Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0023931**
Facility Type	**Municipal**	APS ID	**1066837**
Major / Minor	**Major**	Authorization ID	**1402050**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Cambridge Area Joint Authority**	Facility Name	**Cambridge Area Joint Authority STP**
Applicant Address	161 Carringer Street	Facility Address	Bolard Avenue
	Cambridge Springs, PA 16403-1005		Cambridge Springs, PA 16403
Applicant Contact	Jeffery Murdock	Facility Contact	
Applicant Phone	(814) 398-2311 (spude@cambridgesprinsborough.com)	Facility Phone	
Client ID	161327	Site ID	546788
Ch 94 Load Status	Not Overloaded	Municipality	Cambridge Springs Borough
Connection Status	No Limitations	County	Crawford
Date Application Received	July 4, 2022	EPA Waived?	No
Date Application Accepted	August 13, 2022	If No, Reason	Major Facility

Purpose of Application: Renewal of a NPDES Permit for an existing discharge from a POTW.

Summary of Review

This is a publicly owned sewage treatment plant serving Cambridge Springs Borough and parts of Cambridge Township, Crawford County. The facility does not receive hauled in waste or sludge.

Due to this being a direct discharge to French Creek, potential impacts to threatened and endangered mussel species were evaluated and summarized on Page 13 of this Fact Sheet. Additionally, the draft permit will be forwarded to the US Fish & Wildlife Service.

There are currently no open violations listed in EFACTS for this permittee (7/31/2025).

Sludge use and disposal description and location(s): Sludge is dewatered and sent to Chautauqua County Landfill (N.Y.) for disposal.

Public Participation

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

Approve	Deny	Signatures	Date
X		Adam J. Pesek Adam J. Pesek, E.I.T. / Project Manager	July 31, 2025
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	July 31, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	1.3
Latitude	41º 48' 30.8"	Longitude	-80º 3' 52.9"
Quad Name	Cambridge Springs	Quad Code	01032
Wastewater Description:	Treated domestic sewage		
Receiving Waters	French Creek	Stream Code	51591
NHD Com ID	127344575	RMI	50.08
Drainage Area	513 mi^2	Yield (cfs/mi^2)	0.093
Q_{7-10} Flow (cfs)	47.71	Q_{7-10} Basis	French Ck near Cambridge Springs gage
Elevation (ft)	1126	Slope (ft/ft)	0.00007
Watershed No.	16-A	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	MERCURY		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)	7.8	6/30/93 stream survey
Temperature (°C)	25	Default temp for a WWF stream
Hardness (mg/L)	100	Model default value
$CBOD_5$ (mg/L)	2.0	Default value
NH_3-N (mg/L)	0.1	Default value

Nearest Downstream Public Water Supply Intake		Aqua Pennsylvania – Emlenton	
PWS Waters	Allegheny River	Flow at Intake (cfs)	1801
PWS RMI	90.0	Distance from Outfall (mi)	Approx. 70 miles

Changes Since Last Permit Issuance: Revised RMI, elevation, drainage area, flow and slope as a result of eMAP and USGS StreamStats investigation.

Other Comments: Cambridge Springs' NPDES sampling shows Mercury is not-detectable in their effluent. Therefore, it is not expected to contribute to this impairment and does not need to be addressed in the permit.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	0
Latitude	41º 48' 23.6"	Longitude	-80º 3' 53.8"
Quad Name	Cambridge Springs	Quad Code	01032
Wastewater Description:	Stormwater		
Receiving Waters	Unnamed Tributary to French Creek	Stream Code	53093
NHD Com ID	127344146	RMI	0.1
Drainage Area	---	Yield (cfs/mi^2)	---
Q_{7-10} Flow (cfs)	---	Q_{7-10} Basis	---
Elevation (ft)	---	Slope (ft/ft)	---
Watershed No.	16-A	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	SILTATION		
Source(s) of Impairment	URBAN RUNOFF/STORM SEWERS		
TMDL Status		Name	

Discharge, Receiving Waters and Water Supply Information

Outfall No.	005	Design Flow (MGD)	0
Latitude	41º 48' 26.3"	Longitude	-80º 3' 47.9"
Quad Name	Cambridge Springs	Quad Code	01032
Wastewater Description:	Stormwater		
Receiving Waters	French Creek	Stream Code	51591
NHD Com ID	127344575	RMI	50.1
Drainage Area	---	Yield (cfs/mi^2)	---
Q_{7-10} Flow (cfs)	---	Q_{7-10} Basis	---
Elevation (ft)	---	Slope (ft/ft)	---
Watershed No.	16-A	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	MERCURY		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status		Name	

Treatment Facility Summary

Treatment Facility Name: Cambridge Area Joint Authority STP

WQM Permit No.	Issuance Date
2007402	11/27/2007

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with Ammonia Reduction	Oxidation Ditch	Gas Chlorine	1.3

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
1.3	2500	Not Overloaded	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance: None

Permitted Facilities:

Grant Street Site Screening, Grit Removal, Raw Water Influent Pumps, (2) Aerobic Digesters, Centrifuge Dewatering unit & Drying Beds.

Bolard Avenue Site: (1.5 MGD) Equalization Tank (off-line), Oxidation Ditch, (2) Final Clarifiers, Chlorination/Dechlorination and a Chemical Feed System for phosphorus removal.

Compliance History	
Summary of DMRs:	There have been five effluent limits since the current permit was issued. All five effluent limits were for the fecal coliform IMAX limit.
Summary of Inspections:	The last facility inspection was conducted on 10/16/2024. No violations were noted.

Other Comments:

Compliance History

DMR Data for Outfall 001 (from June 1, 2024 to May 31, 2025)

Parameter	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24
Flow (MGD) Average Monthly	0.701	0.737	0.595	0.638	0.533	0.690	0.393	0.285	0.545	0.307	0.276	0.365
Flow (MGD) Weekly Average	0.963	0.990	0.929	0.856	0.909	0.988	0.555	0.420	0.882	0.388	0.309	0.467
pH (S.U.) Instantaneous Minimum	7.2	7.3	7.3	7.3	7.2	7.2	7.4	7.5	7.6	7.6	7.5	7.4
pH (S.U.) Instantaneous Maximum	7.7	7.7	7.6	7.7	7.6	8.5	7.8	8.1	8.0	8.1	8.0	7.9
DO (mg/L) Minimum Monthly Average	6.3	5.6	7.2	7.3	7.0	5.8	7.2	7.8	6.5	6.6	7.0	4.9
TRC (mg/L) Average Monthly	0.09	0.14	0.14	0.06	0.17	0.08	0.09	0.05	0.08	0.07	0.03	0.02
TRC (mg/L) Instantaneous Maximum	0.3	0.3	0.3	0.2	0.3	0.33	0.3	0.3	0.3	0.42	0.2	0.1
CBOD5 (lbs/day) Average Monthly	< 14	< 13	< 10	< 15	< 9	< 16	< 7	< 7	< 9	< 7	< 7	< 8
CBOD5 (lbs/day) Weekly Average	< 20	< 17	< 16	30	< 17	24	< 9	13	< 13	14	9	< 11
CBOD5 (mg/L) Average Monthly	< 2.6	< 3	< 2	< 2	< 2	< 3	< 3	< 3	< 2	< 3	< 3	< 3
CBOD5 (mg/L) Weekly Average	4	< 3	< 3	3	3	5	3	4	< 3	4	4	3
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	392	463	483	464	418	424	380	287	507	323	335	467
BOD5 (mg/L) Raw Sewage Influent Average Monthly	82	87	101	89	109	77	132	122	147	127	128	163

TSS (lbs/day) Average Monthly	< 30	< 31	< 24	< 28	< 22	< 33	< 15	< 13	< 20	< 13	< 13	< 15
TSS (lbs/day) Raw Sewage Influent Average Monthly	536	637	474	536	392	663	437	322	705	378	471	563
TSS (lbs/day) Weekly Average	< 35	< 60	< 40	< 43	< 43	< 53	< 22	< 23	< 32	< 17	< 14	< 22
TSS (mg/L) Average Monthly	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
TSS (mg/L) Raw Sewage Influent Average Monthly	111	104	107	101	100	110	154	137	183	151	185	195
TSS (mg/L) Weekly Average	< 5	< 7	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Fecal Coliform (No./100 ml) Geometric Mean	3	< 2	< 2	< 2	2	< 2	< 2	< 3	4	5	5	4
Fecal Coliform (No./100 ml) Instantaneous Maximum	6	6	8	4	6	33	8	11	15	145	11	25
Total Nitrogen (mg/L) Average Monthly	< 0.87	< 0.73	0.84	4.34	3.42	3.3	1.28	< 0.73	1.59	12.2	< 0.73	0.9
Ammonia (mg/L) Average Quarterly			< 0.15			0.28			< 0.4			< 0.4
Total Phosphorus (lbs/day) Average Monthly	< 0.8	< 0.9	< 0.7	< 0.9	< 0.7	< 0.8	< 0.5	< 0.5	< 0.9	< 0.3	< 0.3	< 0.8
Total Phosphorus (mg/L) Average Monthly	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.1	< 0.1	< 0.2
Total Nickel (mg/L) Average Quarterly			< 0.005			< 0.005			< 0.005			< 0.005
Chloride (mg/L) Average Quarterly			209			82.4			86.7			123

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 1.3
Latitude 41º 48' 30.8" **Longitude** -80º 3' 52.9"
Wastewater Description: Treated domestic sewage

Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
E. Coli	Report (No./100 ml)	IMAX	-	92a.61

Comments: Monitoring for E. Coli is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Water Quality-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Model
Ammonia Nitrogen (5/01 – 10/31)	22	Average Monthly	WQM 7.0 Ver. 1.1
Total Residual Chlorine	0.35	Average Monthly	TRC_Calc Spreadsheet
Total Residual Chlorine	1.15	IMAX	TRC_Calc Spreadsheet
Total Phosphorus	2	Average Monthly	6/93-8/93 SERA Survey

Comments: A seasonal multiplier of "3" is typically applied for ammonia nitrogen. Wintertime period for ammonia nitrogen will receive monitoring instead of limits since the WQBEL limit of 25 mg/l, which is close the raw sewage concentration, can be easily met based on utilization of secondary treatment and historical DMR data.

The Toxics Management Spreadsheet recommended monitoring for Chrysene. Chrysene was reported as non-detect on the application, however not at or below the quantitative limit for that parameter listed in the application instructions so the need to monitor could not be ruled out. The permittee did not attempt resampling for this parameter prior to issuance of the draft permit.

Best Professional Judgment (BPJ) Limitations

Comments: A dissolved oxygen limit of a minimum of 4.0 mg/l and monitoring for total nitrogen is being placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Monitoring for influent TSS and BOD_5 were placed in the permit in accordance with the Department's SOP entitled "New and Reissuance Sewage Individual NPDES Permit Applications."

Additional Considerations

Comments: Annual monitoring will be placed in the final limits table of the permit for PFOA, PFOS, HFPO-DA and PFBS per Department directives for major sewage facilities that do not receive waste from one of EPA's selected industrial categories. A footnote was also added to the proposed permit for the discontinuation of sampling requirements for PFAS parameters after four consecutive non-detects are reported for all parameters at or below the Target QLs.

Quarterly monitoring for total copper and total zinc will be placed in the permit to collect data to further evaluated potential mussel impacts.

Anti-Backsliding

N/A

Development of Effluent Limitations

Outfall No.	004	**Design Flow (MGD)**	0
Latitude	41º 48' 23.60"	**Longitude**	-80º 3' 53.80"
Wastewater Description:	Stormwater		

Outfall No.	005	**Design Flow (MGD)**	0
Latitude	41º 48' 26.30"	**Longitude**	-80º 3' 47.90"
Wastewater Description:	Stormwater		

Technology-Based Limitations

Comments: None

Water Quality-Based Limitations

Comments: None

Best Professional Judgment (BPJ) Limitations

Comments: None. A special condition for stormwater will be included in Part C. of the NPDES Permit.

Anti-Backsliding

N/A

Whole Effluent Toxicity (WET)

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

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

The dilution series used for the tests was: 100%, 60%, 30%, 6%, and 3%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 6.

Summary of Four Most Recent Test Results

TST Data Analysis

(NOTE – In lieu of recording information below, the application manager may attach the DEP WET Analysis Spreadsheet).

Test Date	*Ceriodaphnia* Results (Pass/Fail)		*Pimephales* Results (Pass/Fail)	
	Survival	Reproduction	Survival	Growth
7/27/2021	Pass	Pass	Pass	Pass
7/26/2022	Pass	Pass	Pass	Pass
7/24/2023	Pass	Pass	Pass	Pass
7/23/2024	Pass	Pass	Pass	Pass
7/21/2025	Pass	Pass	Pass	Pass

Is there reasonable potential for an excursion above water quality standards based on the results of these tests?

☐ **YES** ☒ **NO**

Comments: None

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

Acute Partial Mix Factor (PMFa): **0.149** Chronic Partial Mix Factor (PMFc): **1**

1. **Determine IWC – Acute (IWCa)**:

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

   [(1.3 MGD x 1.547) / ((47.71 cfs x 0.149) + (1.3 MGD x 1.547))] x 100 = **22%**

   Is IWCa < 1%? ☐ **YES** ☒ **NO**

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

   N/A

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

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

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

[(1.3 MGD x 1.547) / ((47.71 cfs x 1) + (1.3 MGD x 1.547))] x 100 = **4%**

3. Determine Dilution Series

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

Dilution Series = 100%, 60%, 30%, 4%, and 2%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

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

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

N/A

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

N/A

Threatened and Endangered Mussel Species Concerns and Considerations

The main segment of French Creek from the Union City Reservoir to the confluence with the Allegheny River was designated by the United States Fish and Wildlife Services (USFWS) as "Critical Habitat" for the rabbitsfoot mussel, a federally listed threatened species, and is known to also contain other threatened and endangered mussel species. Due to this being a direct discharge to French Creek, potential impacts were evaluated.

The USFWS has indicated in comment letters and email correspondence on other NPDES permits, that to protect threatened and endangered mussel species, wastewater discharges containing ammonia-nitrogen (NH3-N), chloride (Cl-) dissolved nickel, dissolved zinc, and copper where mussels or their habitat exist, can be no more than 1.9 mg/l, 78 mg/l, 7.3 µg/l, 13.18 µg/l, and 10 µg/l respectively.

The calculated site- specific criteria based on stream background pH data and default temperature for a TSF (pH of 7.8 and temperature of 25) results in NH3-N criteria of 0.736 mg/l.

The Department conducted a mussel screening in August 2017 in the vicinity of the Cambridge Area Joint Authority discharge. Although a report was not ultimately completed, discussions with Department biologists confirmed that no suitable habitat was found at or below the discharge point (a 500-meter survey length).

A summary of the sampling data for ammonia-nitrogen, chloride, total nickel, total zinc, and total copper for the 2022 renewal application is as follows:

PARAMETER	UNITS	Maximum	Average
NH_3-N	mg/l	3.37	0.64
Chloride	mg/l	146	103.8
Total Nickel	µg/l	<7	<7
Total Zinc	µg/l	32.5	30.6
Total Copper	µg/l	3.77	2.41

Additionally, eDMR data for ammonia nitrogen, chloride and total nickel was reviewed from January 2020 to end of June 2025 (Quarterly sampling). A summary of this eDMR data is as follows:

PARAMETER	UNITS	Average	Maximum
NH_3-N	mg/l	<0.365*	3.37
Chloride	mg/l	113.2	209
Total Nickel	µg/l	<6	<7

- - Note there were only two detections of ammonia nitrogen with the highest MDL of 0.8 mg/l and low of 0.15 mg/l.

The Endangered Mussel Species Impact Area Calculations Spreadsheet (attached) was used to evaluate the area of impact for ammonia nitrogen, chloride, total nickel, total zinc, and total copper using the maximum reported values above. Since no site-specific mussel surveys were conducted for this facility, only Method 2 and 3 were used in the spreadsheet. The results indicate a maximum This yielded a maximum potential impact area of approximately 31.39 square meters for ammonia-nitrogen, no impact area for total nickel, 4.78 square meters for total zinc, 2.67 square meters for chloride, and 0.86 square meters for total copper.

As noted above, there were only two detections of ammonia nitrogen in the discharge over five and half years, with all others being less than 0.8 mg/l. The Department does not believe there to be concern related to mussels due to ammonia nitrogen and does not suggest any further action be taken in the permit for this parameter.

For chloride, total copper, total nickel, and total zinc, due to relatively small, calculated areas of impact (if any) for this this existing major sewage discharge and the belief there is not suitable habitat in the vicinity of the outfall according to our biologists, the existing discharge from this facility is not believed to be having any measurable adverse effects on threatened or endangered mussel species in the Shenango River. However, the Department is proposing quarterly effluent monitoring for total copper and total zinc to develop a dataset as a means of further evaluating potential impacts in the upcoming permit term. Note that chloride and nickel monitoring was in the current permit and no significant changes were made at the facility, so the existing data from that sampling effort is deemed sufficient.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2)	Required
	Average Monthly	Weekly Average	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0	XXX	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.35	XXX	1.15	1/day	Grab
CBOD5	271	434	XXX	25	40 Wkly Avg	50	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS	325	488	XXX	30	45 Wkly Avg	60	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Ammonia May 1 – Oct 31	238	XXX	XXX	22.0	XXX	44	2/week	24-Hr Composite

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Ammonia Nov 1 – April 30	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Phosphorus	21.7	XXX	XXX	2.0	XXX	4	2/week	24-Hr Composite
PFOA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
PFOS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
PFBS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
HFPO-DA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Chrysene (ug/l)	XXX	Report Daily Max	XXX	XXX	Report	XXX	1/month	24-Hr Composite
Total Copper (ug/l)	Report Ave Qtrly	XXX	XXX	Report Ave Qtrly	XXX	XXX	1/quarter	24-Hr Composite
Total Zinc (ug/l)	Report Ave Qtrly	XXX	XXX	Report Ave Qtrly	XXX	XXX	1/quarter	24-Hr Composite

Compliance Sampling Location: Outfall 001 (after disinfection)

Other Comments:

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
16D	51591	FRENCH CREEK	**50.080**	1126.00	513.00	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	0.093	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.80	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
CAJMA	PA0023931	1.3000	0.0000	0.0000	0.000	20.00	7.20

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	4.00	7.54	0.00	0.00
NH3-N	25.00	0.10	0.00	0.30

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
16D	51591	FRENCH CREEK	**47.400**	1125.00	580.00	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	0.093	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.80	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
16D	51591	FRENCH CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
50.080	47.71	0.00	47.71	2.0111	0.00007	1.119	133.91	119.68	0.33	0.494	24.80	7.75
Q1-10 Flow												
50.080	30.53	0.00	30.53	2.0111	0.00007	NA	NA	NA	0.26	0.626	24.69	7.73
Q30-10 Flow												
50.080	64.88	0.00	64.88	2.0111	0.00007	NA	NA	NA	0.39	0.418	24.85	7.76

WQM 7.0 Modeling Specifications

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

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
16D	51591	FRENCH CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
50.080	CAJMA	4.34	50	4.34	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
50.080	CAJMA	.78	22.64	.78	22.64	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
50.08	CAJMA	25	25	22.64	22.64	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16D	51591	FRENCH CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
50.080	1.300	24.798	7.751
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
133.907	1.119	119.683	0.332
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.93	0.379	1.01	0.434
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.397	0.123	Tsivoglou	5
Reach Travel Time (days)			
0.494			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.049	2.86	0.99	7.20
0.099	2.80	0.97	7.02
0.148	2.73	0.95	6.84
0.197	2.67	0.93	6.66
0.247	2.61	0.91	6.49
0.296	2.55	0.89	6.32
0.345	2.49	0.87	6.16
0.395	2.43	0.85	6.00
0.444	2.38	0.83	5.85
0.494	2.32	0.82	5.71

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16D	51591	FRENCH CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
50.080	CAJMA	PA0023931	1.300	CBOD5	25		
				NH3-N	22.64	45.28	
				Dissolved Oxygen			4

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Cambridge Area Joint Authority STP** NPDES Permit No.: **PA0023931** Outfall No.: **001**

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

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
1.3	156	7.2						

					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		385									
	Chloride (PWS)	mg/L		146									
	Bromide	mg/L		0.249									
	Sulfate (PWS)	mg/L		31.9									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		50									
	Total Antimony	µg/L	<	1									
	Total Arsenic	µg/L	<	1.6									
	Total Barium	µg/L		26.7									
	Total Beryllium	µg/L	<	0.1									
	Total Boron	µg/L		112									
	Total Cadmium	µg/L	<	0.3									
	Total Chromium (III)	µg/L	<	3.5									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L	<	0.5									
	Total Copper	µg/L		3.77									
	Free Cyanide	µg/L		3									
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L	<	20									
	Total Iron	µg/L		24									
	Total Lead	µg/L	<	2									
	Total Manganese	µg/L		6.26									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L	<	7									
	Total Phenols (Phenolics) (PWS)	µg/L		7.4									
	Total Selenium	µg/L	<	0.5									
	Total Silver	µg/L	<	0.5									
	Total Thallium	µg/L	<	0.11									
	Total Zinc	µg/L		32.5									
	Total Molybdenum	µg/L	<	4									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	2									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									

Group 3	Carbon Tetrachloride	µg/L	<	0.5									
	Chlorobenzene	µg/L	<	0.5									
	Chlorodibromomethane	µg/L		0.9									
	Chloroethane	µg/L	<	0.5									
	2-Chloroethyl Vinyl Ether	µg/L	<	5									
	Chloroform	µg/L		25.8									
	Dichlorobromomethane	µg/L		6									
	1,1-Dichloroethane	µg/L	<	0.5									
	1,2-Dichloroethane	µg/L	<	0.5									
	1,1-Dichloroethylene	µg/L	<	0.5									
	1,2-Dichloropropane	µg/L	<	0.5									
	1,3-Dichloropropylene	µg/L	<	0.5									
	1,4-Dioxane	µg/L	<	5									
	Ethylbenzene	µg/L	<	0.5									
	Methyl Bromide	µg/L	<	0.5									
	Methyl Chloride	µg/L	<	0.5									
	Methylene Chloride	µg/L	<	0.5									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5									
	Tetrachloroethylene	µg/L	<	0.5									
	Toluene	µg/L	<	0.5									
	1,2-trans-Dichloroethylene	µg/L	<	0.5									
	1,1,1-Trichloroethane	µg/L	<	0.5									
	1,1,2-Trichloroethane	µg/L	<	0.5									
	Trichloroethylene	µg/L	<	0.5									
	Vinyl Chloride	µg/L	<	0.5									
Group 4	2-Chlorophenol	µg/L	<	10									
	2,4-Dichlorophenol	µg/L	<	10									
	2,4-Dimethylphenol	µg/L	<	10									
	4,6-Dinitro-o-Cresol	µg/L	<	10									
	2,4-Dinitrophenol	µg/L	<	10									
	2-Nitrophenol	µg/L	<	10									
	4-Nitrophenol	µg/L	<	10									
	p-Chloro-m-Cresol	µg/L	<	10									
	Pentachlorophenol	µg/L	<	10									
	Phenol	µg/L	<	10									
	2,4,6-Trichlorophenol	µg/L	<	10									
Group 5	Acenaphthene	µg/L	<	2.5									
	Acenaphthylene	µg/L	<	2.5									
	Anthracene	µg/L	<	2.5									
	Benzidine	µg/L	<	50									
	Benzo(a)Anthracene	µg/L	<	2.5									
	Benzo(a)Pyrene	µg/L	<	2.5									
	3,4-Benzofluoranthene	µg/L	<	2.5									
	Benzo(ghi)Perylene	µg/L	<	2.5									
	Benzo(k)Fluoranthene	µg/L	<	2.5									
	Bis(2-Chloroethoxy)Methane	µg/L	<	5									
	Bis(2-Chloroethyl)Ether	µg/L	<	5									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5									
	4-Bromophenyl Phenyl Ether	µg/L	<	5									
	Butyl Benzyl Phthalate	µg/L	<	5									
	2-Chloronaphthalene	µg/L	<	5									
	4-Chlorophenyl Phenyl Ether	µg/L	<	5									
	Chrysene	µg/L	<	5									
	Dibenzo(a,h)Anthrancene	µg/L	<	2.5									
	1,2-Dichlorobenzene	µg/L	<	0.5									
	1,3-Dichlorobenzene	µg/L	<	0.5									
	1,4-Dichlorobenzene	µg/L	<	0.5									
	3,3-Dichlorobenzidine	µg/L	<	1									
	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	<	2.5									
	Fluorene	µg/L	<	2.5									
	Hexachlorobenzene	µg/L	<	5									
	Hexachlorobutadiene	µg/L	<	0.5									
	Hexachlorocyclopentadiene	µg/L	<	5									
	Hexachloroethane	µg/L	<	5									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2.5									
	Isophorone	µg/L	<	5									
	Naphthalene	µg/L	<	0.5									
	Nitrobenzene	µg/L	<	5									
	n-Nitrosodimethylamine	µg/L	<	5									
	n-Nitrosodi-n-Propylamine	µg/L	<	5									
	n-Nitrosodiphenylamine	µg/L	<	5									
	Phenanthrene	µg/L	<	2.5									
	Pyrene	µg/L	<	2.5									
	1,2,4-Trichlorobenzene	µg/L	<	0.5									
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Cambridge Area Joint Authority STP, NPDES Permit No. PA0023931, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: **French Creek**

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	051591	70	1126	513			Yes
End of Reach 1	042122	0.001	865	6390		1	Yes

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

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	70	0.093										100	7.8		
End of Reach 1	0.001	0.1	1450									100	7.8		

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	70														
End of Reach 1	0.001														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Cambridge Area Joint Authority STP, NPDES Permit No. PA0023931, Outfall 001

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

☑ ***Hydrodynamics***

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

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
70	47.71		47.71	2.011	0.00071	1.058	124.739	117.872	0.377	11.357	678.775
0.001	1450.00	1.547	1448.453								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
70	217.81		217.81	2.011	0.00071	2.035	124.739	61.288	0.866	4.94	271.36
0.001	4305.508	1.547	4303.96								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.149 Analysis Hardness (mg/l): 112.37 Analysis pH: 7.58

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	3,395	
Total Antimony	0	0		0	1,100	1,100	4,979	
Total Arsenic	0	0		0	340	340	1,539	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	95,057	
Total Boron	0	0		0	8,100	8,100	36,665	
Total Cadmium	0	0		0	2.256	2.4	10.9	Chem Translator of 0.939 applied
Total Chromium (III)	0	0		0	626.876	1,984	8,980	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	73.8	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	430	
Total Copper	0	0		0	15.000	15.6	70.7	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	99.6	

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	73.309	94.7	429	Chem Translator of 0.774 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	7.46	Chem Translator of 0.85 applied
Total Nickel	0	0		0	516.797	518	2,344	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	3.931	4.63	20.9	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	294	
Total Zinc	0	0		0	129.353	132	599	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	13.6	
Acrylonitrile	0	0		0	650	650	2,942	
Benzene	0	0		0	640	640	2,897	
Bromoform	0	0		0	1,800	1,800	8,148	
Carbon Tetrachloride	0	0		0	2,800	2,800	12,674	
Chlorobenzene	0	0		0	1,200	1,200	5,432	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	81,478	
Chloroform	0	0		0	1,900	1,900	8,600	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	67,898	
1,1-Dichloroethylene	0	0		0	7,500	7,500	33,949	
1,2-Dichloropropane	0	0		0	11,000	11,000	49,792	
1,3-Dichloropropylene	0	0		0	310	310	1,403	
Ethylbenzene	0	0		0	2,900	2,900	13,127	
Methyl Bromide	0	0		0	550	550	2,490	
Methyl Chloride	0	0		0	28,000	28,000	126,743	
Methylene Chloride	0	0		0	12,000	12,000	54,319	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	4,527	
Tetrachloroethylene	0	0		0	700	700	3,169	
Toluene	0	0		0	1,700	1,700	7,695	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	30,781	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	13,580	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	15,390	
Trichloroethylene	0	0		0	2,300	2,300	10,411	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	2,535	
2,4-Dichlorophenol	0	0		0	1,700	1,700	7,695	
2,4-Dimethylphenol	0	0		0	660	660	2,988	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	362	
2,4-Dinitrophenol	0	0		0	660	660	2,988	
2-Nitrophenol	0	0		0	8,000	8,000	36,212	
4-Nitrophenol	0	0		0	2,300	2,300	10,411	
p-Chloro-m-Cresol	0	0		0	160	160	724	
Pentachlorophenol	0	0		0	15.630	15.6	70.7	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	2,082	

Acenaphthene	0	0		0	83	83.0	376	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	1,358	
Benzo(a)Anthracene	0	0		0	0.5	0.5	2.26	
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	135,796	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	20,369	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	1,222	
Butyl Benzyl Phthalate	0	0		0	140	140	634	
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	3,712	
1,3-Dichlorobenzene	0	0		0	350	350	1,584	
1,4-Dichlorobenzene	0	0		0	730	730	3,304	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	18,106	
Dimethyl Phthalate	0	0		0	2,500	2,500	11,316	
Di-n-Butyl Phthalate	0	0		0	110	110	498	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	7,242	
2,6-Dinitrotoluene	0	0		0	990	990	4,481	
1,2-Diphenylhydrazine	0	0		0	15	15.0	67.9	
Fluoranthene	0	0		0	200	200	905	
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	45.3	
Hexachlorocyclopentadiene	0	0		0	5	5.0	22.6	
Hexachloroethane	0	0		0	60	60.0	272	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	45,265	
Naphthalene	0	0		0	140	140	634	
Nitrobenzene	0	0		0	4,000	4,000	18,106	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	76,951	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	1,358	
Phenanthrene	0	0		0	5	5.0	22.6	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	588	

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 102.27 Analysis pH: 7.75

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	

Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	5,439	
Total Arsenic	0	0		0	150	150	3,708	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	101,364	
Total Boron	0	0		0	1,600	1,600	39,557	
Total Cadmium	0	0		0	0.250	0.28	6.8	Chem Translator of 0.908 applied
Total Chromium (III)	0	0		0	75.487	87.8	2,170	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	257	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	470	
Total Copper	0	0		0	9.129	9.51	235	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	129	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	37,084	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.579	3.27	80.9	Chem Translator of 0.788 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	22.4	Chem Translator of 0.85 applied
Total Nickel	0	0		0	53.001	53.2	1,314	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	123	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	321	
Total Zinc	0	0		0	120.402	122	3,019	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	74.2	
Acrylonitrile	0	0		0	130	130	3,214	
Benzene	0	0		0	130	130	3,214	
Bromoform	0	0		0	370	370	9,147	
Carbon Tetrachloride	0	0		0	560	560	13,845	
Chlorobenzene	0	0		0	240	240	5,933	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	86,530	
Chloroform	0	0		0	390	390	9,642	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	76,641	
1,1-Dichloroethylene	0	0		0	1,500	1,500	37,084	
1,2-Dichloropropane	0	0		0	2,200	2,200	54,390	
1,3-Dichloropropylene	0	0		0	61	61.0	1,508	
Ethylbenzene	0	0		0	580	580	14,339	
Methyl Bromide	0	0		0	110	110	2,720	
Methyl Chloride	0	0		0	5,500	5,500	135,976	
Methylene Chloride	0	0		0	2,400	2,400	59,335	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	5,192	
Tetrachloroethylene	0	0		0	140	140	3,461	
Toluene	0	0		0	330	330	8,159	

1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	34,612	
1,1,1-Trichloroethane	0	0		0	610	610	15,081	
1,1,2-Trichloroethane	0	0		0	680	680	16,812	
Trichloroethylene	0	0		0	450	450	11,125	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	2,720	
2,4-Dichlorophenol	0	0		0	340	340	8,406	
2,4-Dimethylphenol	0	0		0	130	130	3,214	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	396	
2,4-Dinitrophenol	0	0		0	130	130	3,214	
2-Nitrophenol	0	0		0	1,600	1,600	39,557	
4-Nitrophenol	0	0		0	470	470	11,620	
p-Chloro-m-Cresol	0	0		0	500	500	12,361	
Pentachlorophenol	0	0		0	11.991	12.0	296	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	2,250	
Acenaphthene	0	0		0	17	17.0	420	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	1,459	
Benzo(a)Anthracene	0	0		0	0.1	0.1	2.47	
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	148,337	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	22,498	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	1,335	
Butyl Benzyl Phthalate	0	0		0	35	35.0	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	160	160	3,956	
1,3-Dichlorobenzene	0	0		0	69	69.0	1,706	
1,4-Dichlorobenzene	0	0		0	150	150	3,708	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	19,778	
Dimethyl Phthalate	0	0		0	500	500	12,361	
Di-n-Butyl Phthalate	0	0		0	21	21.0	519	
2,4-Dinitrotoluene	0	0		0	320	320	7,911	
2,6-Dinitrotoluene	0	0		0	200	200	4,945	
1,2-Diphenylhydrazine	0	0		0	3	3.0	74.2	
Fluoranthene	0	0		0	40	40.0	989	
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	49.4	

Hexachlorocyclopentadiene	0	0		0	1	1.0	24.7	
Hexachloroethane	0	0		0	12	12.0	297	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	51,918	
Naphthalene	0	0		0	43	43.0	1,063	
Nitrobenzene	0	0		0	810	810	20,025	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	84,058	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	1,459	
Phenanthrene	0	0		0	1	1.0	24.7	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	643	

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

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	#########	WQC applied at RMI 0.001 with a design stream flow of 1450 cfs
Chloride (PWS)	0	0		0	250,000	250,000	#########	WQC applied at RMI 0.001 with a design stream flow of 1450 cfs
Sulfate (PWS)	0	0		0	250,000	250,000	#########	WQC applied at RMI 0.001 with a design stream flow of 1450 cfs
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	138	
Total Arsenic	0	0		0	10	10.0	247	
Total Barium	0	0		0	2,400	2,400	59,335	
Total Boron	0	0		0	3,100	3,100	76,641	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	4	4.0	98.9	
Dissolved Iron	0	0		0	300	300	7,417	
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	24,723	
Total Mercury	0	0		0	0.050	0.05	1.24	
Total Nickel	0	0		0	610	610	15,081	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	3,610	WQC applied at RMI 0.001 with a design stream flow of 1450 cfs
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	5.93	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	74.2	
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	2,472	
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	141	
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	816	
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	1,681	
Methyl Bromide	0	0		0	100	100.0	2,472	
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	1,409	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	2,472	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	247,228	
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	742	
2,4-Dichlorophenol	0	0		0	10	10.0	247	
2,4-Dimethylphenol	0	0		0	100	100.0	2,472	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	49.4	
2,4-Dinitrophenol	0	0		0	10	10.0	247	
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	98,891	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	1,731	
Anthracene	0	0		0	300	300	7,417	
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	4,945	
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	2.47	
2-Chloronaphthalene	0	0		0	800	800	19,778	
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	24,723	
1,3-Dichlorobenzene	0	0		0	7	7.0	173	
1,4-Dichlorobenzene	0	0		0	300	300	7,417	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	14,834	
Dimethyl Phthalate	0	0		0	2,000	2,000	49,446	
Di-n-Butyl Phthalate	0	0		0	20	20.0	494	
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	494	
Fluorene	0	0		0	50	50.0	1,236	
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	98.9	
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	841	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	247	
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	494	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	1.73	

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

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	

Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	6.56	
Benzene	0	0		0	0.58	0.58	63.4	
Bromoform	0	0		0	7	7.0	765	
Carbon Tetrachloride	0	0		0	0.4	0.4	43.7	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	87.4	
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	104	
1,2-Dichloroethane	0	0		0	9.9	9.9	1,082	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	98.4	
1,3-Dichloropropylene	0	0		0	0.27	0.27	29.5	
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	2,186	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	21.9	
Tetrachloroethylene	0	0		0	10	10.0	1,093	
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	60.1	
Trichloroethylene	0	0		0	0.6	0.6	65.6	
Vinyl Chloride	0	0		0	0.02	0.02	2.19	
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	3.28	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	164	
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	0.011	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.11	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.011	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.11	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	1.09	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	3.28	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	35.0	
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	13.1	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.011	
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	5.47	
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	5.47	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	5.47	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	3.28	
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	0.009	
Hexachlorobutadiene	0	0		0	0.01	0.01	1.09	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	10.9	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.11	
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	0.077	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.55	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	361	

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
Chrysene	Report	Report	Report	Report	Report	µg/L	13.1	CRL	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)	360,999	mg/L	Discharge Conc ≤ 10% WQBEL
Chloride (PWS)	180,500	mg/L	Discharge Conc ≤ 10% WQBEL
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	180,500	mg/L	Discharge Conc ≤ 10% WQBEL
Total Aluminum	2,176	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	59,335	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	23,501	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	6.8	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	2,170	µg/L	Discharge Conc < TQL
Hexavalent Chromium	47.3	µg/L	Discharge Conc < TQL
Total Cobalt	276	µg/L	Discharge Conc < TQL
Total Copper	45.3	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	63.8	µg/L	Discharge Conc ≤ 25% WQBEL
Dissolved Iron	7,417	µg/L	Discharge Conc < TQL
Total Iron	37,084	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	80.9	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	24,723	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	1.24	µg/L	Discharge Conc < TQL
Total Nickel	1,314	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)	3,610	µg/L	Discharge Conc ≤ 10% WQBEL
Total Selenium	123	µg/L	Discharge Conc < TQL
Total Silver	13.4	µg/L	Discharge Conc ≤ 10% WQBEL

Total Thallium	5.93	µg/L	Discharge Conc < TQL
Total Zinc	384	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	8.7	µg/L	Discharge Conc < TQL
Acrylonitrile	6.56	µg/L	Discharge Conc < TQL
Benzene	63.4	µg/L	Discharge Conc < TQL
Bromoform	765	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	43.7	µg/L	Discharge Conc < TQL
Chlorobenzene	2,472	µg/L	Discharge Conc < TQL
Chlorodibromomethane	87.4	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	52,224	µg/L	Discharge Conc < TQL
Chloroform	141	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	104	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	1,082	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	816	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	98.4	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	29.5	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	1,681	µg/L	Discharge Conc < TQL
Methyl Bromide	1,596	µg/L	Discharge Conc < TQL
Methyl Chloride	81,237	µg/L	Discharge Conc < TQL
Methylene Chloride	2,186	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	21.9	µg/L	Discharge Conc < TQL
Tetrachloroethylene	1,093	µg/L	Discharge Conc < TQL
Toluene	1,409	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	2,472	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	8,704	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	60.1	µg/L	Discharge Conc < TQL
Trichloroethylene	65.6	µg/L	Discharge Conc < TQL
Vinyl Chloride	2.19	µg/L	Discharge Conc < TQL
2-Chlorophenol	742	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	247	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	1,915	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	49.4	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	247	µg/L	Discharge Conc < TQL
2-Nitrophenol	23,211	µg/L	Discharge Conc < TQL
4-Nitrophenol	6,673	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	464	µg/L	Discharge Conc < TQL
Pentachlorophenol	3.28	µg/L	Discharge Conc < TQL
Phenol	98,891	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	164	µg/L	Discharge Conc < TQL
Acenaphthene	241	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS

Anthracene	7,417	µg/L	Discharge Conc < TQL
Benzidine	0.011	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.11	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.011	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.11	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	1.09	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	3.28	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	4,945	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	35.0	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	783	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	2.47	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	19,778	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Dibenzo(a,h)Anthrancene	0.011	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	2,379	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	173	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	2,118	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	5.47	µg/L	Discharge Conc < TQL
Diethyl Phthalate	11,605	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	7,253	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	319	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	5.47	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	5.47	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	3.28	µg/L	Discharge Conc < TQL
Fluoranthene	494	µg/L	Discharge Conc < TQL
Fluorene	1,236	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.009	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	1.09	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	14.5	µg/L	Discharge Conc < TQL
Hexachloroethane	10.9	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.11	µg/L	Discharge Conc < TQL
Isophorone	841	µg/L	Discharge Conc < TQL
Naphthalene	406	µg/L	Discharge Conc < TQL
Nitrobenzene	247	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.077	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.55	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	361	µg/L	Discharge Conc < TQL
Phenanthrene	14.5	µg/L	Discharge Conc < TQL
Pyrene	494	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	1.73	µg/L	Discharge Conc < TQL

CAJA TRC_CALC

TRC EVALUATION

Cambridge Area Jt. Auth.

47.71	= Q stream (cfs)	0.5	= CV Daily
1.3	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.099	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	0.687	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	0.768	1.3.2.iii	WLA cfc =	5.080
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.286	5.1d	LTA_cfc =	2.953

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.352	AFC
		INST MAX LIMIT (mg/l) =	1.152	

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)**

Cambridge Area Joint Auth STP
Cambridge Springs Borough, Crawford County
PA00223931 Discharge pH

Outfall 001

Date	pH min	pH max	10^ -pH min	10^ -pH max	& pH max)	-Log (Ave pH)
Jul-21	6.2	6.6	6.31E-07	2.51E-07	4.41E-07	**6.4**
Aug-21	6.3	6.8	5.01E-07	1.58E-07	3.3E-07	**6.5**
Sep-21	6.3	6.9	5.01E-07	1.26E-07	3.14E-07	**6.5**
Jul-22	7.1	7.6	7.94E-08	2.51E-08	5.23E-08	**7.3**
Aug-22	7.0	7.5	1E-07	3.16E-08	6.58E-08	**7.2**
Sep-22	7.1	7.5	7.94E-08	3.16E-08	5.55E-08	**7.3**
Jul-23	7.4	8.0	3.98E-08	1E-08	2.49E-08	**7.6**
Aug-23	7.5	7.9	3.16E-08	1.26E-08	2.21E-08	**7.7**
Sep-23	7.5	7.8	3.16E-08	1.58E-08	2.37E-08	**7.6**
					Median:	**7.2**

7/31/2025

Outfall 001

Facility:	Cambridge Area Joint Authority STP
Permit Number:	PA0023931 Effective: Pending Expiration: Pending
Outfall No:	001
Location:	Cambridge Springs Borough, Crawford County
Discharge to:	French Creek
Site Specific Mussel Survey Completed:	No - Preliminary screening by biologist only.

Discharge and Stream Characteristics			Comments
Q_S	Stream Flow	31 MGD / 47.71 cfs	French Creek near Cambridge Springs gage
Q_D	Discharge Flow	1.3 MGD / 2.01169 cfs	Plant Design Flow
$C_{S(Cl^-)}$	Instream chloride Concentration	16 mg/L	2025 Saegrtown STP Mussel Survey - 1FRC station grab sample
$C_{E(Cl^-)}$	Discharge chloride (existing)	146 mg/L	Maximum value for 2000 - Present DMRs
$C_{P(Cl^-)}$	Discharge chloride (proposed)	146 mg/L	Maximum value for 2000 - Present DMRs
$C_{S(Ni)}$	Instream nickel Concentration	0 µg/L	2025 Saegrtown STP Mussel Survey - 1FRC station grab sample
$C_{E(Ni)}$	Discharge nickel (existing)	7 µg/L	(<7 mg/l) highest non-detect from application and DMRs
$C_{P(Ni)}$	Discharge nickel (proposed)	7 µg/L	(<7 mg/l) highest non-detect from application and DMRs
$C_{S(Zn)}$	Instream zinc Concentration	0 µg/L	2025 Saegrtown STP Mussel Survey - 1FRC station grab sample
$C_{E(Zn)}$	Discharge zinc (existing)	32.5 µg/L	Maximum value for 2022 renewal application
$Zn_{P(Zn)}$	Discharge zinc (proposed)	32.5 µg/L	Maximum value for 2022 renewal application
$C_{S(Cu)}$	Instream copper Concentration	0 µg/L	2025 Saegrtown STP Mussel Survey - 1FRC station grab sample
$C_{E(Cu)}$	Discharge copper (existing)	3.77 µg/L	Maximum value for 2022 renewal application
$Zn_{P(Cu)}$	Discharge copper (proposed)	3.77 µg/L	Maximum value for 2022 renewal application
$C_{S(NH3-N)}$	Instream NH^3-N	0.03 mg/L	2025 Saegrtown STP Mussel Survey - 1FRC station grab sample
$C_{E(NH3-N)}$	Discharge NH^3-N (existing)	3.37 mg/L	Maximum value for 2022 renewal application and DMRs
$C_{P(NH3-N)}$	Discharge NH^3-N (proposed)	3.37 mg/L	Maximum value for 2022 renewal application and DMRs
pH_S	Instream pH	7.8 S.U.	6/30/1993 stream survey
T_S	Instream Temp.	25 °C	Default value for a WWF
$C_{C(NH3-N)}$	Ammonia criteria	0.736 mg/L	From ammonia criteria comparison spreadsheet -using instream pH and Temp
$C_{C(Cl^-)}$	Chloride criteria	78 mg/L	USFWS criteria
$C_{C(Ni)}$	Nickel criteria	7.3 µg/L	USFWS criteria
$C_{C(Zn)}$	Zinc criteria	13.18 µg/L	USFWS criteria
$C_{C(Cu)}$	Copper criteria	10 µg/L	USFWS criteria
W_S	Stream width	50 meters	Google Earth (approx)

Ammonia Criteria Calculations:

	pH_S	7.8	S.U.	*(Default value is 7.0)*
	T_S	25	°C	*(Default value is 20° for a CWF and 25° for a WWF)*

Acute Criteria

	METHOD and UNITS	CRITERIA	Comments	
	Old CMC (mg TAN/L) =	2.623		
	EPA 2013 CMC (mg TAN/L) =	3.724	Oncorhynchus present	* formula on pg. 41 (plateaus at 15.7 C)
		3.724	Oncorhynchus absent	* formula on pg. 42 (plateaus at 10.2 C)

Chronic Criteria

	METHOD and UNITS	CRITERIA	COMMENTS
	Old CMC (mg TAN/L) =	0.721	
$C_{C(NH3-N)}$	EPA 2013 CMC (mg TAN/L) =	0.736	* formula on pg. 46 (plateaus at 7 C)

Endangered Mussel Species Impact Area Calculations:

Existing Area of Impact

☑ N/A - No Site Specific Mussel Survey Completed for this Discharger

Approximate Area of Impact Determined from Survey =	N/A m^2	(Enter N/A if no site specific survey has been completed)
Existing Mussel Density within Area of Impact =		
Rabbitsfoot *(Quadrula cylindrical)*	per m^2	
Northern Riffleshell *(Epioblasma torulosa rangiana)*	per m^2	
Rayed Bean *(Villosa fabalis)*	per m^2	
Clubshell *(Pleurobema clava)*	per m^2	
Sheepnose *(Plethobasus cyphyus)*	per m^2	
Snuffbox *(Epioblasma triquetra)*	per m^2	
TOTAL	0 per m^2	

Method 1 - Utilizing Site Specific Mussel Survey Information

☑ N/A - No Site Specific Mussel Survey Completed for this Discharger

This method utilizes a simple comparison of the size of the existing area of impact as determined from a site specific mussel survey and the chlorides in the existing discharge compared to the chlorides in the proposed discharge after the facility upgrades treatment technologies. This method is only applicable to where the stream impairment is caused by TDS and/or chlorides as the plume has been delineated through conductivity measurements.

A.	Area of Impact Determined from Survey:	N/A	m^2
B.	Chlorides in Existing Discharge:	146	mg/L
C.	Chlorides in Proposed Discharge after Treatment Facility Upgrades:	146	mg/L
D.	Approximate Area of Impact after Treatment Facility Upgrades:	N/A	m^2

A/B = D/C Therefore, D = (A*C)/B

7/31/2025

Outfall 001

Facility:	Cambridge Area Joint Authority STP		
Permit Number:	PA0023931	Effective: Pending	Expiration: Pending
Outfall No:	001		
Location:	Cambridge Springs Borough, Crawford County		
Discharge to:	French Creek		
Site Specific Mussel Survey Completed:	No - Preliminary screening by biologist only.		

Endangered Mussel Species Impact Area Calculations: (continued...)

Method 2 - Mass Balance Relationship of Loading and Assimilative Capacity of Stream

Chloride (Cl^-)	$L_{S(Cl^-)}$ = Available Chloride Loading in Stream = $C_{C(Cl^-)} - C_{S(Cl^-)} \times Q_S$(MGD) X 8.34 =	16,029 lbs/Day
	$L_{D\text{-}MAX(Cl^-)}$ = Current Maximium Discharge Chloride Loading exceeding criteria = $\{C_{E(CL^-)} - C_{E(CL^-)}\} \times Q_D$(MGD) X 8.34 =	737 lbs/Day
	$\%_{E(Cl^-)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Cl^-)} / L_{S(Cl^-)}$ =	5% of Stream Capacity
	$L_{D(Cl^-)}$ = Proposed Discharge Cl^- Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Cl^-)} - C_{P(Cl^-)}\} \times Q_D$(MGD) X 8.34 =	737.256 lbs/Day
	$\%_{P(Cl^-)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Cl^-)} / L_{S(Cl^-)}$ =	4.60% of Stream Capacity
	Proposed Area of Impact due to Chloride * = $(\%_{P(Cl^-)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	2.64 m^2
Nickel(Ni)	$L_{S(Ni)}$ = Available Nickel Loading in Stream = $C_{C(Ni)} - C_{S(Ni)} \times Q_S$(MGD) X 8.34 =	1,887 lbs/Day
	$L_{D\text{-}MAX(Ni)}$ = Current Maximium Discharge Nickel Loading exceeding criteria = $\{C_{E(Ni)} - C_{E(Ni)}\} \times Q_D$(MGD) X 8.34 =	-3 lbs/Day
	$\%_{E(Ni)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Ni)} / L_{S(Ni)}$ =	0% of Stream Capacity
	$L_{D(Ni)}$ = Proposed Discharge Ni Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Ni)} - C_{P(Ni)}\} \times Q_D$(MGD) X 8.34 =	-3.2526 lbs/Day
	$\%_{P(Ni)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Ni)} / L_{S(Ni)}$ =	-0.17% of Stream Capacity
	Proposed Area of Impact due to Nickel * = $(\%_{P(Ni)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Zinc (Zn)	$L_{S(Zn)}$ = Available Zinc Loading in Stream = $C_{C(Zn)} - C_{S(Zn)} \times Q_S$(MGD) X 8.34 =	3,408 lbs/Day
	$L_{D\text{-}MAX(Zn)}$ = Current Maximium Discharge Zinc Loading exceeding criteria = $\{C_{E(Zn)} - C_{E(Zn)}\} \times Q_D$(MGD) X 8.34 =	209 lbs/Day
	$\%_{E(Zn)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Zn)} / L_{S(Zn)}$ =	6% of Stream Capacity
	$L_{D(Zn)}$ = Proposed Discharge Zn Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Zn)} - C_{P(Zn)}\} \times Q_D$(MGD) X 8.34 =	209.46744 lbs/Day
	$\%_{P(Zn)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Zn)} / L_{S(Zn)}$ =	6.15% of Stream Capacity
	Proposed Area of Impact due to Zinc * = $(\%_{P(Zn)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	4.72 m^2
Copper (Cu)	$L_{S(Cu)}$ = Available Copper Loading in Stream = $C_{C(Cu)} - C_{S(Cu)} \times Q_S$(MGD) X 8.34 =	2,585 lbs/Day
	$L_{D\text{-}MAX(Cu)}$ = Current Maximium Discharge Copper Loading exceeding criteria = $\{C_{E(Cu)} - C_{E(Cu)}\} \times Q_D$(MGD) X 8.34 =	-68 lbs/Day
	$\%_{E(Cu)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Cu)} / L_{S(Cu)}$ =	0% of Stream Capacity
	$L_{D(Cu)}$ = Proposed Discharge Cu Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Cu)} - C_{P(Cu)}\} \times Q_D$(MGD) X 8.34 =	-67.54566 lbs/Day
	$\%_{P(Cu)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Cu)} / L_{S(Cu)}$ =	-2.61% of Stream Capacity
	Proposed Area of Impact due to Copper* = $(\%_{P(Cu)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.85 m^2
Ammonia-Nitrogen (NH3-N)	$L_{S(NH3\text{-}N)}$ = Available NH3-N Loading in Stream = $C_{C(NH3\text{-}N)} - C_{S(NH3\text{-}N)} \times Q_S$(MGD) X 8.34 =	183 lbs/Day
	$L_{D\text{-}MAX(NH3\text{-}N)}$ = Current Maximium Discharge NH3-N Loading = $C_{E(NH3\text{-}N)} \times Q_D$(MGD) X 8.34 =	37 lbs/Day
	$\%_{E(NH3\text{-}N)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(NH3\text{-}N)} / L_{S(NH3\text{-}N)}$ =	20% of Stream Capacity
	$L_{D(NH3\text{-}N)}$ = Proposed Discharge NH3-N Loading after Treatment Facility Upgrades = $C_{P(NH3\text{-}N)} - C_{C(NH3\text{-}N)} \times Q_D$(MGD) X 8.34 =	29 lbs/Day
	$\%_{P(NH3\text{-}N)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(NH3\text{-}N)} / L_{S(NH3\text{-}N)}$ =	15.85% of Stream Capacity
	Proposed Area of Impact due to NH3-N * = $(\%_{P(NH3\text{-}N)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	31.39 m^2

7/31/2025

Outfall 001

Facility:	Cambridge Area Joint Authority STP		
Permit Number:	PA0023931	Effective: Pending	Expiration: Pending
Outfall No:	001		
Location:	Cambridge Springs Borough, Crawford County		
Discharge to:	French Creek		
Site Specific Mussel Survey Completed:	No - Preliminary screening by biologist only.		

Endangered Mussel Species Impact Area Calculations: (continued...)

Method 3 - Mass Balance Relationship of Stream Flow, Proposed Effluent Quality, and Mussel Protection Criteria

Chloride (Cl⁻)	$Q_{A(Cl^-)}C_{S(Cl^-)} + Q_D C_{P(Cl^-)} = Q_T C_{C(Cl^-)}$	
	$Q_{A(Cl^-)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Cl^-)}C_{S(Cl^-)} + Q_D C_{P(Cl^-)} = (Q_D+Q_S)C_{C(Cl^-)}$	
	SOLVING FOR $Q_{A(Cl^-)} = [(Q_D C_{P(Cl^-)} / C_{C(Cl^-)}) - Q_D)] / (1 - C_{S(Cl^-)}/C_{C(Cl^-)})$ =	2.20636968 cfs
	$\%_{P(Cl^-)}$ = Percent of Stream Width Required to Assimilate Chlorides to Criteria Concentration = $Q_{A(Cl^-)} / Q_S$ (cfs) =	4.6245%
	$W_{I(Cl^-)}$ = Proposed Width of Stream required to Assimilate Chlorides to Criteria Concentration = W_S X $\%_{P(Cl^-)}$	2.312272 meters
	Proposed Area of Impact due to Chloride * = $(W_{I(Cl^-)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	2.67 m^2
Nickel (Ni)	$Q_{A(Ni)}C_{S(Ni)} + Q_D C_{P(Ni)} = Q_T C_{C(Ni)}$	
	$Q_{A(Ni)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Ni)}C_{S(Ni)} + Q_D C_{P(Ni)} = (Q_D+Q_S)C_{C(Ni)}$	
	SOLVING FOR $Q_{A(Ni)} = [(Q_D C_{P(Ni)} / C_{C(Ni)}) - Q_D)] / (1 - C_{S(Ni)}/C_{C(Ni)})$ =	-0.08267219 cfs
	$\%_{P(Cl^-)}$ = Percent of Stream Width Required to Assimilate Nickel to Criteria Concentration = $Q_{A(Ni)} / Q_S$ (cfs) =	-0.1733%
	$W_{I(Ni)}$ = Proposed Width of Stream required to Assimilate Nickel to Criteria Concentration = W_S X $\%_{P(Ni)}$	-0.086640 meters
	Proposed Area of Impact due to Nickel * = $(W_{I(Ni)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Zinc (Zn)	$Q_{A(Zn)}C_{S(Zn)} + Q_D C_{P(Zn)} = Q_T C_{C(Zn)}$	
	$Q_{A(Zn)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Zn)}C_{S(Zn)} + Q_D C_{P(Zn)} = (Q_D+Q_S)C_{C(Zn)}$	
	SOLVING FOR $Q_{A(Zn)} = [(Q_D C_{PZn)} / C_{C(Zn)}) - Q_D)] / (1 - C_{S(Zn)}/C_{C(Zn)})$ =	2.94885059 cfs
	$\%_{P(Cl^-)}$ = Percent of Stream Width Required to Assimilate Zinc to Criteria Concentration = $Q_{A(Zn)} / Q_S$ (cfs) =	6.1808%
	$W_{I(Zn)}$ = Proposed Width of Stream required to Assimilate Zinc to Criteria Concentration = W_S X $\%_{PZn)}$	3.090390 meters
	Proposed Area of Impact due to Zinc * = $(W_{IZn)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	4.78 m^2
Copper (Cu)	$Q_{A(Cu)}C_{S(Cu)} + Q_D C_{P(Cu)} = Q_T C_{C(Cu)}$	
	$Q_{A(Cu)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Cu)}C_{S(Cu)} + Q_D C_{P(Cu)} = (Q_D+Q_S)C_{C(Cu)}$	
	SOLVING FOR $Q_{A(Cu)} = [(Q_D C_{PCu)} / C_{C(Cu)}) - Q_D)] / (1 - C_{S(Cu)}/C_{C(Cu)})$ =	-1.25328287 cfs
	$\%_{P(Cu)}$ = Percent of Stream Width Required to Assimilate Copper to Criteria Concentration = $Q_{A(Cu)} / Q_S$ (cfs) =	-2.6269%
	$W_{I(Cu)}$ = Proposed Width of Stream required to Assimilate Copper to Criteria Concentration = W_S X $\%_{PCu)}$	-1.313438 meters
	Proposed Area of Impact due to Copper * = $(W_{I(Cu)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.86 m^2
Ammonia-Nitrogen (NH3-N)	$Q_{A(NH3\text{-}N)}C_{S(NH3\text{-}N)} + Q_D C_{P(NH3\text{-}N)} = Q_T C_{C(NH3\text{-}N)}$	
	$Q_{A(NH3\text{-}N)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(NH3\text{-}N)}C_{S(NH3\text{-}N)} + Q_D C_{P(NH3\text{-}N)} = (Q_D+Q_S)C_{C(NH3\text{-}N)}$	
	SOLVING FOR $Q_{A(NH3\text{-}N)} = [(Q_D C_{P(NH3\text{-}N)} / C_{C(NH3\text{-}N)}) - Q_D)] / (1 - C_{S(NH3\text{-}N)}/C_{C(NH3\text{-}N)})$ =	7.505370 cfs
	$\%_{P(NH3\text{-}N)}$ = Percent of Stream Width Required to Assimilate NH3-N to Criteria Concentration = $Q_{A(NH3\text{-}N)} / Q_S$ (cfs) =	15.7312%
	$W_{I(NH3\text{-}N)}$ = Proposed Width of Stream required to Assimilate NH3-N to Criteria Concentration = W_S X $\%_{P(NH3\text{-}N)}$	7.865616 meters
	Proposed Area of Impact due to NH3-N * = $(W_{I(NH3\text{-}N)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	30.93 m^2