58	142	
Bromoform	0	0		0	7	7.0	1,711	
Carbon Tetrachloride	0	0		0	0.4	0.4	97.8	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	196	
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	232	
1,2-Dichloroethane	0	0		0	9.9	9.9	2,420	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	220	
1,3-Dichloropropylene	0	0		0	0.27	0.27	66.0	
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	4,888	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	48.9	

Tetrachloroethylene	0	0		0	10	10.0	2,444	
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	134	
Trichloroethylene	0	0		0	0.6	0.6	147	
Vinyl Chloride	0	0		0	0.02	0.02	4.89	
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	7.33	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	367	
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	0.024	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.24	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.024	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.24	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	2.44	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	7.33	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	78.2	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	29.3	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.024	
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	12.2	
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	12.2	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	12.2	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	7.33	
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	0.02	
Hexachlorobutadiene	0	0		0	0.01	0.01	2.44	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	24.4	

Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.24	
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	0.17	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	1.22	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	807	
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 Cadmium	0.15	0.24	19.9	31.0	49.7	µg/L	19.9	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Chromium (III)	50.3	78.5	6,557	10,231	16,393	µg/L	6,557	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Hexavalent Chromium	0.67	1.05	87.6	137	219	µg/L	87.6	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	1.58	2.46	206	321	515	µg/L	206	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Lead	2.29	3.57	298	465	746	µg/L	298	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Nickel	30.8	48.1	4,019	6,270	10,047	µg/L	4,019	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Silver	0.98	1.53	128	199	319	µg/L	128	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Thallium	0.096	0.15	12.5	19.6	31.3	µg/L	12.5	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	12.2	19.1	1,592	2,484	3,981	µg/L	1,592	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Tetrachloroethylene	18.8	29.3	2,444	3,813	6,110	µg/L	2,444	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(a)Pyrene	0.0002	0.0003	0.024	0.038	0.061	µg/L	0.024	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Naphthalene	5.78	9.02	753	1,175	1,883	µg/L	753	AFC	Discharge Conc ≥ 50% WQBEL (RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	4,035	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	292	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	522	µg/L	Discharge Conc ≤ 10% WQBEL

Total Barium	112,968	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	43,573	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	511	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	15,666	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	87,006	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	52,219	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	2.61	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	261	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	16.1	µg/L	Discharge Conc < TQL
Acrylonitrile	14.7	µg/L	Discharge Conc < TQL
Benzene	142	µg/L	Discharge Conc ≤ 25% WQBEL
Bromoform	1,711	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	97.8	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	5,222	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	196	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	96,830	µg/L	Discharge Conc < TQL
Chloroform	298	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	232	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	2,420	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethylene	1,723	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-Dichloropropane	220	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichloropropylene	66.0	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	3,551	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Bromide	2,959	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	150,624	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	4,888	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	48.9	µg/L	Discharge Conc ≤ 25% WQBEL
Toluene	2,976	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	5,222	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	16,138	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2-Trichloroethane	134	µg/L	Discharge Conc ≤ 25% WQBEL
Trichloroethylene	147	µg/L	Discharge Conc ≤ 25% WQBEL
Vinyl Chloride	4.89	µg/L	Discharge Conc < TQL
2-Chlorophenol	1,567	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	522	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	3,550	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	104	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	522	µg/L	Discharge Conc < TQL
2-Nitrophenol	43,035	µg/L	Discharge Conc < TQL
4-Nitrophenol	12,373	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	861	µg/L	Discharge Conc < TQL
Pentachlorophenol	7.33	µg/L	Discharge Conc < TQL

Phenol	208,874	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	367	µg/L	Discharge Conc < TQL
Acenaphthene	446	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	15,666	µg/L	Discharge Conc ≤ 25% WQBEL
Benzidine	0.024	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.24	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.24	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	2.44	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	7.33	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	10,444	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	78.2	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	1,452	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	5.22	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	41,775	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	29.3	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.024	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	4,411	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	366	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	3,927	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	12.2	µg/L	Discharge Conc < TQL
Diethyl Phthalate	21,518	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	13,449	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	592	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	12.2	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	12.2	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	7.33	µg/L	Discharge Conc < TQL
Fluoranthene	1,044	µg/L	Discharge Conc ≤ 25% WQBEL
Fluorene	2,611	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorobenzene	0.02	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	2.44	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	26.9	µg/L	Discharge Conc < TQL
Hexachloroethane	24.4	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.24	µg/L	Discharge Conc < TQL
Isophorone	1,775	µg/L	Discharge Conc < TQL
Nitrobenzene	522	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.17	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	1.22	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	807	µg/L	Discharge Conc < TQL
Phenanthrene	26.9	µg/L	Discharge Conc < TQL
Pyrene	1,044	µg/L	Discharge Conc ≤ 25% WQBEL
1,2,4-Trichlorobenzene	3.66	µg/L	Discharge Conc < TQL

TMS – Chemical additives run at 0.008 MGD

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Carpenter Technology Corp.** NPDES Permit No.: **PA0013129** Outfall No.: **See WW De**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **NCCW (2,4,5,11,12,13,14,902)**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.008	107	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		257									
	Chloride (PWS)	mg/L		118									
	Bromide	mg/L	<	2.5									
	Sulfate (PWS)	mg/L		19									
	Fluoride (PWS)	mg/L		0.52									
Group 2	Total Aluminum	µg/L		89									
	Total Antimony	µg/L	<	22									
	Total Arsenic	µg/L	<	22									
	Total Barium	µg/L		102									
	Total Beryllium	µg/L	<	6									
	Total Boron	µg/L	<	22									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L	<	6									
	Hexavalent Chromium	µg/L	<	1									
	Total Cobalt	µg/L	<	6									
	Total Copper	µg/L		68									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L		449									
	Total Iron	µg/L		456									
	Total Lead	µg/L	<	4.7									
	Total Manganese	µg/L		16									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		6									
	Total Phenols (Phenolics) (PWS)	µg/L	<	20									
	Total Selenium	µg/L	<	1									
	Total Silver	µg/L	<	0.5									
	Total Thallium	µg/L	<	0.5									
	Total Zinc	µg/L		88									
	Total Molybdenum	µg/L		22									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L											
	Acrylonitrile	µg/L	<	1									
	Benzene	µg/L	<	1									
	Bromoform	µg/L	<	1									
	Carbon Tetrachloride	µg/L	<	1									
	Chlorobenzene	µg/L		1									
	Chlorodibromomethane	µg/L	<	1									
	Chloroethane	µg/L	<	1									
	2-Chloroethyl Vinyl Ether	µg/L	<	1									

Group 3	Chloroform	µg/L		3.86										
	Dichlorobromomethane	µg/L	<	1										
	1,1-Dichloroethane	µg/L	<	1										
	1,2-Dichloroethane	µg/L	<	1										
	1,1-Dichloroethylene	µg/L	<	1										
	1,2-Dichloropropane	µg/L	<	1										
	1,3-Dichloropropylene	µg/L	<	1										
	1,4-Dioxane	µg/L	<	250										
	Ethylbenzene	µg/L	<	1										
	Methyl Bromide	µg/L	<	1										
	Methyl Chloride	µg/L	<	1										
	Methylene Chloride	µg/L	<	1										
	1,1,2,2-Tetrachloroethane	µg/L	<	1										
	Tetrachloroethylene	µg/L	<	1										
	Toluene	µg/L	<	1										
	1,2-trans-Dichloroethylene	µg/L	<	1										
	1,1,1-Trichloroethane	µg/L	<	1										
	1,1,2-Trichloroethane	µg/L	<	1										
	Trichloroethylene	µg/L	<	1										
	Vinyl Chloride	µg/L	<	0.5										
Group 4	2-Chlorophenol	µg/L	<	5										
	2,4-Dichlorophenol	µg/L	<	5										
	2,4-Dimethylphenol	µg/L	<	10										
	4,6-Dinitro-o-Cresol	µg/L	<	10										
	2,4-Dinitrophenol	µg/L	<	5										
	2-Nitrophenol	µg/L	<	5										
	4-Nitrophenol	µg/L	<	5										
	p-Chloro-m-Cresol	µg/L	<	5										
	Pentachlorophenol	µg/L	<	5										
	Phenol	µg/L	<	1.1										
	2,4,6-Trichlorophenol	µg/L	<	5										
Group 5	Acenaphthene	µg/L	<	5										
	Acenaphthylene	µg/L	<	5										
	Anthracene	µg/L	<	5										
	Benzidine	µg/L	<	50										
	Benzo(a)Anthracene	µg/L	<	2										
	Benzo(a)Pyrene	µg/L	<	2										
	3,4-Benzofluoranthene	µg/L	<	2										
	Benzo(ghi)Perylene	µg/L	<	5										
	Benzo(k)Fluoranthene	µg/L	<	2										
	Bis(2-Chloroethoxy)Methane	µg/L	<	5										
	Bis(2-Chloroethyl)Ether	µg/L	<	5										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5										
	4-Bromophenyl Phenyl Ether	µg/L	<	5										
	Butyl Benzyl Phthalate	µg/L	<	5										
	2-Chloronaphthalene	µg/L	<	5										
	4-Chlorophenyl Phenyl Ether	µg/L	<	5										
	Chrysene	µg/L	<	2										
	Dibenzo(a,h)Anthrancene	µg/L	<	2										
	1,2-Dichlorobenzene	µg/L	<	5										
	1,3-Dichlorobenzene	µg/L	<	5										
	1,4-Dichlorobenzene	µg/L	<	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	<	2.1										
	Hexachlorocyclopentadiene	µg/L	<	5										
	Hexachloroethane	µg/L	<	5										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2										

	Isophorone	µg/L	<	5									
	Naphthalene	µg/L	<	2.1									
	Nitrobenzene	µg/L	<	5									
	n-Nitrosodimethylamine	µg/L	<	5									
	n-Nitrosodi-n-Propylamine	µg/L	<	5									
	n-Nitrosodiphenylamine	µg/L	<	5									
	Phenanthrene	µg/L	<	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											
	Continuum AT3203	µg/L		1.00E+09									
	Corrshield MD4103	µg/L		1.00E+09									
	Gengard GN8113	µg/L		1.00E+09									
	Gengard GN8203	µg/L		1.00E+09									
	Spectrus NX1103	µg/L		1.00E+09									
	Spectrus NX1106	µg/L		1.00E+09									

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Carpenter Technology Corp., NPDES Permit No. PA0013129, Outfall See WW Desc

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	76.76	202.11	665			Yes
End of Reach 1	000833	70.35	169.58	923			Yes

Q_{7-10}

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	76.76	0.122										133	8.05		
End of Reach 1	70.35	0.144										133	8.05		

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	76.76														
End of Reach 1	70.35														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Carpenter Technology Corp., NPDES Permit No. PA0013129, Outfall See WW Desc

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.128 Analysis Hardness (mg/l): 132.97 Analysis pH: 8.04

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	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	631,419	
Total Antimony	0	0		0	1,100	1,100	926,081	
Total Arsenic	0	0		0	340	340	286,243	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	17,679,725	
Total Boron	0	0		0	8,100	8,100	6,819,323	
Total Cadmium	0	0		0	2.656	2.85	2,399	Chem Translator of 0.932 applied
Total Chromium (III)	0	0		0	719.526	2,277	1,916,971	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	13,717	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	79,980	
Total Copper	0	0		0	17.578	18.3	15,415	Chem Translator of 0.96 applied
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	87.948	117	98,792	Chem Translator of 0.749 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	1,387	Chem Translator of 0.85 applied
Total Nickel	0	0		0	595.879	597	502,671	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	5.251	6.18	5,201	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	54,723	
Total Zinc	0	0		0	149.180	153	128,418	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	2,526	
Acrylonitrile	0	0		0	650	650	547,230	
Benzene	0	0		0	640	640	538,811	

Bromoform	0	0		0	1,800	1,800	1,515,405	
Carbon Tetrachloride	0	0		0	2,800	2,800	2,357,297	
Chlorobenzene	0	0		0	1,200	1,200	1,010,270	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	15,154,050	
Chloroform	0	0		0	1,900	1,900	1,599,594	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	12,628,375	
1,1-Dichloroethylene	0	0		0	7,500	7,500	6,314,188	
1,2-Dichloropropane	0	0		0	11,000	11,000	9,260,808	
1,3-Dichloropropylene	0	0		0	310	310	260,986	
Ethylbenzene	0	0		0	2,900	2,900	2,441,486	
Methyl Bromide	0	0		0	550	550	463,040	
Methyl Chloride	0	0		0	28,000	28,000	23,572,967	
Methylene Chloride	0	0		0	12,000	12,000	10,102,700	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	841,892	
Tetrachloroethylene	0	0		0	700	700	589,324	
Toluene	0	0		0	1,700	1,700	1,431,216	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	5,724,863	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	2,525,675	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	2,862,432	
Trichloroethylene	0	0		0	2,300	2,300	1,936,351	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	471,459	
2,4-Dichlorophenol	0	0		0	1,700	1,700	1,431,216	
2,4-Dimethylphenol	0	0		0	660	660	555,649	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	67,351	
2,4-Dinitrophenol	0	0		0	660	660	555,649	
2-Nitrophenol	0	0		0	8,000	8,000	6,735,133	
4-Nitrophenol	0	0		0	2,300	2,300	1,936,351	
p-Chloro-m-Cresol	0	0		0	160	160	134,703	
Pentachlorophenol	0	0		0	24.928	24.9	20,987	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	387,270	
Acenaphthene	0	0		0	83	83.0	69,877	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	252,568	
Benzo(a)Anthracene	0	0		0	0.5	0.5	421	
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	25,256,750	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	3,788,513	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	227,311	
Butyl Benzyl Phthalate	0	0		0	140	140	117,865	
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	690,351	
1,3-Dichlorobenzene	0	0		0	350	350	294,662	
1,4-Dichlorobenzene	0	0		0	730	730	614,581	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	3,367,567	
Dimethyl Phthalate	0	0		0	2,500	2,500	2,104,729	
Di-n-Butyl Phthalate	0	0		0	110	110	92,608	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	1,347,027	
2,6-Dinitrotoluene	0	0		0	990	990	833,473	
1,2-Diphenylhydrazine	0	0		0	15	15.0	12,628	
Fluoranthene	0	0		0	200	200	168,378	
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	8,419	
Hexachlorocyclopentadiene	0	0		0	5	5.0	4,209	
Hexachloroethane	0	0		0	60	60.0	50,514	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	8,418,917	
Naphthalene	0	0		0	140	140	117,865	
Nitrobenzene	0	0		0	4,000	4,000	3,367,567	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	14,312,158	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	252,568	
Phenanthrene	0	0		0	5	5.0	4,209	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	109,446	
Continuum AT3203	0	0		0	2,090	2,090	1,759,554	
Corrshield MD4103	0	0		0	106,880	106,880	89,981,382	
Gengard GN8113	0	0		0	10,990	10,990	9,252,390	
Gengard GN8203	0	0		0	17,060	17,060	14,362,672	
Spectrus NX1103	0	0		0	19	19.0	15,996	
Spectrus NX1106	0	0		0	210	210	176,797	

☑ ***CFC*** CCT (min): 720 PMF: 0.889 Analysis Hardness (mg/l): 133 Analysis pH: 8.05

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	
Fluoride (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	1,281,911	
Total Arsenic	0	0		0	150	150	874,030	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	23,890,161	
Total Boron	0	0		0	1,600	1,600	9,322,989	

Total Cadmium	0	0		0	0.300	0.33	1,948	Chem Translator of 0.897 applied
Total Chromium (III)	0	0		0	93.611	109	634,253	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	60,570	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	110,710	
Total Copper	0	0		0	11.427	11.9	69,356	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	9,834,645	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.428	4.57	26,652	Chem Translator of 0.749 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	5,278	Chem Translator of 0.85 applied
Total Nickel	0	0		0	66.195	66.4	386,869	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	29,071	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	75,749	
Total Zinc	0	0		0	150.425	153	888,953	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	17,481	
Acrylonitrile	0	0		0	130	130	757,493	
Benzene	0	0		0	130	130	757,493	
Bromoform	0	0		0	370	370	2,155,941	
Carbon Tetrachloride	0	0		0	560	560	3,263,046	
Chlorobenzene	0	0		0	240	240	1,398,448	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	20,394,039	
Chloroform	0	0		0	390	390	2,272,479	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	18,063,292	
1,1-Dichloroethylene	0	0		0	1,500	1,500	8,740,303	
1,2-Dichloropropane	0	0		0	2,200	2,200	12,819,111	
1,3-Dichloropropylene	0	0		0	61	61.0	355,439	
Ethylbenzene	0	0		0	580	580	3,379,584	
Methyl Bromide	0	0		0	110	110	640,956	
Methyl Chloride	0	0		0	5,500	5,500	32,047,776	
Methylene Chloride	0	0		0	2,400	2,400	13,984,484	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	1,223,642	
Tetrachloroethylene	0	0		0	140	140	815,762	
Toluene	0	0		0	330	330	1,922,867	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	8,157,616	
1,1,1-Trichloroethane	0	0		0	610	610	3,554,390	
1,1,2-Trichloroethane	0	0		0	680	680	3,962,271	
Trichloroethylene	0	0		0	450	450	2,622,091	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	640,956	
2,4-Dichlorophenol	0	0		0	340	340	1,981,135	
2,4-Dimethylphenol	0	0		0	130	130	757,493	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	93,230	
2,4-Dinitrophenol	0	0		0	130	130	757,493	
2-Nitrophenol	0	0		0	1,600	1,600	9,322,989	
4-Nitrophenol	0	0		0	470	470	2,738,628	

p-Chloro-m-Cresol	0	0		0	500	500	2,913,434	
Pentachlorophenol	0	0		0	19.125	19.1	111,437	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	530,245	
Acenaphthene	0	0		0	17	17.0	99,057	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	343,785	
Benzo(a)Anthracene	0	0		0	0.1	0.1	583	
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	34,961,211	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	5,302,450	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	314,651	
Butyl Benzyl Phthalate	0	0		0	35	35.0	203,940	
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	932,299	
1,3-Dichlorobenzene	0	0		0	69	69.0	402,054	
1,4-Dichlorobenzene	0	0		0	150	150	874,030	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	4,661,495	
Dimethyl Phthalate	0	0		0	500	500	2,913,434	
Di-n-Butyl Phthalate	0	0		0	21	21.0	122,364	
2,4-Dinitrotoluene	0	0		0	320	320	1,864,598	
2,6-Dinitrotoluene	0	0		0	200	200	1,165,374	
1,2-Diphenylhydrazine	0	0		0	3	3.0	17,481	
Fluoranthene	0	0		0	40	40.0	233,075	
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	11,654	
Hexachlorocyclopentadiene	0	0		0	1	1.0	5,827	
Hexachloroethane	0	0		0	12	12.0	69,922	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	12,236,424	
Naphthalene	0	0		0	43	43.0	250,555	
Nitrobenzene	0	0		0	810	810	4,719,763	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	19,811,353	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	343,785	
Phenanthrene	0	0		0	1	1.0	5,827	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	151,499	
Continuum AT3203	0	0		0	230	230	1,340,180	
Corrshield MD4103	0	0		0	11,980	11,980	69,805,884	
Gengard GN8113	0	0		0	1,220	1,220	7,108,779	
Gengard GN8203	0	0		0	1,900	1,900	11,071,050	

Spectrus NX1103	0	0		0	2	2.0	11,654	
Spectrus NX1106	0	0		0	23	23.0	134,018	

☑ ***THH*** CCT (min): 720 PMF: 0.889 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	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	32,630	
Total Arsenic	0	0		0	10	10.0	58,269	
Total Barium	0	0		0	2,400	2,400	13,984,484	
Total Boron	0	0		0	3,100	3,100	18,063,292	
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	
Dissolved Iron	0	0		0	300	300	1,748,061	
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	5,826,868	
Total Mercury	0	0		0	0.050	0.05	291	
Total Nickel	0	0		0	610	610	3,554,390	
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	1,398	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	17,481	
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	582,687	
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	33,213	
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	192,287	
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	396,227	
Methyl Bromide	0	0		0	100	100.0	582,687	
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	332,131	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	582,687	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	58,268,684	
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	174,806	
2,4-Dichlorophenol	0	0		0	10	10.0	58,269	
2,4-Dimethylphenol	0	0		0	100	100.0	582,687	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	11,654	
2,4-Dinitrophenol	0	0		0	10	10.0	58,269	
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	23,307,474	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	407,881	
Anthracene	0	0		0	300	300	1,748,061	
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	1,165,374	
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	583	
2-Chloronaphthalene	0	0		0	800	800	4,661,495	
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	5,826,868	
1,3-Dichlorobenzene	0	0		0	7	7.0	40,788	
1,4-Dichlorobenzene	0	0		0	300	300	1,748,061	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	3,496,121	
Dimethyl Phthalate	0	0		0	2,000	2,000	11,653,737	
Di-n-Butyl Phthalate	0	0		0	20	20.0	116,537	
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	116,537	
Fluorene	0	0		0	50	50.0	291,343	
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	23,307	
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	198,114	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	58,269	
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	116,537	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	408	
Continuum AT3203	0	0		0	2,100	2,100	12,236,424	
Corrshield MD4103	0	0		0	210	210	1,223,642	
Gengard GN8113	0	0		0	64,200	64,200	#########	
Gengard GN8203	0	0		0	112,900	112,900	#########	
Spectrus NX1103	0	0		0	35	35.0	203,940	
Spectrus NX1106	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): ###### PMF: 1 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	
Fluoride (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	
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	1,680	
Benzene	0	0		0	0.58	0.58	16,236	
Bromoform	0	0		0	7	7.0	195,951	
Carbon Tetrachloride	0	0		0	0.4	0.4	11,197	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	22,394	
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	26,593	
1,2-Dichloroethane	0	0		0	9.9	9.9	277,130	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	25,194	
1,3-Dichloropropylene	0	0		0	0.27	0.27	7,558	
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	559,859	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	5,599	
Tetrachloroethylene	0	0		0	10	10.0	279,929	
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	15,396	
Trichloroethylene	0	0		0	0.6	0.6	16,796	
Vinyl Chloride	0	0		0	0.02	0.02	560	
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	840	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	41,989	
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	2.8	
Benzo(a)Anthracene	0	0		0	0.001	0.001	28.0	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	2.8	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	28.0	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	280	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	840	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	8,958	
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	3,359	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	2.8	
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	1,400	
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	1,400	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	1,400	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	840	
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	2.24	
Hexachlorobutadiene	0	0		0	0.01	0.01	280	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	2,799	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	28.0	
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	19.6	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	140	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	92,377	
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	
Continuum AT3203	0	0		0	N/A	N/A	N/A	
Corrshield MD4103	0	0		0	N/A	N/A	N/A	
Gengard GN8113	0	0		0	N/A	N/A	N/A	
Gengard GN8203	0	0		0	N/A	N/A	N/A	
Spectrus NX1103	0	0		0	N/A	N/A	N/A	
Spectrus NX1106	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
Continuum AT3203	75.2	117	1,127,803	1,759,554	2,819,507	µg/L	1,127,803	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Corrshield MD4103	81.6	127	1,223,642	1,909,079	3,059,106	µg/L	1,223,642	THH	Discharge Conc ≥ 50% WQBEL (RP)
Gengard GN8113	396	617	5,930,408	9,252,390	14,826,020	µg/L	5,930,408	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Gengard GN8203	614	958	9,205,893	14,362,672	23,014,732	µg/L	9,205,893	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Spectrus NX1103	0.68	1.07	10,253	15,996	25,632	µg/L	10,253	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Spectrus NX1106	7.56	11.8	113,320	176,797	283,300	µg/L	113,320	AFC	Discharge Conc ≥ 50% WQBEL (RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	404,714	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	32,630	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	58,269	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	11,331,990	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	4,370,910	µg/L	Discharge Conc < TQL
Total Cadmium	1,538	µg/L	Discharge Conc < TQL
Total Chromium (III)	634,253	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	8,792	µg/L	Discharge Conc < TQL
Total Cobalt	51,264	µg/L	Discharge Conc ≤ 10% WQBEL

Total Copper	9,881	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	1,748,061	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	9,834,645	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	26,652	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	5,826,868	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	291	µg/L	Discharge Conc < TQL
Total Nickel	322,192	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	29,071	µg/L	Discharge Conc < TQL
Total Silver	3,334	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	1,398	µg/L	Discharge Conc < TQL
Total Zinc	82,311	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	1,619	µg/L	Discharge Conc < TQL
Acrylonitrile	1,680	µg/L	Discharge Conc < TQL
Benzene	16,236	µg/L	Discharge Conc ≤ 25% WQBEL
Bromoform	195,951	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	11,197	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	582,687	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	22,394	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	9,713,134	µg/L	Discharge Conc < TQL
Chloroform	33,213	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	26,593	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	277,130	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethylene	192,287	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-Dichloropropane	25,194	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichloropropylene	7,558	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	396,227	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Bromide	296,790	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	15,109,320	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	559,859	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	5,599	µg/L	Discharge Conc ≤ 25% WQBEL
Tetrachloroethylene	279,929	µg/L	Discharge Conc ≤ 25% WQBEL
Toluene	332,131	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	582,687	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	1,618,856	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2-Trichloroethane	15,396	µg/L	Discharge Conc ≤ 25% WQBEL
Trichloroethylene	16,796	µg/L	Discharge Conc ≤ 25% WQBEL
Vinyl Chloride	560	µg/L	Discharge Conc < TQL
2-Chlorophenol	174,806	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	58,269	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	356,148	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	11,654	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	58,269	µg/L	Discharge Conc < TQL
2-Nitrophenol	4,316,949	µg/L	Discharge Conc < TQL

4-Nitrophenol	1,241,123	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	86,339	µg/L	Discharge Conc < TQL
Pentachlorophenol	840	µg/L	Discharge Conc < TQL
Phenol	23,307,474	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	41,989	µg/L	Discharge Conc < TQL
Acenaphthene	44,788	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	1,748,061	µg/L	Discharge Conc ≤ 25% WQBEL
Benzidine	2.8	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	28.0	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	2.8	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	28.0	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	280	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	840	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	1,165,374	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	8,958	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	145,697	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	583	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	4,661,495	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	3,359	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	2.8	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	442,487	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	40,788	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	393,922	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	1,400	µg/L	Discharge Conc < TQL
Diethyl Phthalate	2,158,474	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	1,349,046	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	59,358	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	1,400	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	1,400	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	840	µg/L	Discharge Conc < TQL
Fluoranthene	107,924	µg/L	Discharge Conc ≤ 25% WQBEL
Fluorene	291,343	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorobenzene	2.24	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	280	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorocyclopentadiene	2,698	µg/L	Discharge Conc < TQL
Hexachloroethane	2,799	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	28.0	µg/L	Discharge Conc < TQL
Isophorone	198,114	µg/L	Discharge Conc < TQL
Naphthalene	75,547	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	58,269	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	19.6	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	140	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	92,377	µg/L	Discharge Conc < TQL
Phenanthrene	2,698	µg/L	Discharge Conc ≤ 25% WQBEL

Pyrene	116,537	µg/L	Discharge Conc ≤ 25% WQBEL
1,2,4-Trichlorobenzene	408	µg/L	Discharge Conc < TQL

TMS – Chemical additives run at 3.08 MGD

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Carpenter Technology Corp.** NPDES Permit No.: **PA0013129** Outfall No.: **See WW De**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **NCCW (2,4,5,11,12,13,14,902)**

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
3.08	107	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	Strea m CV	Fate Coeff	FOS	Criteri a Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		257									
	Chloride (PWS)	mg/L		118									
	Bromide	mg/L	<	2.5									
	Sulfate (PWS)	mg/L		19									
	Fluoride (PWS)	mg/L		0.52									
Group 2	Total Aluminum	µg/L		89									
	Total Antimony	µg/L	<	22									
	Total Arsenic	µg/L	<	22									
	Total Barium	µg/L		102									
	Total Beryllium	µg/L	<	6									
	Total Boron	µg/L	<	22									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L	<	6									
	Hexavalent Chromium	µg/L	<	1									
	Total Cobalt	µg/L	<	6									
	Total Copper	µg/L		68									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L		449									
	Total Iron	µg/L		456									
	Total Lead	µg/L	<	4.7									
	Total Manganese	µg/L		16									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		6									
	Total Phenols (Phenolics) (PWS)	µg/L	<	20									
	Total Selenium	µg/L	<	1									
	Total Silver	µg/L	<	0.5									
	Total Thallium	µg/L	<	0.5									
	Total Zinc	µg/L		88									
	Total Molybdenum	µg/L		22									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L											
	Acrylonitrile	µg/L	<	1									
	Benzene	µg/L	<	1									
	Bromoform	µg/L	<	1									
	Carbon Tetrachloride	µg/L	<	1									
	Chlorobenzene	µg/L		1									
	Chlorodibromomethane	µg/L	<	1									
	Chloroethane	µg/L	<	1									
	2-Chloroethyl Vinyl Ether	µg/L	<	1									

Group 3	Chloroform	µg/L		3.86										
	Dichlorobromomethane	µg/L	<	1										
	1,1-Dichloroethane	µg/L	<	1										
	1,2-Dichloroethane	µg/L	<	1										
	1,1-Dichloroethylene	µg/L	<	1										
	1,2-Dichloropropane	µg/L	<	1										
	1,3-Dichloropropylene	µg/L	<	1										
	1,4-Dioxane	µg/L	<	250										
	Ethylbenzene	µg/L	<	1										
	Methyl Bromide	µg/L	<	1										
	Methyl Chloride	µg/L	<	1										
	Methylene Chloride	µg/L	<	1										
	1,1,2,2-Tetrachloroethane	µg/L	<	1										
	Tetrachloroethylene	µg/L	<	1										
	Toluene	µg/L	<	1										
	1,2-trans-Dichloroethylene	µg/L	<	1										
	1,1,1-Trichloroethane	µg/L	<	1										
	1,1,2-Trichloroethane	µg/L	<	1										
	Trichloroethylene	µg/L	<	1										
	Vinyl Chloride	µg/L	<	0.5										
Group 4	2-Chlorophenol	µg/L	<	5										
	2,4-Dichlorophenol	µg/L	<	5										
	2,4-Dimethylphenol	µg/L	<	10										
	4,6-Dinitro-o-Cresol	µg/L	<	10										
	2,4-Dinitrophenol	µg/L	<	5										
	2-Nitrophenol	µg/L	<	5										
	4-Nitrophenol	µg/L	<	5										
	p-Chloro-m-Cresol	µg/L	<	5										
	Pentachlorophenol	µg/L	<	5										
	Phenol	µg/L	<	1.1										
	2,4,6-Trichlorophenol	µg/L	<	5										
Group 5	Acenaphthene	µg/L	<	5										
	Acenaphthylene	µg/L	<	5										
	Anthracene	µg/L	<	5										
	Benzidine	µg/L	<	50										
	Benzo(a)Anthracene	µg/L	<	2										
	Benzo(a)Pyrene	µg/L	<	2										
	3,4-Benzofluoranthene	µg/L	<	2										
	Benzo(ghi)Perylene	µg/L	<	5										
	Benzo(k)Fluoranthene	µg/L	<	2										
	Bis(2-Chloroethoxy)Methane	µg/L	<	5										
	Bis(2-Chloroethyl)Ether	µg/L	<	5										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5										
	4-Bromophenyl Phenyl Ether	µg/L	<	5										
	Butyl Benzyl Phthalate	µg/L	<	5										
	2-Chloronaphthalene	µg/L	<	5										
	4-Chlorophenyl Phenyl Ether	µg/L	<	5										
	Chrysene	µg/L	<	2										
	Dibenzo(a,h)Anthrancene	µg/L	<	2										
	1,2-Dichlorobenzene	µg/L	<	5										
	1,3-Dichlorobenzene	µg/L	<	5										
	1,4-Dichlorobenzene	µg/L	<	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	<	2.1										
	Hexachlorocyclopentadiene	µg/L	<	5										
	Hexachloroethane	µg/L	<	5										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2										

	Isophorone	µg/L	<	5									
	Naphthalene	µg/L	<	2.1									
	Nitrobenzene	µg/L	<	5									
	n-Nitrosodimethylamine	µg/L	<	5									
	n-Nitrosodi-n-Propylamine	µg/L	<	5									
	n-Nitrosodiphenylamine	µg/L	<	5									
	Phenanthrene	µg/L	<	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											
	Continuum AT3203	µg/L		1.00E+09									
	Corrshield MD4103	µg/L		1.00E+09									
	Gengard GN8113	µg/L		1.00E+09									
	Gengard GN8203	µg/L		1.00E+09									
	Spectrus NX1103	µg/L		1.00E+09									
	Spectrus NX1106	µg/L		1.00E+09									

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Carpenter Technology Corp., NPDES Permit No. PA0013129, Outfall See WW Desc

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	76.76	202.11	665			Yes
End of Reach 1	000833	70.35	169.58	923			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	76.76	0.122										133	8.05		
End of Reach 1	70.35	0.144										133	8.05		

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	76.76														
End of Reach 1	70.35														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Carpenter Technology Corp., NPDES Permit No. PA0013129, Outfall See WW Desc

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.133 Analysis Hardness (mg/l): 125.04 Analysis pH: 7.43

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	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	2,448	
Total Antimony	0	0		0	1,100	1,100	3,591	
Total Arsenic	0	0		0	340	340	1,110	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	68,556	
Total Boron	0	0		0	8,100	8,100	26,443	
Total Cadmium	0	0		0	2.502	2.68	8.74	Chem Translator of 0.935 applied
Total Chromium (III)	0	0		0	684.172	2,165	7,068	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	53.2	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	310	
Total Copper	0	0		0	16.588	17.3	56.4	Chem Translator of 0.96 applied
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	82.296	109	354	Chem Translator of 0.758 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	5.38	Chem Translator of 0.85 applied
Total Nickel	0	0		0	565.660	567	1,850	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	4.724	5.56	18.1	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	212	
Total Zinc	0	0		0	141.603	145	473	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	9.79	
Acrylonitrile	0	0		0	650	650	2,122	
Benzene	0	0		0	640	640	2,089	

Bromoform	0	0		0	1,800	1,800	5,876	
Carbon Tetrachloride	0	0		0	2,800	2,800	9,141	
Chlorobenzene	0	0		0	1,200	1,200	3,917	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	58,762	
Chloroform	0	0		0	1,900	1,900	6,203	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	48,969	
1,1-Dichloroethylene	0	0		0	7,500	7,500	24,484	
1,2-Dichloropropane	0	0		0	11,000	11,000	35,910	
1,3-Dichloropropylene	0	0		0	310	310	1,012	
Ethylbenzene	0	0		0	2,900	2,900	9,467	
Methyl Bromide	0	0		0	550	550	1,796	
Methyl Chloride	0	0		0	28,000	28,000	91,408	
Methylene Chloride	0	0		0	12,000	12,000	39,175	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	3,265	
Tetrachloroethylene	0	0		0	700	700	2,285	
Toluene	0	0		0	1,700	1,700	5,550	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	22,199	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	9,794	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	11,100	
Trichloroethylene	0	0		0	2,300	2,300	7,509	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,828	
2,4-Dichlorophenol	0	0		0	1,700	1,700	5,550	
2,4-Dimethylphenol	0	0		0	660	660	2,155	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	261	
2,4-Dinitrophenol	0	0		0	660	660	2,155	
2-Nitrophenol	0	0		0	8,000	8,000	26,117	
4-Nitrophenol	0	0		0	2,300	2,300	7,509	
p-Chloro-m-Cresol	0	0		0	160	160	522	
Pentachlorophenol	0	0		0	13.493	13.5	44.0	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	1,502	
Acenaphthene	0	0		0	83	83.0	271	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	979	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.63	
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	97,937	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	14,691	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	881	
Butyl Benzyl Phthalate	0	0		0	140	140	457	
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	2,677	
1,3-Dichlorobenzene	0	0		0	350	350	1,143	
1,4-Dichlorobenzene	0	0		0	730	730	2,383	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	13,058	
Dimethyl Phthalate	0	0		0	2,500	2,500	8,161	
Di-n-Butyl Phthalate	0	0		0	110	110	359	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	5,223	
2,6-Dinitrotoluene	0	0		0	990	990	3,232	
1,2-Diphenylhydrazine	0	0		0	15	15.0	49.0	
Fluoranthene	0	0		0	200	200	653	
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	32.6	
Hexachlorocyclopentadiene	0	0		0	5	5.0	16.3	
Hexachloroethane	0	0		0	60	60.0	196	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	32,646	
Naphthalene	0	0		0	140	140	457	
Nitrobenzene	0	0		0	4,000	4,000	13,058	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	55,498	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	979	
Phenanthrene	0	0		0	5	5.0	16.3	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	424	
Continuum AT3203	0	0		0	2,090	2,090	6,823	
Corrshield MD4103	0	0		0	106,880	106,880	348,917	
Gengard GN8113	0	0		0	10,990	10,990	35,878	
Gengard GN8203	0	0		0	17,060	17,060	55,694	
Spectrus NX1103	0	0		0	19	19.0	62.0	
Spectrus NX1106	0	0		0	210	210	686	

☑ ***CFC*** CCT (min): 720 PMF: 0.921 Analysis Hardness (mg/l): 131.44 Analysis pH: 7.84

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	
Fluoride (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	3,672	
Total Arsenic	0	0		0	150	150	2,503	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	68,427	
Total Boron	0	0		0	1,600	1,600	26,703	

Total Cadmium	0	0		0	0.297	0.33	5.53	Chem Translator of 0.898 applied
Total Chromium (III)	0	0		0	92.714	108	1,799	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	173	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	317	
Total Copper	0	0		0	11.313	11.8	197	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	27,041	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.385	4.51	75.2	Chem Translator of 0.751 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	15.1	Chem Translator of 0.85 applied
Total Nickel	0	0		0	65.540	65.7	1,097	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	83.3	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	217	
Total Zinc	0	0		0	148.935	151	2,521	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	50.1	
Acrylonitrile	0	0		0	130	130	2,170	
Benzene	0	0		0	130	130	2,170	
Bromoform	0	0		0	370	370	6,175	
Carbon Tetrachloride	0	0		0	560	560	9,346	
Chlorobenzene	0	0		0	240	240	4,005	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	58,413	
Chloroform	0	0		0	390	390	6,509	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	51,737	
1,1-Dichloroethylene	0	0		0	1,500	1,500	25,034	
1,2-Dichloropropane	0	0		0	2,200	2,200	36,717	
1,3-Dichloropropylene	0	0		0	61	61.0	1,018	
Ethylbenzene	0	0		0	580	580	9,680	
Methyl Bromide	0	0		0	110	110	1,836	
Methyl Chloride	0	0		0	5,500	5,500	91,792	
Methylene Chloride	0	0		0	2,400	2,400	40,055	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	3,505	
Tetrachloroethylene	0	0		0	140	140	2,337	
Toluene	0	0		0	330	330	5,508	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	23,365	
1,1,1-Trichloroethane	0	0		0	610	610	10,181	
1,1,2-Trichloroethane	0	0		0	680	680	11,349	
Trichloroethylene	0	0		0	450	450	7,510	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	1,836	
2,4-Dichlorophenol	0	0		0	340	340	5,674	
2,4-Dimethylphenol	0	0		0	130	130	2,170	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	267	
2,4-Dinitrophenol	0	0		0	130	130	2,170	
2-Nitrophenol	0	0		0	1,600	1,600	26,703	
4-Nitrophenol	0	0		0	470	470	7,844	

p-Chloro-m-Cresol	0	0		0	500	500	8,345	
Pentachlorophenol	0	0		0	10.352	10.4	173	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	1,519	
Acenaphthene	0	0		0	17	17.0	284	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	985	
Benzo(a)Anthracene	0	0		0	0.1	0.1	1.67	
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	100,136	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	15,187	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	901	
Butyl Benzyl Phthalate	0	0		0	35	35.0	584	
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	2,670	
1,3-Dichlorobenzene	0	0		0	69	69.0	1,152	
1,4-Dichlorobenzene	0	0		0	150	150	2,503	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	13,352	
Dimethyl Phthalate	0	0		0	500	500	8,345	
Di-n-Butyl Phthalate	0	0		0	21	21.0	350	
2,4-Dinitrotoluene	0	0		0	320	320	5,341	
2,6-Dinitrotoluene	0	0		0	200	200	3,338	
1,2-Diphenylhydrazine	0	0		0	3	3.0	50.1	
Fluoranthene	0	0		0	40	40.0	668	
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	33.4	
Hexachlorocyclopentadiene	0	0		0	1	1.0	16.7	
Hexachloroethane	0	0		0	12	12.0	200	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	35,048	
Naphthalene	0	0		0	43	43.0	718	
Nitrobenzene	0	0		0	810	810	13,518	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	56,744	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	985	
Phenanthrene	0	0		0	1	1.0	16.7	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	434	
Continuum AT3203	0	0		0	230	230	3,839	
Corrshield MD4103	0	0		0	11,980	11,980	199,939	
Gengard GN8113	0	0		0	1,220	1,220	20,361	
Gengard GN8203	0	0		0	1,900	1,900	31,710	

Spectrus NX1103	0	0		0	2	2.0	33.4	
Spectrus NX1106	0	0		0	23	23.0	384	

☑ ***THH*** CCT (min): 720 PMF: 0.921 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	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	93.5	
Total Arsenic	0	0		0	10	10.0	167	
Total Barium	0	0		0	2,400	2,400	40,055	
Total Boron	0	0		0	3,100	3,100	51,737	
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	
Dissolved Iron	0	0		0	300	300	5,007	
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	16,689	
Total Mercury	0	0		0	0.050	0.05	0.83	
Total Nickel	0	0		0	610	610	10,181	
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	4.01	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	50.1	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	1,669	
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	95.1	
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	551	
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	1,135	
Methyl Bromide	0	0		0	100	100.0	1,669	
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	951	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	1,669	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	166,894	
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	501	
2,4-Dichlorophenol	0	0		0	10	10.0	167	
2,4-Dimethylphenol	0	0		0	100	100.0	1,669	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	33.4	
2,4-Dinitrophenol	0	0		0	10	10.0	167	
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	66,758	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	1,168	
Anthracene	0	0		0	300	300	5,007	
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	3,338	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	1.67	
2-Chloronaphthalene	0	0		0	800	800	13,352	
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	16,689	
1,3-Dichlorobenzene	0	0		0	7	7.0	117	
1,4-Dichlorobenzene	0	0		0	300	300	5,007	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	10,014	
Dimethyl Phthalate	0	0		0	2,000	2,000	33,379	
Di-n-Butyl Phthalate	0	0		0	20	20.0	334	
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	334	
Fluorene	0	0		0	50	50.0	834	
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	66.8	
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	567	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	167	
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	334	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	1.17	
Continuum AT3203	0	0		0	2,100	2,100	35,048	
Corrshield MD4103	0	0		0	210	210	3,505	
Gengard GN8113	0	0		0	64,200	64,200	1,071,460	
Gengard GN8203	0	0		0	112,900	112,900	1,884,234	
Spectrus NX1103	0	0		0	35	35.0	584	
Spectrus NX1106	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): ###### PMF: 1 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	
Fluoride (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	
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	4.42	
Benzene	0	0		0	0.58	0.58	42.7	
Bromoform	0	0		0	7	7.0	516	
Carbon Tetrachloride	0	0		0	0.4	0.4	29.5	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	59.0	
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	70.0	
1,2-Dichloroethane	0	0		0	9.9	9.9	730	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	66.3	
1,3-Dichloropropylene	0	0		0	0.27	0.27	19.9	
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	1,474	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	14.7	
Tetrachloroethylene	0	0		0	10	10.0	737	
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	40.5	
Trichloroethylene	0	0		0	0.6	0.6	44.2	
Vinyl Chloride	0	0		0	0.02	0.02	1.47	
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	2.21	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	111	
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	0.007	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.074	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.007	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.074	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.74	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	2.21	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	23.6	
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	8.84	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.007	
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	3.69	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	3.69	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	3.69	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	2.21	
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	0.006	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.74	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	7.37	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.074	
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	0.052	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.37	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	243	
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	
Continuum AT3203	0	0		0	N/A	N/A	N/A	
Corrshield MD4103	0	0		0	N/A	N/A	N/A	
Gengard GN8113	0	0		0	N/A	N/A	N/A	
Gengard GN8203	0	0		0	N/A	N/A	N/A	
Spectrus NX1103	0	0		0	N/A	N/A	N/A	
Spectrus NX1106	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 Antimony	Report	Report	Report	Report	Report	µg/L	93.5	THH	Discharge Conc > 10% WQBEL (no RP)
Total Arsenic	Report	Report	Report	Report	Report	µg/L	167	THH	Discharge Conc > 10% WQBEL (no RP)
Total Copper	0.93	1.45	36.2	56.4	90.4	µg/L	36.2	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	303	AFC	Discharge Conc > 10% WQBEL (no RP)
Hexachlorobutadiene	0.019	0.03	0.74	1.15	1.84	µg/L	0.74	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Phenanthrene	Report	Report	Report	Report	Report	µg/L	10.5	AFC	Discharge Conc > 25% WQBEL (no RP)
Continuum AT3203	98.6	154	3,839	5,989	9,596	µg/L	3,839	CFC	Discharge Conc ≥ 50% WQBEL (RP)

Corrshield MD4103	90.0	140	3,505	5,468	8,762	µg/L	3,505	THH	Discharge Conc ≥ 50% WQBEL (RP)
Gengard GN8113	523	816	20,361	31,767	50,903	µg/L	20,361	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Gengard GN8203	815	1,271	31,710	49,473	79,275	µg/L	31,710	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Spectrus NX1103	0.86	1.34	33.4	52.1	83.4	µg/L	33.4	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Spectrus NX1106	9.86	15.4	384	599	960	µg/L	384	CFC	Discharge Conc ≥ 50% WQBEL (RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	1,569	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	40,055	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	16,949	µg/L	Discharge Conc < TQL
Total Cadmium	5.53	µg/L	Discharge Conc < TQL
Total Chromium (III)	1,799	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	34.1	µg/L	Discharge Conc < TQL
Total Cobalt	199	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	5,007	µg/L	Discharge Conc ≤ 10% WQBEL

Total Iron	27,041	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	75.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	16,689	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.83	µg/L	Discharge Conc < TQL
Total Nickel	1,097	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	83.3	µg/L	Discharge Conc < TQL
Total Silver	11.6	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	4.01	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	6.28	µg/L	Discharge Conc < TQL
Acrylonitrile	4.42	µg/L	Discharge Conc < TQL
Benzene	42.7	µg/L	Discharge Conc ≤ 25% WQBEL
Bromoform	516	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	29.5	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	1,669	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	59.0	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	37,664	µg/L	Discharge Conc < TQL
Chloroform	95.1	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	70.0	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	730	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethylene	551	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-Dichloropropane	66.3	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichloropropylene	19.9	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	1,135	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Bromide	1,151	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	58,589	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	1,474	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	14.7	µg/L	Discharge Conc ≤ 25% WQBEL
Tetrachloroethylene	737	µg/L	Discharge Conc ≤ 25% WQBEL
Toluene	951	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	1,669	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	6,277	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2-Trichloroethane	40.5	µg/L	Discharge Conc ≤ 25% WQBEL
Trichloroethylene	44.2	µg/L	Discharge Conc ≤ 25% WQBEL
Vinyl Chloride	1.47	µg/L	Discharge Conc < TQL
2-Chlorophenol	501	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	167	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	1,381	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	33.4	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	167	µg/L	Discharge Conc < TQL
2-Nitrophenol	16,740	µg/L	Discharge Conc < TQL
4-Nitrophenol	4,813	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	335	µg/L	Discharge Conc < TQL
Pentachlorophenol	2.21	µg/L	Discharge Conc < TQL
Phenol	66,758	µg/L	Discharge Conc < TQL

2,4,6-Trichlorophenol	111	µg/L	Discharge Conc < TQL
Acenaphthene	174	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	5,007	µg/L	Discharge Conc ≤ 25% WQBEL
Benzidine	0.007	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.074	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.007	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.074	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.74	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	2.21	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	3,338	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	23.6	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	565	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	1.67	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	13,352	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	8.84	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.007	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	1,716	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	117	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	1,527	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	3.69	µg/L	Discharge Conc < TQL
Diethyl Phthalate	8,370	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	5,231	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	230	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	3.69	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	3.69	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	2.21	µg/L	Discharge Conc < TQL
Fluoranthene	334	µg/L	Discharge Conc ≤ 25% WQBEL
Fluorene	834	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorobenzene	0.006	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	10.5	µg/L	Discharge Conc < TQL
Hexachloroethane	7.37	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.074	µg/L	Discharge Conc < TQL
Isophorone	567	µg/L	Discharge Conc < TQL
Naphthalene	293	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	167	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.052	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.37	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	243	µg/L	Discharge Conc < TQL
Pyrene	334	µg/L	Discharge Conc ≤ 25% WQBEL
1,2,4-Trichlorobenzene	1.17	µg/L	Discharge Conc < TQL

Attachment C- Thermal Worksheets

Facility:	**Carpenter Technology Corporation**
Permit Number:	PA0013129
Stream Name:	Schuylkill River
Analyst/Engineer:	DEP
Stream Q7-10 (cfs):	162

	Facility Flows					Stream Flows		
	Intake (Stream) (MGD)	Intake (External) (MGD)	Consumptive Loss (MGD)	Discharge Flow (MGD)	PMF	Upstream Stream Flow (cfs)	Adjusted Stream Flow (cfs)	Downstream Stream Flow (cfs)
Jan 1-31	0	3.09	0	3.09	0.50	518.40	259.20	263.98
Feb 1-29	0	3.09	0	3.09	0.50	567.00	283.50	288.28
Mar 1-31	0	3.09	0	3.09	0.50	1134.00	567.00	571.78
Apr 1-15	0	3.09	0	3.09	0.50	1506.60	753.30	758.08
Apr 16-30	0	3.09	0	3.09	0.50	1506.60	753.30	758.08
May 1-15	0	3.09	0	3.09	0.50	826.20	413.10	417.88
May 16-31	0	3.09	0	3.09	0.50	826.20	413.10	417.88
Jun 1-15	0	3.09	0	3.09	0.50	486.00	243.00	247.78
Jun 16-30	0	3.09	0	3.09	0.50	486.00	243.00	247.78
Jul 1-31	0	3.09	0	3.09	0.50	275.40	137.70	142.48
Aug 1-15	0	3.09	0	3.09	0.50	226.80	113.40	118.18
Aug 16-31	0	3.09	0	3.09	0.50	226.80	113.40	118.18
Sep 1-15	0	3.09	0	3.09	0.50	178.20	89.10	93.88
Sep 16-30	0	3.09	0	3.09	0.50	178.20	89.10	93.88
Oct 1-15	0	3.09	0	3.09	0.50	194.40	97.20	101.98
Oct 16-31	0	3.09	0	3.09	0.50	194.40	97.20	101.98
Nov 1-15	0	3.09	0	3.09	0.50	259.20	129.60	134.38
Nov 16-30	0	3.09	0	3.09	0.50	259.20	129.60	134.38
Dec 1-31	0	3.09	0	3.09	0.50	388.80	194.40	199.18

Please forward all comments to Tom Starosta at 717-787-4317, tstarosta@state.pa.us.

Version 2.0 -- 07/01/2005 Reference: Implementation Guidance for Temperature Criteria, DEP-ID: 391-2000-017

NOTE: The user can only edit fields that are blue.

NOTE: MGD x 1.547 = cfs.

Facility:	**Carpenter Technology Corporation**							
Permit Number:	PA0013129							
Stream:	Schuylkill River							
	WWF			**WWF**		**WWF**		**PMF**
	Ambient Stream	Ambient Stream	Target Maximum	Daily		Daily		
	Temperature (ºF)	Temperature (ºF)	Stream Temp.[1]	WLA[2]		WLA[3]	at Discharge	
	(Default)	(Site-specific data)	(ºF)	(Million BTUs/day)		(ºF)	Flow (MGD)	
Jan 1-31	35	0	40	N/A -- Case 2		110.0	3.09	0.50
Feb 1-29	35	0	40	N/A -- Case 2		110.0	3.09	0.50
Mar 1-31	40	0	46	N/A -- Case 2		110.0	3.09	0.50
Apr 1-15	47	0	52	N/A -- Case 2		110.0	3.09	0.50
Apr 16-30	53	0	58	N/A -- Case 2		110.0	3.09	0.50
May 1-15	58	0	64	N/A -- Case 2		110.0	3.09	0.50
May 16-31	62	0	72	N/A -- Case 2		110.0	3.09	0.50
Jun 1-15	67	0	80	N/A -- Case 2		110.0	3.09	0.50
Jun 16-30	71	0	84	N/A -- Case 2		110.0	3.09	0.50
Jul 1-31	75	0	87	N/A -- Case 2		110.0	3.09	0.50
Aug 1-15	74	0	87	N/A -- Case 2		110.0	3.09	0.50
Aug 16-31	74	0	87	N/A -- Case 2		110.0	3.09	0.50
Sep 1-15	71	0	84	N/A -- Case 2		110.0	3.09	0.50
Sep 16-30	65	0	78	N/A -- Case 2		110.0	3.09	0.50
Oct 1-15	60	0	72	N/A -- Case 2		110.0	3.09	0.50
Oct 16-31	54	0	66	N/A -- Case 2		110.0	3.09	0.50
Nov 1-15	48	0	58	N/A -- Case 2		110.0	3.09	0.50
Nov 16-30	42	0	50	N/A -- Case 2		110.0	3.09	0.50
Dec 1-31	37	0	42	N/A -- Case 2		110.0	3.09	0.50

[1] This is the maximum of the WWF WQ criterion or the ambient temperature. The ambient temperature may be either the design (median) temperature for WWF, or the ambient stream temperature based on site-specific data entered by the user. A minimum of 1ºF above ambient stream temperature is allocated.

[2] The WLA expressed in Million BTUs/day is valid for Case 1 scenarios, and disabled for Case 2 scenarios.

[3] The WLA expressed in ºF is valid only if the limit is tied to a daily discharge flow limit (may be used for Case 1 or Case 2). WLAs greater than 110ºF are displayed as 110ºF.

Attachment E:
DMR Flow Data

Flow Rate Data for Outfall 901

Period Begin	End Date	Outfall	Parameter Name	DMR Value	DMR Value	Units	Code
11/01/2017	11/30/2017	901	Flow	0.811	0.811	MGD	Average Monthly
12/01/2017	12/31/2017	901	Flow	0.827	0.827	MGD	Average Monthly
01/01/2018	01/31/2018	901	Flow	0.944	0.944	MGD	Average Monthly
02/01/2018	02/28/2018	901	Flow	0.807	0.807	MGD	Average Monthly
03/01/2018	03/31/2018	901	Flow	0.743	0.743	MGD	Average Monthly
04/01/2018	04/30/2018	901	Flow	0.77	0.77	MGD	Average Monthly
05/01/2018	05/31/2018	901	Flow	0.761	0.761	MGD	Average Monthly
06/01/2018	06/30/2018	901	Flow	0.768	0.768	MGD	Average Monthly
06/01/2018	06/30/2018	901	Flow	0.001		MGD	Average Monthly
07/01/2018	07/31/2018	901	Flow	0.808	0.808	MGD	Average Monthly
08/01/2018	08/31/2018	901	Flow	0.954	0.954	MGD	Average Monthly
09/01/2018	09/30/2018	901	Flow	1.117	1.117	MGD	Average Monthly
10/01/2018	10/31/2018	901	Flow	1.014	1.014	MGD	Average Monthly
11/01/2018	11/30/2018	901	Flow	0.953	0.953	MGD	Average Monthly
12/01/2018	12/31/2018	901	Flow	1.025	1.025	MGD	Average Monthly
01/01/2019	01/31/2019	901	Flow	1.113	1.113	MGD	Average Monthly
02/01/2019	02/28/2019	901	Flow	1.105	1.105	MGD	Average Monthly
03/01/2019	03/31/2019	901	Flow	1.135	1.135	MGD	Average Monthly
04/01/2019	04/30/2019	901	Flow	1.142	1.142	MGD	Average Monthly
05/01/2019	05/31/2019	901	Flow	1.134	1.134	MGD	Average Monthly
06/01/2019	06/30/2019	901	Flow	1.166	1.166	MGD	Average Monthly
07/01/2019	07/31/2019	901	Flow	1.351	1.351	MGD	Average Monthly
08/01/2019	08/31/2019	901	Flow	1.151	1.151	MGD	Average Monthly
09/01/2019	09/30/2019	901	Flow	1.093	1.093	MGD	Average Monthly
10/01/2019	10/31/2019	901	Flow	1.151	1.151	MGD	Average Monthly
11/01/2019	11/30/2019	901	Flow	0.806	0.806	MGD	Average Monthly
12/01/2019	12/31/2019	901	Flow	0.89	0.89	MGD	Average Monthly
01/01/2020	01/31/2020	901	Flow	0.835	0.835	MGD	Average Monthly
02/01/2020	02/29/2020	901	Flow	0.888	0.888	MGD	Average Monthly
03/01/2020	03/31/2020	901	Flow	0.877	0.877	MGD	Average Monthly
04/01/2020	04/30/2020	901	Flow	0.773	0.773	MGD	Average Monthly
05/01/2020	05/31/2020	901	Flow	0.698	0.698	MGD	Average Monthly
06/01/2020	06/30/2020	901	Flow	0.87	0.87	MGD	Average Monthly
07/01/2020	07/31/2020	901	Flow	0.74	0.74	MGD	Average Monthly
08/01/2020	08/31/2020	901	Flow	0.912	0.912	MGD	Average Monthly
09/01/2020	09/30/2020	901	Flow	0.876	0.876	MGD	Average Monthly
10/01/2020	10/31/2020	901	Flow	0.937	0.937	MGD	Average Monthly
11/01/2020	11/30/2020	901	Flow	0.951	0.951	MGD	Average Monthly
12/01/2020	12/31/2020	901	Flow	0.898	0.898	MGD	Average Monthly
01/01/2021	01/31/2021	901	Flow	0.688	0.688	MGD	Average Monthly
02/01/2021	02/28/2021	901	Flow	0.899	0.899	MGD	Average Monthly
03/01/2021	03/31/2021	901	Flow	0.897	0.897	MGD	Average Monthly
04/01/2021	04/30/2021	901	Flow	0.837	0.837	MGD	Average Monthly
05/01/2021	05/31/2021	901	Flow	0.907	0.907	MGD	Average Monthly
06/01/2021	06/30/2021	901	Flow	0.95	0.95	MGD	Average Monthly
07/01/2021	07/31/2021	901	Flow	0.731	0.731	MGD	Average Monthly
08/01/2021	08/31/2021	901	Flow	0.873	0.873	MGD	Average Monthly
09/01/2021	09/30/2021	901	Flow	0.85	0.85	MGD	Average Monthly
10/01/2021	10/31/2021	901	Flow	0.894	0.894	MGD	Average Monthly
11/01/2021	11/30/2021	901	Flow	0.856	0.856	MGD	Average Monthly
12/01/2021	12/31/2021	901	Flow	0.774	0.774	MGD	Average Monthly
01/01/2022	01/31/2022	901	Flow	0.875	0.875	MGD	Average Monthly
02/01/2022	02/28/2022	901	Flow	1.08	1.08	MGD	Average Monthly
03/01/2022	03/31/2022	901	Flow	1.015	1.015	MGD	Average Monthly
04/01/2022	04/30/2022	901	Flow	0.68	0.68	MGD	Average Monthly
05/01/2022	05/31/2022	901	Flow	0.833	0.833	MGD	Average Monthly
06/01/2022	06/30/2022	901	Flow	0.897	0.897	MGD	Average Monthly
07/01/2022	07/31/2022	901	Flow	0.674	0.674	MGD	Average Monthly
08/01/2022	08/31/2022	901	Flow	0.865	0.865	MGD	Average Monthly
09/01/2022	09/30/2022	901	Flow	0.875	0.875	MGD	Average Monthly
10/01/2022	10/31/2022	901	Flow	0.957	0.957	MGD	Average Monthly
11/01/2022	11/30/2022	901	Flow	0.818	0.818	MGD	Average Monthly
12/01/2022	12/31/2022	901	Flow	0.831	0.831	MGD	Average Monthly
01/01/2023	01/31/2023	901	Flow	0.838	0.838	MGD	Average Monthly
02/01/2023	02/28/2023	901	Flow	1.027	1.027	MGD	Average Monthly
03/01/2023	03/31/2023	901	Flow	1.106	1.106	MGD	Average Monthly
04/01/2023	04/30/2023	901	Flow	1.043	1.043	MGD	Average Monthly
05/01/2023	05/31/2023	901	Flow	0.91	0.91	MGD	Average Monthly
06/01/2023	06/30/2023	901	Flow	1.014	1.014	MGD	Average Monthly
07/01/2023	07/31/2023	901	Flow	1.043	1.043	MGD	Average Monthly

Min	**0.001**	**0.674**
Max	**1.351**	**1.351**
Average for 11/2017 to 7/2023	**0.90**	**0.92**
Average for 2022	**0.87**	**0.87**
Average for 1/2022 to 7/2023	**0.91**	**0.91**

Note: There are two columns with DMR Value. One column removed an outlier with a flow rate of 0.001 MGD.

DMR Discharge Flow Rates (All outfalls except 901)
Beginning November 2017 and Ending August 2023

Monitoring	DMR Received	Outfall	DMR Value	Units	Statistical Base Code
11/30/2017	01/09/2018	014	0.043	MGD	Average Monthly
02/28/2018	03/14/2018	004	0.043	MGD	Average Monthly
05/31/2018	06/14/2018	012	0.009	MGD	Average Monthly
06/30/2018	07/18/2018	004	0.001	MGD	Average Monthly
06/30/2018	07/18/2018	011	0.001	MGD	Average Monthly
06/30/2018	07/18/2018	012	0.001	MGD	Average Monthly
06/30/2018	07/18/2018	013	0.001	MGD	Average Monthly
06/30/2018	07/18/2018	014	0.001	MGD	Average Monthly
07/31/2018	08/21/2018	004	0.006	MGD	Average Monthly
07/31/2018	08/21/2018	012	0.028	MGD	Average Monthly
08/31/2018	09/18/2018	004	0.006	MGD	Average Monthly
08/31/2018	09/18/2018	011	0.002	MGD	Average Monthly
02/28/2019	03/14/2019	004	0.002	MGD	Average Monthly
04/30/2019	05/17/2019	004	0.005	MGD	Average Monthly
06/30/2019	07/10/2019	011	0.01	MGD	Average Monthly
07/31/2019	08/13/2019	005	0.01	MGD	Average Monthly
07/31/2019	08/13/2019	011	0.002	MGD	Average Monthly
11/30/2019	12/11/2019	012	0.014	MGD	Average Monthly
04/30/2020	05/18/2020	014	0.003	MGD	Average Monthly
09/30/2020	10/12/2020	004	0.001	MGD	Average Monthly
10/31/2020	11/11/2020	004	0.001	MGD	Average Monthly
11/30/2020	12/14/2020	004	0.007	MGD	Average Monthly
11/30/2020	12/14/2020	011	0.01	MGD	Average Monthly
11/30/2020	12/14/2020	012	0.01	MGD	Average Monthly
12/31/2020	01/18/2021	004	0.006	MGD	Average Monthly
12/31/2020	01/18/2021	011	0.001	MGD	Average Monthly
03/31/2021	04/14/2021	004	0.008	MGD	Average Monthly
04/30/2021	05/18/2021	004	0.01	MGD	Average Monthly
05/31/2021	06/15/2021	011	0.004	MGD	Average Monthly
06/30/2021	07/15/2021	004	0.003	MGD	Average Monthly
10/31/2021	11/17/2021	011	0.014	MGD	Average Monthly
12/31/2021	01/10/2022	004	0.003	MGD	Average Monthly
12/31/2021	01/10/2022	014	0.001	MGD	Average Monthly
01/31/2022	02/04/2022	004	0.002	MGD	Average Monthly
01/31/2022	02/04/2022	011	0.001	MGD	Average Monthly
03/31/2022	04/21/2022	004	0.003	MGD	Average Monthly
03/31/2022	04/21/2022	011	0.018	MGD	Average Monthly
06/30/2022	07/19/2022	011	0.001	MGD	Average Monthly
08/31/2022	09/15/2022	011	0.001	MGD	Average Monthly
10/31/2022	11/17/2022	011	0.001	MGD	Average Monthly
01/31/2023	02/16/2023	004	0.007	MGD	Average Monthly
02/28/2023	03/20/2023	004	0.003	MGD	Average Monthly
07/31/2023	08/15/2023	011	0.003	MGD	Average Monthly
08/31/2023	09/22/2023	011	0.001	MGD	Average Monthly
06/30/2018	07/18/2018	902	0.001	MGD	Average Monthly
		Maximum	***0.043***	***MGD***	

Attachment F:
TMDL- PCB

Attachment G:
DRBC Docket

Attachment H:
2016 Comment and Response

Attachment I:
DEP Chemical Additives Aquatic Values

The table below summarizes the aquatic life values utilized in the Toxics Management Spreadsheet (TMS) to determine impacts to receiving waters.

CHEMICAL ADDITIVE NAME	MANUFACTURER	PURPOSE	AQUATIC LIFE EFFECT LEVEL ACUTE (mg/L)	AQUATIC LIFE EFFECT LEVEL CHRONIC (mg/L)	HUMAN HEALTH SAFE USAGE CONCENTRATION (mg/L)	CRL	APPROVED DATE	MSDS DATE
Continuum AT3203	Veolia WTS USA, Inc. (formerly SUEZ WTS USA, Inc., formerly GE Betz Inc.)		2.09	0.23	2.1	No	09/18/2013	01/19/2010
Corrshield MD4103	Veolia WTS USA, Inc. (formerly SUEZ WTS USA, Inc., formerly GE Betz Inc.)		106.88	11.88	.21	No	09/18/2013	06/28/2011
Gengard GN8113	Veolia WTS USA, Inc. (formerly SUEZ WTS USA, Inc., formerly GE Betz Inc.)	Corrosion Inhibitor	10.99	1.22	64.2	No	01/09/2015	10/14/2013
Gengard GN8203	Veolia WTS USA, Inc. (formerly SUEZ WTS USA, Inc., formerly GE Betz Inc.)	Corrosion Inhibitor	17.06	1.9	112.9	No	05/20/2016	01/19/2016
Spectrus NX1103	Veolia WTS USA, Inc. (formerly SUEZ WTS USA, Inc., formerly GE Betz Inc.)	Microbial Control Agent	0.019	0.002	.035	No	09/18/2013	09/15/2011
Spectrus NX1106	Veolia WTS USA, Inc. (formerly SUEZ WTS USA, Inc., formerly GE Betz Inc.)	Microbial Control Agent	0.21	0.023	NT	No	09/18/2013	10/21/2011

Attachment J:
TRC Evaluation

Carpenter December 2024
PA0013129

1A	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	162	= Q stream (cfs)		0.5	= CV Daily	
5	1.9	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		0.5	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 8.810		1.3.2.iii	WLA cfc = 17.152
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 3.283		5.1d	LTA_cfc = 9.971
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
18			INST MAX LIMIT (mg/l) = 1.635			

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

Attachment K: Calculation Tables

CONFIDENTIAL

Table	Purpose of Table
ELG1.0	Table of emission factors abstracted from ELG federal regulations for Process lines A to J
ELG1.1	Mass limits for Process Line A thru J. Mass limits obtained by Production x emission factor
ELG2.0	Table of emission factors abstracted from ELG federal regulations for process line K
ELG2.1	Mass limits for Process Line K. Mass limits obtained by Production x emission factor
ELG3.0	Total Mass Loading for Process lines A to K
CONC4.0	Summary of Concentration limits. This table evaluates which policy enforces permit limit
MASS5.0	Summary of Mass limits. This table evaluates which policy enforces permit limit

Table absent due to confidential

Table absent due to confidential

Table absent due to confidential

Table absent due to confidential

Table absent due to confidential

Table absent due to confidential