pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0095087**
Facility Type	**Municipal**	APS ID	**818425**
Major / Minor	**Major**	Authorization ID	**1259851**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Bradys Run Sanitary Authority**	Facility Name	**Bradys Run Sanitary Authority STP**
Applicant Address	2326 Darlington Road	Facility Address	701 Constitution Boulevard
	Beaver Falls, PA 15010-1357		Beaver Falls, PA 15010-1749
Applicant Contact	Mr. Ken Meverden	Facility Contact	Same as Applicant
Applicant Phone	(724) 891-2058	Facility Phone	Same as Applicant
Client ID	26202	Site ID	264604
Ch 94 Load Status	Not Overloaded	Municipality	Chippewa Township
Connection Status	No Limitations	County	Beaver
Date Application Received	January 29, 2019	EPA Waived?	No
Date Application Accepted	January 30, 2019	If No, Reason	Major Facility

Purpose of Application: Application for a renewal of an existing NPDES Permit for the discharge of treated Sewage.

Summary of Review

The applicant has applied for a renewal of an existing NPDES Permit, Permit No. PA0095087, which was previously issued by the Department on March 25, 2014. That permit expired on March 31, 2019.

WQM Permit 0484403 A-1, issued on November 19, 1993, approved STP expansion with a hydraulic design capacity of 2.13 MGD and organic capacity of 3,167 lbs/day. The existing treatment process consists of bar screen/grit chamber, flow equalization, primary clarifiers, trickling filtration, final clarifiers and chlorination.

The receiving stream, Brady Run, is classified as a TSF and is located in State Watershed No. 20-B

Storm Water Outfall 010 will again be permitted for the discharge of un-contaminated storm water runoff from areas in and around the treatment plant. Part C.IV, Requirements Applicable to Storm Water Outfalls, has again been added to the Permit.

The applicant has complied with Act 14 Notifications and no comments were received.

Sludge use and disposal description and location(s): Solids from aerobic digestion are dewatered, via belt filter press, and disposed of at a DEP approved landfill.

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-

Approve	Deny	Signatures	Date
X		William C. Mitchell, E.I.T. / Project Manager	April 23, 2021
X		Christopher Kriley, P.E. / Clean Water Program Manager	April 23, 2021

Summary of Review
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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	2.13
Latitude	40º 42' 55.00"	Longitude	-80º 18' 20.00"
Quad Name	Beaver	Quad Code	1303
Wastewater Description:	Sewage Effluent		
Receiving Waters	Brady Run (TSF) - Discharge Evaluated on Beaver River	Stream Code	33959 – Brady Run
NHD Com ID	123918444	RMI	0.095 – Brady Run
Drainage Area	3,154.5 Brady Run Confluence with Beaver River)	Yield (cfs/mi^2)	N/A
Q_{7-10} Flow (cfs)	640.465	Q_{7-10} Basis	US Army Corps of Engineers
Elevation (ft)	1127.1 (Brady Run Confluence with Beaver River)	Slope (ft/ft)	0.00004
Watershed No.	20-B	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	Midland Borough Water Authority		
PWS Waters	Ohio River	Flow at Intake (cfs)	
PWS RMI	944.76	Distance from Outfall (mi)	12.14

Changes Since Last Permit Issuance: None

Other Comments: N/A

Treatment Facility Summary				
Treatment Facility Name: Chippewa Township STP				
WQM Permit No.	**Issuance Date**			
0484403 A-1	11/19/1993			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Trickling Filter With Settling	Gas Chlorine	0.97
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
2.13	3167	Not Overloaded	Aerobic Digestion and Belt Filter Press	Landfill

Changes Since Last Permit Issuance: None

Other Comments: N/A

Compliance History

Operations Compliance Check Summary Report

Facility: Bradys_Run_SA_STP

NPDES Permit No.: PA0095087

Compliance Review Period: 01/11/2016 – 01/01/2021

Open Violations by Client Summary

None.

Inspection Summary

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC	# OF VIOLATIONS
2990235	01/30/2020	Compliance Evaluation	PA Dept of Environmental Protection	Violation(s) Noted	1
2825817	01/11/2019	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted	0
2765318	08/13/2018	Incident-Response to Accident or Event	PA Dept of Environmental Protection	No Violations Noted	0
2707832	03/20/2018	Administrative/File Review	PA Dept of Environmental Protection	No Violations Noted	0
2698917	02/27/2018	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted	0
2583291	04/13/2017	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted	0
2506317	08/01/2016	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted	0

Violation Summary

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE
876388	01/30/2020	92A.44	NPDES - Violation of effluent limits in Part A of permit	02/10/2020

Enforcement Summary

ENF ID	ENF TYPE DESC	EXECUTED DATE	ENF FINALSTATUS	ENF CLOSED DATE
383744	Notice of Violation	02/10/2020		

DMR Violation Summary

Current eDMR user.

Effluent limit violation summary: Unable to obtain this report in WMS yesterday or today.

Compliance Status: Facility does not appear to have any current compliance issues.

Completed by: David Roote

Completed date: 1-12-2021

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 2.13
Latitude 40º 42' 55.00" **Longitude** -80º 18' 20.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Comments: The attached WQM 7.0 & TRC_CALC Modeling Data confirms that the above Technology-Based Limitation for $CBOD_5$ & TRC is applicable.

Water Quality-Based Limitations

A “Reasonable Potential Analysis” (Attachment WQM 7.0 Output Data, Toxic Management Spreadsheet, & TRC_CALC Spreadsheet) was conducted.

No limitations were determined through water quality modeling using DEPs WQM 7.0 Model, Toxic Management Spreadsheet Version 1.1 & TRC_CALC Spreadsheet, and no WQBELs will be imposed on this facility during this permit cycle.

This discharge was evaluated at the confluence of Brady Run and the Beaver River, which is consistent with how the limits were developed in previous renewal permits. WQM 7.0 modeling included discharges from the New Brighton STP (NPDES Permit No. PA0026026), and City of Beaver Falls STP (NPDES Permit No. PA0026883)

, both majors which discharge upstream on the Beaver River.

The NPDES Permit Application indicates that the STP does not receive IW flow from an IU.

Best Professional Judgment (BPJ) Limitations

Comments: A Dissolved Oxygen minimum limitation of 4.0 mg/L will be implemented based on the standard in 25 PA Code Chapter 93 and best professional judgment.

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 (l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.

The facility is not seeking to revise the previously permitted effluent limits.

Additional Considerations:

For pH, DO and TRC, a monitoring frequency 1/day has been imposed. In general, less frequent monitoring may be established only when the permittee demonstrates that there will be no discharge on days where monitoring is not required.

Sewage discharges will include monitoring, at a minimum, for E. Coli, in new and reissued permits, with a monitoring frequency of 1/month for facilities with a design flows >= 1 MGD per Chapter 92.a.61.

Nutrient monitoring is required to establish the nutrient load from the wastewater treatment facility and the impacts that load may have on the quality of the receiving stream(s). A 1/quarter monitor and report requirement for Total N & Total P has been added to the permit per Chapter 92.a.61.

For existing discharges (NPDES Renewal Applications), if WQM7.0 modeling results for summer indicates that an average monthly warm period limit of 25 mg/L (default in model) is acceptable for ammonia-nitrogen, a year-round monitoring requirement, at a minimum should be established.

Mass loading limits are applicable for publicly owned treatment works. Current policy requires average monthly mass loading limits be established for CBOD5, TSS, and NH_3-N and average weekly mass loading limits be established for CBOD5 and TSS. Average monthly mass loading limits (lbs/day) are based on the formula: design flow (MGD) x concentration limit (mg/L) x conversion factor (8.34).

For POTWs with design flows greater than 2,000 GPD influent BOD_5 and TSS monitoring must be established in the permit, and the monitoring should be consistent with the same frequency and sample type as is used for other effluent parameters.

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Departments Technical Guidance for the Development and Specification of Effluent Limitations. Please note that Monitoring Requirements were changed for Flow to 2/week Metered to be consistent with the guidance.

Whole Effluent Toxicity (WET)

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

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

The dilution series used for the tests was: 100%, 60%, 30%, 2%, and 1%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 0.02.

Summary of Four Most Recent Test Results

TST Data Analysis

Test Date	*Ceriodaphnia* Results (Pass/Fail)		*Pimephales* Results (Pass/Fail)	
	Survival	Reproduction	Survival	Growth
11/17/2015	Pass	Pass	Pass	Pass
11/18/2016	Pass	Pass	Pass	Pass
11/22/2017	Pass	Pass	Pass	Pass
11/20/2018	Pass	Pass	Pass	Pass

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

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

☐ **YES** ☒ **NO**

Comments: N/A

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

Acute Partial Mix Factor (PMFa): **0.159** Chronic Partial Mix Factor (PMFc): **1**

1. Determine IWC – Acute (IWCa):

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

[(2.13 MGD x 1.547) / ((640.35 cfs x 0.159) + (2.13 MGD x 1.547))] x 100 = **3.13%**

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

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

N/A

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

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

TIWCa = 3.13 / 0.3 = 10.43**%**

2b. Determine Target IWCc (Chronic Tests Required)

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

[(2.13 MGD x 1.547) / ((640.35 cfs x 1) + (2.13 MGD x 1.547))] x 100 = **1%**

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%, 2%, and 1%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

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

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

N/A

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

N/A

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	2/week	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	440	665	XXX	25.0	37.5	50	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS	530	795	XXX	30.0	45.0	60	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	XXX	Report Daily Max	XXX	1/quarter	24-Hr Composite
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	XXX	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	Weekly Average	Instant. Maximum		
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	24-Hr Composite

Compliance Sampling Location: Outfall 001

Other Comments: N/A

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
20B	33953	BEAVER RIVER	3.400	1127.40	3120.39	0.00002	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	0.205	0.00	640.00	0.950	0.108	27.0	400.00	15.00	20.00	7.44	20.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
City of Beaver	PA0026883	4.8000	4.8000	4.8000	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	20.00
NH3-N	25.00	0.00	0.00	0.60

Dam provides aeration

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
20B	33953	BEAVER RIVER	1.720	1127.20	3128.52	0.00006	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	0.205	0.00	640.11	0.180	0.107	27.0	400.00	15.00	20.00	7.44	20.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
N. Brighton STP	PA0026026	2.0000	2.0000	2.0000	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	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	0.60

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
20B	33953	BEAVER RIVER	1.400	1127.10	3154.50	0.00004	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	0.203	0.00	640.35	0.794	0.108	27.0	400.00	15.00	20.00	7.44	20.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Chippewa STP	PA0095087	2.1300	2.1300	2.1300	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	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	0.60

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
20B	33953	BEAVER RIVER	0.010	1126.80	19700.00	0.00040	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	0.244	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	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
20B	33953	BEAVER 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												
3.400	640.00	0.00	640.00	7.4256	0.00002	15	399.65	26.64	0.11	0.951	20.06	7.43
1.720	640.11	0.00	640.11	10.5196	0.00006	15	405.38	27.03	0.11	0.183	20.06	7.43
1.400	640.35	0.00	640.35	13.8147	0.00004	15	403.81	26.92	0.11	0.787	20.06	7.42
Q1-10 Flow												
3.400	409.60	0.00	409.60	7.4256	0.00002	NA	NA	NA	0.07	1.477	20.09	7.43
1.720	409.67	0.00	409.67	10.5196	0.00006	NA	NA	NA	0.07	0.279	20.09	7.42
1.400	409.83	0.00	409.83	13.8147	0.00004	NA	NA	NA	0.07	1.203	20.09	7.42
Q30-10 Flow												
3.400	691.20	0.00	691.20	7.4256	0.00002	NA	NA	NA	0.12	0.882	20.05	7.43
1.720	691.32	0.00	691.32	10.5196	0.00006	NA	NA	NA	0.12	0.167	20.05	7.43
1.400	691.58	0.00	691.58	13.8147	0.00004	NA	NA	NA	0.12	0.723	20.05	7.43

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	Uniform Treatme	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.08	Temperature Adjust Kr	☑
D.O. Saturation	85.00%	Use Balanced Technology	☐
D.O. Goal	5		

From Storet Data for period of record 1961-1991, Q_{30-10} Flow = 693.5 cfs.

Therefore, Q_{30-10}/Q_{7-10} ratio = 693.5 cfs / 640 cfs =

1.08.

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20B	33953	BEAVER 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
3.400	City of Beaver	NA	50	6.39	50	0	0
1.720	N. Brighton STP	NA	50	6.44	50	0	0
1.400	Chippewa STP	NA	50	6.48	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
3.400	City of Beaver	NA	25	1.48	25	0	0
1.720	N. Brighton STP	NA	25	1.49	25	0	0
1.400	Chippewa STP	NA	25	1.49	25	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)		
3.40	City of Beaver	25	25	25	25	3	3	0	0
1.72	N. Brighton STP	25	25	25	25	3	3	0	0
1.40	Chippewa STP	25	25	25	25	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20B	33953	BEAVER RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.400	4.800	20.057	7.431
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
399.645	15.000	26.643	0.108
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.26	0.106	0.29	0.603
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.183	20.027	User Supplied	5
Reach Travel Time (days)			
0.951			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.095	2.24	0.27	7.78
0.190	2.22	0.26	7.78
0.285	2.20	0.24	7.78
0.380	2.17	0.23	7.78
0.475	2.15	0.22	7.78
0.570	2.13	0.20	7.78
0.665	2.11	0.19	7.78
0.760	2.09	0.18	7.78
0.856	2.07	0.17	7.78
0.951	2.05	0.16	7.78

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.720	6.800	20.057	7.428
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
405.377	15.000	27.025	0.107
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.15	0.115	0.28	0.603
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.754	0.073	O'Connor	5
Reach Travel Time (days)			
0.183			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.018	2.15	0.28	7.74
0.037	2.15	0.27	7.72
0.055	2.14	0.27	7.70
0.073	2.14	0.27	7.68
0.091	2.13	0.26	7.66
0.110	2.13	0.26	7.64
0.128	2.12	0.26	7.63
0.146	2.12	0.26	7.61
0.164	2.11	0.25	7.59
0.183	2.11	0.25	7.57

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20B	33953	BEAVER RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.400	8.930	20.057	7.424
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
403.808	15.000	26.921	0.108
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.23	0.106	0.38	0.603
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.550	0.073	O'Connor	5
Reach Travel Time (days)			
0.787			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.079	2.21	0.36	7.45
0.157	2.19	0.34	7.36
0.236	2.17	0.33	7.27
0.315	2.15	0.31	7.19
0.393	2.13	0.30	7.10
0.472	2.12	0.28	7.03
0.551	2.10	0.27	6.95
0.629	2.08	0.26	6.88
0.708	2.06	0.24	6.82
0.787	2.05	0.23	6.75

Ohio River will provide additional significant dilution which will prevent a D.O. deficit below criteria of 5.0 mg/L.

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WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20B	33953	BEAVER 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)
3.400	City of Beaver	PA0026883	4.800	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

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)
1.720	N. Brighton STP	PA0026026	2.000	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

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)
1.400	Chippewa STP	PA0095087	2.130	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

TRC_CALC.xlsx

1A	B	C	D	E	F	G
2	**TRC EVALUATION**				CI	
3	Input appropriate values in B4:B8 and E4:E7				Chippewa STP	
4	650.894	= Q stream (cfs)		0.5	= CV Daily	
5	2.13	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		0.154	= 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 = 9.723		1.3.2.iii	WLA cfc = 61.444
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 3.623		5.1d	LTA_cfc = 35.721
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)

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.1, October 2020

Discharge Information

Instructions | Discharge | Stream

Facility: **Bradys Run Sanitary Authority STP** NPDES Permit No.: **PA0095087** Outfall No.: **001**

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

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
2.13	177.33	6.85	0.159	1				

					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		468									
	Chloride (PWS)	mg/L		125									
	Bromide	mg/L	<	1.25									
	Sulfate (PWS)	mg/L		56.6									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L	<	200									
	Total Antimony	µg/L	<	1									
	Total Arsenic	µg/L	<	5									
	Total Barium	µg/L		50.5									
	Total Beryllium	µg/L	<	2									
	Total Boron	µg/L		159									
	Total Cadmium	µg/L	<	0.6									
	Total Chromium (III)	µg/L		6.39									
	Hexavalent Chromium	µg/L		5									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L		20.5									
	Free Cyanide	µg/L		8									
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L	<	100									
	Total Iron	µg/L		104									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		18									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		4.63									
	Total Phenols (Phenolics) (PWS)	µg/L		5.77									
	Total Selenium	µg/L	<	1									
	Total Silver	µg/L	<	1									
	Total Thallium	µg/L	<	0.2									
	Total Zinc	µg/L		62									
	Total Molybdenum	µg/L	<	10									
	Acrolein	µg/L	<	10									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	5									
	Benzene	µg/L	<	1									
	Bromoform	µg/L	<	1									

Group 3	Carbon Tetrachloride	µg/L	<	1										
	Chlorobenzene	µg/L		1										
	Chlorodibromomethane	µg/L	<	1										
	Chloroethane	µg/L	<	1										
	2-Chloroethyl Vinyl Ether	µg/L	<	5										
	Chloroform	µg/L		4.9										
	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	<	100										
	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	<	5.26										
	2,4-Dichlorophenol	µg/L	<	5.26										
	2,4-Dimethylphenol	µg/L	<	5.26										
	4,6-Dinitro-o-Cresol	µg/L	<	26.3										
	2,4-Dinitrophenol	µg/L	<	2.3										
	2-Nitrophenol	µg/L	<	5.26										
	4-Nitrophenol	µg/L	<	10.5										
	p-Chloro-m-Cresol	µg/L	<	5.26										
	Pentachlorophenol	µg/L	<	26.3										
	Phenol	µg/L	<	5.26										
	2,4,6-Trichlorophenol	µg/L	<	5.26										
Group 5	Acenaphthene	µg/L	<	5.26										
	Acenaphthylene	µg/L		5.26										
	Anthracene	µg/L	<	5.26										
	Benzidine	µg/L	<	26.3										
	Benzo(a)Anthracene	µg/L	<	1										
	Benzo(a)Pyrene	µg/L	<	1										
	3,4-Benzofluoranthene	µg/L	<	1										
	Benzo(ghi)Perylene	µg/L	<	5.26										
	Benzo(k)Fluoranthene	µg/L	<	1										
	Bis(2-Chloroethoxy)Methane	µg/L	<	5.26										
	Bis(2-Chloroethyl)Ether	µg/L	<	1										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5.26										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5.26										
	4-Bromophenyl Phenyl Ether	µg/L	<	5.26										
	Butyl Benzyl Phthalate	µg/L	<	5.26										
	2-Chloronaphthalene	µg/L	<	5.26										
	4-Chlorophenyl Phenyl Ether	µg/L	<	5.26										
	Chrysene	µg/L	<	1										
	Dibenzo(a,h)Anthrancene	µg/L	<	1										
	1,2-Dichlorobenzene	µg/L	<	5.26										
	1,3-Dichlorobenzene	µg/L	<	5.26										
	1,4-Dichlorobenzene	µg/L	<	5.26										
	3,3-Dichlorobenzidine	µg/L	<	1										
	Diethyl Phthalate	µg/L	<	5.26										
	Dimethyl Phthalate	µg/L	<	5.26										
	Di-n-Butyl Phthalate	µg/L	<	5.26										
	2,4-Dinitrotoluene	µg/L	<	5.26										

	2,6-Dinitrotoluene	µg/L	<	5.26										
	Di-n-Octyl Phthalate	µg/L	<	5.26										
	1,2-Diphenylhydrazine	µg/L	<	5.26										
	Fluoranthene	µg/L	<	5.26										
	Fluorene	µg/L	<	5.26										
	Hexachlorobenzene	µg/L	<	1										
	Hexachlorobutadiene	µg/L	<	5.26										
	Hexachlorocyclopentadiene	µg/L	<	10.5										
	Hexachloroethane	µg/L	<	5.26										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	1										
	Isophorone	µg/L	<	5.26										
	Naphthalene	µg/L	<	5.26										
	Nitrobenzene	µg/L	<	5.26										
	n-Nitrosodimethylamine	µg/L	<	1										
	n-Nitrosodi-n-Propylamine	µg/L	<	1										
	n-Nitrosodiphenylamine	µg/L	<	5.26										
	Phenanthrene	µg/L	<	5.26										
	Pyrene	µg/L	<	5.26										
	1,2,4-Trichlorobenzene	µg/L	<	5.26										
Group 6	Aldrin	µg/L	<											
	alpha-BHC	µg/L	<											
	beta-BHC	µg/L	<											
	gamma-BHC	µg/L	<											
	delta BHC	µg/L	<											
	Chlordane	µg/L	<											
	4,4-DDT	µg/L	<											
	4,4-DDE	µg/L	<											
	4,4-DDD	µg/L	<											
	Dieldrin	µg/L	<											
	alpha-Endosulfan	µg/L	<											
	beta-Endosulfan	µg/L	<											
	Endosulfan Sulfate	µg/L	<											
	Endrin	µg/L	<											
	Endrin Aldehyde	µg/L	<											
	Heptachlor	µg/L	<											
	Heptachlor Epoxide	µg/L	<											
	PCB-1016	µg/L	<											
	PCB-1221	µg/L	<											
	PCB-1232	µg/L	<											
	PCB-1242	µg/L	<											
	PCB-1248	µg/L	<											
	PCB-1254	µg/L	<											
	PCB-1260	µg/L	<											
	PCBs, Total	µg/L	<											
	Toxaphene	µg/L	<											
	2,3,7,8-TCDD	ng/L	<											
Group 7	Gross Alpha	pCi/L												
	Total Beta	pCi/L	<											
	Radium 226/228	pCi/L	<											
	Total Strontium	µg/L	<											
	Total Uranium	µg/L	<											
	Osmotic Pressure	mOs/kg												

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Toxics Management Spreadsheet
Version 1.1, October 2020

Stream / Surface Water Information

Bradys Run Sanitary Authority STP, NPDES Permit No. PA0095087, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: **Bradys Run Evaluated on the Beaver R**

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	033953	1.4	1127.1	3154.5	0.004		Yes
End of Reach 1	033953	0.01	1126.8	19700			Yes

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

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	1.4	0.205	640.35		27	400	15	0.108				137.18	7.44		
End of Reach 1	0.01	0.1													

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	1.4														
End of Reach 1	0.01														

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Toxics Management Spreadsheet
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Model Results

Bradys Run Sanitary Authority STP, NPDES Permit No. PA0095087, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.159 Analysis Hardness (mg/l): 138.44 Analysis pH: 7.40

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	23,924	
Total Antimony	0	0		0	1,100	1,100	35,089	
Total Arsenic	0	0		0	340	340	10,846	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	669,879	
Total Boron	0	0		0	8,100	8,100	258,382	
Total Cadmium	0	0		0	2.762	2.97	94.7	Chem Translator of 0.93 applied
Total Chromium (III)	0	0		0	743.677	2,353	75,071	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	520	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	3,030	
Total Copper	0	0		0	18.258	19.0	607	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	702	
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	91.853	124	3,940	Chem Translator of 0.744 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	52.5	Chem Translator of 0.85 applied
Total Nickel	0	0		0	616.550	618	19,707	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	5.628	6.62	211	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	2,073	
Total Zinc	0	0		0	154.363	158	5,035	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	95.7	

Acrylonitrile	0	0		0	650	650	20,734	
Benzene	0	0		0	640	640	20,415	
Bromoform	0	0		0	1,800	1,800	57,418	
Carbon Tetrachloride	0	0		0	2,800	2,800	89,317	
Chlorobenzene	0	0		0	1,200	1,200	38,279	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	574,182	
Chloroform	0	0		0	1,900	1,900	60,608	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	478,485	
1,1-Dichloroethylene	0	0		0	7,500	7,500	239,243	
1,2-Dichloropropane	0	0		0	11,000	11,000	350,889	
1,3-Dichloropropylene	0	0		0	310	310	9,889	
Ethylbenzene	0	0		0	2,900	2,900	92,507	
Methyl Bromide	0	0		0	550	550	17,544	
Methyl Chloride	0	0		0	28,000	28,000	893,172	
Methylene Chloride	0	0		0	12,000	12,000	382,788	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	31,899	
Tetrachloroethylene	0	0		0	700	700	22,329	
Toluene	0	0		0	1,700	1,700	54,228	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	216,913	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	95,697	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	108,457	
Trichloroethylene	0	0		0	2,300	2,300	73,368	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	17,863	
2,4-Dichlorophenol	0	0		0	1,700	1,700	54,228	
2,4-Dimethylphenol	0	0		0	660	660	21,053	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	2,552	
2,4-Dinitrophenol	0	0		0	660	660	21,053	
2-Nitrophenol	0	0		0	8,000	8,000	255,192	
4-Nitrophenol	0	0		0	2,300	2,300	73,368	
p-Chloro-m-Cresol	0	0		0	160	160	5,104	
Pentachlorophenol	0	0		0	13.070	13.1	417	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	14,674	
Acenaphthene	0	0		0	83	83.0	2,648	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	9,570	
Benzo(a)Anthracene	0	0		0	0.5	0.5	15.9	
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	956,970	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	143,546	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	8,613	
Butyl Benzyl Phthalate	0	0		0	140	140	4,466	

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	26,157	
1,3-Dichlorobenzene	0	0		0	350	350	11,165	
1,4-Dichlorobenzene	0	0		0	730	730	23,286	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	127,596	
Dimethyl Phthalate	0	0		0	2,500	2,500	79,748	
Di-n-Butyl Phthalate	0	0		0	110	110	3,509	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	51,038	
2,6-Dinitrotoluene	0	0		0	990	990	31,580	
1,2-Diphenylhydrazine	0	0		0	15	15.0	478	
Fluoranthene	0	0		0	200	200	6,380	
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	319	
Hexachlorocyclopentadiene	0	0		0	5	5.0	159	
Hexachloroethane	0	0		0	60	60.0	1,914	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	318,990	
Naphthalene	0	0		0	140	140	4,466	
Nitrobenzene	0	0		0	4,000	4,000	127,596	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	542,283	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	9,570	
Phenanthrene	0	0		0	5	5.0	159	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	4,147	

☑ *CFC* CCT (min): 59.078 PMF: 1 Analysis Hardness (mg/l): 137.39 Analysis pH: 7.43

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	42,973	
Total Arsenic	0	0		0	150	150	29,300	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	800,867	
Total Boron	0	0		0	1,600	1,600	312,533	
Total Cadmium	0	0		0	0.307	0.34	66.9	Chem Translator of 0.896 applied
Total Chromium (III)	0	0		0	96.134	112	21,835	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	2,030	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	3,711	
Total Copper	0	0		0	11.748	12.2	2,390	Chem Translator of 0.96 applied

Free Cyanide	0	0		0	5.2	5.2	1,016	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	293,000	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.550	4.77	931	Chem Translator of 0.745 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	177	Chem Translator of 0.85 applied
Total Nickel	0	0		0	68.039	68.2	13,330	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	975	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	2,539	
Total Zinc	0	0		0	154.622	157	30,632	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	586	
Acrylonitrile	0	0		0	130	130	25,393	
Benzene	0	0		0	130	130	25,393	
Bromoform	0	0		0	370	370	72,273	
Carbon Tetrachloride	0	0		0	560	560	109,387	
Chlorobenzene	0	0		0	240	240	46,880	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	683,667	
Chloroform	0	0		0	390	390	76,180	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	605,534	
1,1-Dichloroethylene	0	0		0	1,500	1,500	293,000	
1,2-Dichloropropane	0	0		0	2,200	2,200	429,734	
1,3-Dichloropropylene	0	0		0	61	61.0	11,915	
Ethylbenzene	0	0		0	580	580	113,293	
Methyl Bromide	0	0		0	110	110	21,487	
Methyl Chloride	0	0		0	5,500	5,500	1,074,334	
Methylene Chloride	0	0		0	2,400	2,400	468,800	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	41,020	
Tetrachloroethylene	0	0		0	140	140	27,347	
Toluene	0	0		0	330	330	64,460	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	273,467	
1,1,1-Trichloroethane	0	0		0	610	610	119,153	
1,1,2-Trichloroethane	0	0		0	680	680	132,827	
Trichloroethylene	0	0		0	450	450	87,900	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	21,487	
2,4-Dichlorophenol	0	0		0	340	340	66,413	
2,4-Dimethylphenol	0	0		0	130	130	25,393	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	3,125	
2,4-Dinitrophenol	0	0		0	130	130	25,393	
2-Nitrophenol	0	0		0	1,600	1,600	312,533	
4-Nitrophenol	0	0		0	470	470	91,807	

p-Chloro-m-Cresol	0	0		0	30	30.0	5,860	
Pentachlorophenol	0	0		0	10.028	10.0	1,959	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	17,775	
Acenaphthene	0	0		0	17	17.0	3,321	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	11,525	
Benzo(a)Anthracene	0	0		0	0.1	0.1	19.5	
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	1,172,001	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	177,753	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	10,548	
Butyl Benzyl Phthalate	0	0		0	35	35.0	6,837	
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	31,253	
1,3-Dichlorobenzene	0	0		0	69	69.0	13,478	
1,4-Dichlorobenzene	0	0		0	150	150	29,300	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	156,267	
Dimethyl Phthalate	0	0		0	500	500	97,667	
Di-n-Butyl Phthalate	0	0		0	21	21.0	4,102	
2,4-Dinitrotoluene	0	0		0	320	320	62,507	
2,6-Dinitrotoluene	0	0		0	200	200	39,067	
1,2-Diphenylhydrazine	0	0		0	3	3.0	586	
Fluoranthene	0	0		0	40	40.0	7,813	
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	391	
Hexachlorocyclopentadiene	0	0		0	1	1.0	195	
Hexachloroethane	0	0		0	12	12.0	2,344	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	410,200	
Naphthalene	0	0		0	43	43.0	8,399	
Nitrobenzene	0	0		0	810	810	158,220	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	664,134	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	11,525	
Phenanthrene	0	0		0	1	1.0	195	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	5,079	

☑ ***THH*** CCT (min): 59.078 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	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	1,094	
Total Arsenic	0	0		0	10	10.0	1,953	
Total Barium	0	0		0	2,400	2,400	468,800	
Total Boron	0	0		0	3,100	3,100	605,534	
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	140	140	27,347	
Dissolved Iron	0	0		0	300	300	58,600	
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	195,333	
Total Mercury	0	0		0	0.050	0.05	9.77	
Total Nickel	0	0		0	610	610	119,153	
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	46.9	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	6	6.0	1,172	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	130	130	25,393	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	6,446	
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	530	530	103,527	

Methyl Bromide	0	0		0	47	47.0	9,181	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	1,300	1,300	253,933	
1,2-trans-Dichloroethylene	0	0		0	140	140	27,347	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	81	81.0	15,822	
2,4-Dichlorophenol	0	0		0	77	77.0	15,041	
2,4-Dimethylphenol	0	0		0	380	380	74,227	
4,6-Dinitro-o-Cresol	0	0		0	13	13.0	2,539	
2,4-Dinitrophenol	0	0		0	69	69.0	13,478	
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	10,400	10,400	2,031,468	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	670	670	130,873	
Anthracene	0	0		0	8,300	8,300	1,621,267	
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	1,400	1,400	273,467	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	150	150	29,300	
2-Chloronaphthalene	0	0		0	1,000	1,000	195,333	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	420	420	82,040	
1,3-Dichlorobenzene	0	0		0	420	420	82,040	
1,4-Dichlorobenzene	0	0		0	420	420	82,040	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	17,000	17,000	3,320,668	
Dimethyl Phthalate	0	0		0	270,000	270,000	52,740,024	
Di-n-Butyl Phthalate	0	0		0	2,000	2,000	390,667	
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	

2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	130	130	25,393	
Fluorene	0	0		0	1,100	1,100	214,867	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	40	40.0	7,813	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.0038	0.004	0.74	
Isophorone	0	0		0	35	35.0	6,837	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	17	17.0	3,321	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	830	830	162,127	
1,2,4-Trichlorobenzene	0	0		0	35	35.0	6,837	

☑ *CRL* CCT (min): 27.169 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	0.051	0.051	32.7	
Benzene	0	0		0	1.2	1.2	769	
Bromoform	0	0		0	4.3	4.3	2,755	
Carbon Tetrachloride	0	0		0	0.23	0.23	147	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.4	0.4	256	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	3,652	
Dichlorobromomethane	0	0		0	0.55	0.55	352	
1,2-Dichloroethane	0	0		0	0.38	0.38	243	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	0.34	0.34	218	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	4.6	4.6	2,947	
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	109	
Tetrachloroethylene	0	0		0	0.69	0.69	442	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.59	0.59	378	
Trichloroethylene	0	0		0	2.5	2.5	1,602	
Vinyl Chloride	0	0		0	0.025	0.025	16.0	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.270	0.27	173	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	897	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.000086	0.00009	0.055	
Benzo(a)Anthracene	0	0		0	0.0038	0.004	2.43	
Benzo(a)Pyrene	0	0		0	0.0038	0.004	2.43	

3,4-Benzofluoranthene	0	0		0	0.0038	0.004	2.43	
Benzo(k)Fluoranthene	0	0		0	0.0038	0.004	2.43	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	19.2	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	1.2	1.2	769	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.0038	0.004	2.43	
Dibenzo(a,h)Anthrancene	0	0		0	0.0038	0.004	2.43	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.021	0.021	13.5	
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	32.0	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	32.0	
1,2-Diphenylhydrazine	0	0		0	0.036	0.036	23.1	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00028	0.0003	0.18	
Hexachlorobutadiene	0	0		0	0.44	0.44	282	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	1.4	1.4	897	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.00069	0.0007	0.44	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	3.2	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	2,114	
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

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	15,334	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	1,953	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	429,366	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	165,612	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	60.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	21,835	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	333	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	1,942	µg/L	Discharge Conc < TQL
Total Copper	389	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	450	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	58,600	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	293,000	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	931	µg/L	Discharge Conc < TQL
Total Manganese	195,333	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	9.77	µg/L	Discharge Conc < TQL
Total Nickel	12,631	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	975	µg/L	Discharge Conc < TQL
Total Silver	135	µg/L	Discharge Conc ≤ 10% WQBEL

Total Thallium	46.9	µg/L	Discharge Conc < TQL
Total Zinc	3,227	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	61.3	µg/L	Discharge Conc ≤ 25% WQBEL
Acrylonitrile	32.7	µg/L	Discharge Conc < TQL
Benzene	769	µg/L	Discharge Conc ≤ 25% WQBEL
Bromoform	2,755	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	147	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	24,535	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	256	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	368,028	µg/L	Discharge Conc < TQL
Chloroform	3,652	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	352	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	243	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethylene	6,446	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-Dichloropropane	224,906	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichloropropylene	218	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	59,293	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Bromide	9,181	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	572,487	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	2,947	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	109	µg/L	Discharge Conc ≤ 25% WQBEL
Tetrachloroethylene	442	µg/L	Discharge Conc ≤ 25% WQBEL
Toluene	34,758	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	27,347	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	61,338	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2-Trichloroethane	378	µg/L	Discharge Conc ≤ 25% WQBEL
Trichloroethylene	1,602	µg/L	Discharge Conc ≤ 25% WQBEL
Vinyl Chloride	16.0	µg/L	Discharge Conc ≤ 25% WQBEL
2-Chlorophenol	11,450	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	15,041	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	13,494	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	1,636	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dinitrophenol	13,478	µg/L	Discharge Conc < TQL
2-Nitrophenol	163,568	µg/L	Discharge Conc < TQL
4-Nitrophenol	47,026	µg/L	Discharge Conc ≤ 25% WQBEL
p-Chloro-m-Cresol	3,271	µg/L	Discharge Conc < TQL
Pentachlorophenol	173	µg/L	Discharge Conc ≤ 25% WQBEL
Phenol	2,031,468	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	897	µg/L	Discharge Conc < TQL
Acenaphthene	1,697	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthylene	N/A	N/A	No WQS

Anthracene	1,621,267	µg/L	Discharge Conc ≤ 25% WQBEL
Benzidine	0.055	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	2.43	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	2.43	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	2.43	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	2.43	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	19.2	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	273,467	µg/L	Discharge Conc ≤ 25% WQBEL
Bis(2-Ethylhexyl)Phthalate	769	µg/L	Discharge Conc ≤ 25% WQBEL
4-Bromophenyl Phenyl Ether	5,520	µg/L	Discharge Conc ≤ 25% WQBEL
Butyl Benzyl Phthalate	2,862	µg/L	Discharge Conc ≤ 25% WQBEL
2-Chloronaphthalene	195,333	µg/L	Discharge Conc ≤ 25% WQBEL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	2.43	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	2.43	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	16,766	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	7,156	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	14,926	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	13.5	µg/L	Discharge Conc < TQL
Diethyl Phthalate	81,784	µg/L	Discharge Conc ≤ 25% WQBEL
Dimethyl Phthalate	51,115	µg/L	Discharge Conc ≤ 25% WQBEL
Di-n-Butyl Phthalate	2,249	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dinitrotoluene	32.0	µg/L	Discharge Conc ≤ 25% WQBEL
2,6-Dinitrotoluene	32.0	µg/L	Discharge Conc ≤ 25% WQBEL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	23.1	µg/L	Discharge Conc < TQL
Fluoranthene	4,089	µg/L	Discharge Conc ≤ 25% WQBEL
Fluorene	214,867	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorobenzene	0.18	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	204	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorocyclopentadiene	102	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachloroethane	897	µg/L	Discharge Conc ≤ 25% WQBEL
Indeno(1,2,3-cd)Pyrene	0.74	µg/L	Discharge Conc < TQL
Isophorone	6,837	µg/L	Discharge Conc ≤ 25% WQBEL
Naphthalene	2,862	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	3,321	µg/L	Discharge Conc ≤ 25% WQBEL
n-Nitrosodimethylamine	0.44	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	3.2	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	2,114	µg/L	Discharge Conc ≤ 25% WQBEL
Phenanthrene	102	µg/L	Discharge Conc ≤ 25% WQBEL
Pyrene	162,127	µg/L	Discharge Conc ≤ 25% WQBEL
1,2,4-Trichlorobenzene	2,658	µg/L	Discharge Conc ≤ 25% WQBEL

Applicant:	Bradys Run Sanitary Authority
Name of plant:	Bradys Run Sanitary Authority STP
Permit Number:	PA0095087
Municipality:	Chippewa Township
County:	Beaver County
Receiving stream:	Bradys Run

The following program will calulate partial mix factors for acute and chronic conditions:

calculated fields

net stream flow (Qs cfs)=	640.35
discharge flow (Qd mgd)=	2.13
velocity (fps)=	0.108
width (feet) =	400
depth (feet) =	15
slope (ft/ft) =	0.00004

complete mix time (min) = 590.76

FOR ACUTE CONDITIONS: IF COMPLETE MIX TIME < 15 MINUTES
THEN PMF = 1, IF > 15 MINUTES CALCULATE PMFa

PMFa = 0.159
or 15.93 %

FOR CHRONIC CONDITIONS: IF COMPLETE MIX TIME < 720 MINUTES
THEN PMF = 1, IF > 720 MINUTES CALCULATE PMFc

PMFc = 1.000
or 100.00 %

IWCc=[Qd * 1.547] / [(Qs*PMFc) + (Qd * 1.547)] = 0.0051

Target IWCc=IWCc/1= 0.005 0.51 %

IWCa=[Qd * 1.547] / [(Qs*PMFa) + (Qd * 1.547)] = 0.0313

Target IWCa=IWCa/0.3= 0.104 **or** 10.43 %

WET tests should pass if percentage for C.dubia LC50 and P.promelas LC50 are greater than the target IWCa (acute) or NOEC > target IWCc (chronic).

Program written by David Ponchione on April 8, 1999

Program run by : W. Mitchell **on** January 14, 2021

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

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

Facility Name: Bradys Run SA

Permit No.: PA0095087

Test Completion Date: 11/17/2015

Replicate No.	Control	TIWC
1	32	35
2	35	35
3	38	39
4	33	35
5	30	34
6	31	28
7	35	36
8	30	38
9	5	37
10	34	21
11		
12		
13		
14		
15		
Mean	30.300	33.800
Std Dev.	9.238	5.391
# Replicates	10	10

T-Test Result	3.9893
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Test Completion Date: 11/8/2016

Replicate No.	Control	TIWC
1	28	30
2	35	38
3	37	39
4	32	35
5	32	40
6	30	30
7	27	34
8	39	39
9	34	37
10	33	16
11		
12		
13		
14		
15		
Mean	32.700	33.800
Std Dev.	3.773	7.208
# Replicates	10	10

T-Test Result	3.7877
Deg. of Freedom	13
Critical T Value	0.8702
Pass or Fail	PASS

Test Completion Date: 11/22/2017

Replicate No.	Control	TIWC
1	31	21
2	30	25
3	19	15
4	24	20
5	21	28
6	17	27
7	20	25
8	20	23
9	18	19
10	20	24
11		
12		
13		
14		
15		
Mean	22.000	22.700
Std Dev.	4.853	3.974
# Replicates	10	10

T-Test Result	3.6383
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Test Completion Date: 11/20/2018

Replicate No.	Control	TIWC
1	20	15
2	33	30
3	27	29
4	20	30
5	26	33
6	26	33
7	26	29
8	29	30
9	30	29
10	31	28
11		
12		
13		
14		
15		
Mean	26.800	28.600
Std Dev.	4.290	5.060
# Replicates	10	10

T-Test Result	4.4830
Deg. of Freedom	15
Critical T Value	0.8662
Pass or Fail	PASS

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

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

Facility Name: Bradys Run SA

Permit No.: PA0095087

Test Completion Date: 11/17/2015

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	0	1
10	1	1
11		
12		
13		
14		
15		
Mean	0.900	1.000
Std Dev.	0.316	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

Test Completion Date: 11/8/2016

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

Test Completion Date: 11/22/2017

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

Test Completion Date: 11/20/2018

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

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

Facility Name: Bradys Run SA

Permit No.: PA0095087

Replicate No.	Test Completion Date: 11/17/2015 Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	4	4
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/8/2016 Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	4	4
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/22/2017 Control	TIWC
1	1	0.8
2	1	0.8
3	1	1
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	1.000	0.900
Std Dev.	0.000	0.115
# Replicates	4	4
T-Test Result	6.2306	
Deg. of Freedom	3	
Critical T Value	0.7649	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/20/2018 Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	4	4
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

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

Facility Name: Bradys Run SA

Permit No.: PA0095087

Replicate No.	Test Completion Date: 11/17/2015 Control	TIWC
1	0.396	0.399
2	0.391	0.401
3	0.403	0.419
4	0.404	0.357
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.399	0.394
Std Dev.	0.006	0.026
# Replicates	4	4
T-Test Result	7.1373	
Deg. of Freedom	3	
Critical T Value	0.7649	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/8/2016 Control	TIWC
1	0.364	0.44
2	0.491	0.44
3	0.368	0.494
4	0.383	0.471
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.402	0.461
Std Dev.	0.060	0.026
# Replicates	4	4
T-Test Result	6.1288	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/22/2017 Control	TIWC
1	0.316	0.2667
2	0.317	0.249
3	0.367	0.308
4	0.336	0.306
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.334	0.282
Std Dev.	0.024	0.029
# Replicates	4	4
T-Test Result	1.8603	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/20/2018 Control	TIWC
1	0.399	0.325
2	0.387	0.38
3	0.348	0.308
4	0.336	0.264
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.368	0.319
Std Dev.	0.030	0.048
# Replicates	4	4
T-Test Result	1.6443	
Deg. of Freedom	4	
Critical T Value	0.7407	
Pass or Fail	PASS	

WET Summary and Evaluation

Facility Name	Bradys Run SA
Permit No.	PA0095087
Design Flow (MGD)	2.13
Q_{7-10} Flow (cfs)	640.35
PMF_a	0.159
PMF_c	1

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/17/15	11/8/16	11/22/17	11/20/18
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/17/15	11/8/16	11/22/17	11/20/18
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/17/15	11/8/16	11/22/17	11/20/18
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/17/15	11/8/16	11/22/17	11/20/18
Pimephales	Growth	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	Chronic	
TIWC	1	% Effluent
Dilution Series	1, 2, 30, 60, 100	% Effluent
Permit Limit	None	
Permit Limit Species		