pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0032611**
Facility Type	**Municipal**	APS ID	**734635**
Major / Minor	**Major**	Authorization ID	**1212873**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Portage Area Sewer Authority**	Facility Name	**Portage Area STP**
Applicant Address	606 Cambria Street	Facility Address	128 N Oak Drive
	Portage, PA 15946-1516		Portage, PA 15946
Applicant Contact	Donald Squillario	Facility Contact	Mark Stancovich
Applicant Phone	(814) 736-9642	Facility Phone	(814) 736-3753
Client ID	26170	Site ID	256155
Ch 94 Load Status		Municipality	Portage Township
Connection Status		County	Cambria
Date Application Received	October 23, 2017	EPA Waived?	No
Date Application Accepted	January 9, 2018	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. PA0032611, which was previously issued by the Department on June 18, 2013. That permit expired on June 30, 2018.

WQM Permit No. 1171402-A3 authorizes construction of the plant to treat a hydraulic design flow of 2.0 MGD. The STP consists of 2 aerated EQ tanks, a headworks building that provides grit removal, an influent pump station, 2 SBRs, 2 aerobic sludge tanks, and UV disinfection.

The receiving stream, Little Conemaugh River, is classified as a CWF and is located in State Watershed No. 18-E.

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

The applicant indicated that there is one storm water outfall at the STP. Part C will contain language titled “Requirements Applicable to Stormwater Outfalls”.

Sludge use and disposal description and location(s): A polymer is added to the sludge from the aerobic sludge tanks and a rotary fan press is used for the dewatering of sludge. Solids are disposed of at the Laurel Highlands Landfill, Jackson TWP, Cambria County, DEP Permit # 101534.

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. / Environmental Engineering Specialist	September 2, 2021
X		Christopher Kriley, P.E. / Program Manager	September 3, 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
Latitude	40º 23' 36.00"	Longitude	-78º 41' 2.00"
Quad Name	Ebensburg	Quad Code	1516
Wastewater Description:	Sewage Effluent		
Receiving Waters	Little Conemaugh River (CWF)	Stream Code	45815
NHD Com ID	123718454	RMI	19.83
Drainage Area	37.2	Yield (cfs/mi^2)	0.101
Q_{7-10} Flow (cfs)	3.76	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1,600	Slope (ft/ft)	0.004
Watershed No.	18-E	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	NONE	Exceptions to Criteria	NONE
Assessment Status	Impaired		
Cause(s) of Impairment	METALS, PH		
Source(s) of Impairment	ACID MINE DRAINAGE, ACID MINE DRAINAGE		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL

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

Nearest Downstream Public Water Supply Intake		Blairsville Municipal Authority	
PWS Waters	Conemaugh River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Changes Since Last Permit Issuance: NONE

Other Comments:

Kiskiminetas-Conemaugh River Watershed TMDL

A TMDL for the Kiskiminetas-Conemaugh River Watershed ("Kiski-Conemaugh TMDL")—of which the Little Conemaugh River is a part—was completed on January 29, 2010 for the control of acid mine drainage pollutants: aluminum, iron, manganese, sediment and pH. In accordance with 40 CFR § 122.44(d)(1)(vii)(B), when developing WQBELs, the permitting authority shall ensure that effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation (WLA) for the discharge prepared by the State and approved by EPA pursuant to 40 CFR § 130.7. The Portage Area STP was assigned wasteload allocations (WLAs) for aluminum, iron, and manganese by the Kiski-Conemaugh TMDL. Therefore, pursuant to § 122.44(d)(1)(vii)(B), WQBELs will be imposed at Outfall 001. Only aluminum, iron, and manganese WQBELs are imposed because the TMDL does not establish wasteload allocations for sediment or pH. The TMDL used a surrogate approach for both of those constituents by which reductions of in-stream concentrations of aluminum, iron, and manganese would result in acceptable reductions of sediment and mitigation of acidic pH.

The TMDL's allocated concentrations for aluminum, iron, and manganese are equivalent to the most stringent water quality criteria for those pollutants and those criteria will be imposed as end-of-pipe limits at Outfall 001. The methods used to

implement water quality criteria are described in 25 Pa. Code §§ 96.3 and 96.4. Also, DEP's *Water Quality Toxics Management Strategy* (Doc. No. 361-2000-003) addresses design conditions in detail (Table 1 in that document), including the appropriate durations to assign to water quality criteria. The design duration for Criteria Maximum Concentration (CMC) criteria is 1 hour (acute). The design duration for Criteria Continuous Concentration (CCC) criteria is 4 days (chronic). The design duration for Threshold Human Health (THH) criteria is 30 days (chronic). The design duration for Cancer Risk Level (CRL) criteria is 70 years (chronic).

The 750 µg/L aluminum criterion in 25 Pa. Code § 93.8c is a CMC (acute) criterion. Therefore, 750 µg/L is imposed as a maximum daily limit. There is no CCC criterion for aluminum necessitating the imposition of a more stringent average monthly limit. Imposing 750 µg/L as both a maximum daily and average monthly limit is protective of water quality uses.

The 1.5 mg/L iron criterion is given as a 30-day average in 25 Pa. Code § 93.7(a). Therefore, 1.5 mg/L is imposed as an average monthly limit and the maximum daily effluent limit is calculated using a multiplier of two times the average monthly limit based on DEP's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (Doc. No. 362-0400-001, Chapter 3, pp. 15 – 16).

The 1 mg/L potable water supply criterion for manganese in 25 Pa. Code § 93.7(a) is a human health criterion (chronic). Per Table 1 of the *Water Quality Toxics Management Strategy*, the duration for a THH criterion is 30 days. Therefore, an average monthly effluent limit of 1 mg/L is imposed, and the maximum daily effluent limit is calculated using a multiplier of two times the average monthly limit consistent with the technical guidance cited above for iron.

Since the allocated concentrations are equivalent to water quality criteria, the Portage Area STP's compliance with concentration limits for aluminum, iron, and manganese will not result in excursions above water quality criteria and the permit will be consistent with the TMDL's WLAs. Consequently, the TMDL's load limits are not required. The TMDL's wasteload allocations and the applicable WQBELs are summarized in the table below.

Table 5. TMDL Effluent Limits for Outfall 001

Pollutant	Average Monthly (mg/L)	Maximum Daily (mg/L)
Aluminum, Total	0.75	0.75
Iron, Total	1.5	3.0
Manganese, Total	1.0	2.0

Effluent concentrations (as reported in the renewal application) for Aluminum, Iron and Manganese were significantly less than the proposed WQBELs found in Table 5 above. As a result, no schedule of compliance is needed and the new TMDL WQBELs will take effect upon permit issuance. Measurement frequency will be 1/month and the required sample type is 24-Hr. composite.

Treatment Facility Summary

Treatment Facility Name: Portage Area STP

WQM Permit No.	Issuance Date
1171402 A-3	February 5, 2007

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	SBRs	UV	0.846 (2015)

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
2.0	1,700	Not Overloaded	Aerobic Sludge tanks & a Rotary Fan Press	Landfill

Changes Since Last Permit Issuance: NONE

Other Comments: Plant expansion to 2.0 MGD, with a peak flow of 6.0 MGD, was part of a Corrective Action Plan, which the Authority was under to eliminate bypassing during wet weather conditions. Act 537 Planning was not required due to the fact that this expansion was only to deal with wet weather flow. Mass Limitations (CBOD5 & TSS) for the facility will be based upon a design flow of 1.0 MGD. The organic design capacity of 1700 lbs BOD_5 per day remained unchanged.

Compliance History

Operations Compliance Check Summary Report

Facility: Portage Area STP
NPDES Permit No.: PA0032611
Compliance Review Period: 12/2015 – 12/2020

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC	# OF VIOLATIONS
3052168	05/04/2020	Administrative/File Review	PA Dept of Environmental Protection	Violation(s) Noted	1
2914535	06/14/2019	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted	0
2890727	06/06/2019	Chapter 94 Inspection	PA Dept of Environmental Protection	No Violations Noted	0
2856091	01/15/2019	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted	0
2781825	10/01/2018	Chapter 94 Inspection	PA Dept of Environmental Protection	No Violations Noted	0
2826487	06/19/2018	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted	0
2615777	06/14/2017	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted	0
2501903	06/22/2016	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted	0
2479158	04/28/2016	Administrative/File Review	PA Dept of Environmental Protection	No Violations Noted	0

Violation Summary:

VIOL ID	VIOLATION DATE	VIOLATION TYPE DESC	RESOLVED DATE	INSPECTED DATE	INSP TYPE
888124	05/04/2020	NPDES - Violation of effluent limits in Part A of permit	05/04/2020	05/04/2020	Administrative/File Review

Open Violations by Client ID:

No open violations for Client ID 26170

Enforcement Summary:

ENF ID	ENF TYPE DESC	ENF CREATION DATE	EXECUTED DATE	VIOLATIONS	# OF VIOLATIONS	PENALTY AMOUNT	AMOUNT RECEIVED	ENF FINALSTATUS	ENF CLOSED DATE
386740	Field Notice of Violation	07/07/2020	05/04/2020	92A.44	1				

DMR Violation Summary:

MONITORING START DATE	MONITORING END DATE	NON COMPLIANCE CATEGORY	PARAMETER	SAMPLE VALUE	PERMIT VALUE	UNIT OF MEASURE	STATISTICAL BASE CODE
03/01/2020	03/31/2020	Load 2 Effluent Violation	Copper, Total	0.20	0.18	lbs/day	Daily Maximum
02/01/2020	02/29/2020	Concentration 2 Effluent Violation	Copper, Total	< 0.020	0.014	mg/L	Average Monthly
02/01/2020	02/29/2020	Concentration 3 Effluent Violation	Copper, Total	0.052	0.022	mg/L	Daily Maximum
02/01/2020	02/29/2020	Concentration 3 Effluent Violation	Fecal Coliform	12100	10000	CFU/100 ml	Instantaneous Maximum
02/01/2020	02/29/2020	Concentration 3 Effluent Violation	Total Suspended Solids	< 78	45	mg/L	Weekly Average
02/01/2020	02/29/2020	Load 1 Effluent Violation	Copper, Total	< 0.400	0.12	lbs/day	Average Monthly
02/01/2020	02/29/2020	Load 1 Effluent Violation	Total Suspended Solids	< 565	250	lbs/day	Average Monthly
02/01/2020	02/29/2020	Load 2 Effluent Violation	Copper, Total	1.45	0.18	lbs/day	Daily Maximum
02/01/2020	02/29/2020	Load 2 Effluent Violation	Total Suspended Solids	< 2135	375	lbs/day	Weekly Average
09/01/2019	09/30/2019	Concentration 3 Effluent Violation	Fecal Coliform	12100	1000	CFU/100 ml	Instantaneous Maximum
09/01/2018	09/30/2018	Concentration 3 Effluent Violation	Fecal Coliform	12100	1000	CFU/100 ml	Instantaneous Maximum
09/01/2018	09/30/2018	Load 2 Effluent Violation	Copper, Total	< 0.30	0.18	lbs/day	Daily Maximum
04/01/2018	04/30/2018	Concentration 3 Effluent Violation	Copper, Total	0.024	0.022	mg/L	Daily Maximum
04/01/2018	04/30/2018	Concentration 3 Effluent Violation	Fecal Coliform	12100	10000	CFU/100 ml	Instantaneous Maximum

04/01/2018	04/30/2018	Concentration 3 Effluent Violation	Total Suspended Solids	< 47	45	mg/L	Weekly Average
04/01/2018	04/30/2018	Load 1 Effluent Violation	Copper, Total	< 0.20	0.12	lbs/day	Average Monthly
04/01/2018	04/30/2018	Load 1 Effluent Violation	Total Suspended Solids	< 296	250	lbs/day	Average Monthly
04/01/2018	04/30/2018	Load 2 Effluent Violation	Copper, Total	0.60	0.18	lbs/day	Daily Maximum
04/01/2018	04/30/2018	Load 2 Effluent Violation	Total Suspended Solids	< 1132	375	lbs/day	Weekly Average
10/01/2017	10/31/2017	Concentration 1 Effluent Violation	Dissolved Oxygen	3.94	4.0	mg/L	Minimum
06/01/2017	06/30/2017	Concentration 3 Effluent Violation	Fecal Coliform	2420	1000	CFU/100 ml	Instantaneous Maximum

Compliance Status:
Completed by: John Murphy
Completed date: 12/10/2020

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 2
Latitude 40º 23' 36.00" **Longitude** -78º 41' 2.00"
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 above technology-based limitations will again be imposed under the authority of PA Code, Title 25, Chapter 95.5(a)(1) - Treatment requirements for discharges to waters affected by abandoned mine drainage. For wastes discharged to waters polluted by abandoned coal mine drainage, so that the applicable water quality criteria are not being met and designated water uses are not being achieved to the extent that aquatic communities are essentially excluded, and where the pollution cannot be remedied by controlling known, active discharges, the following degrees of treatment shall be provided: Sewage shall receive secondary treatment.

The attached Cause and Effect Survey, Dated July 13, 2021, gives the following conclusion:

The objective of this survey was to determine if the discharge from the Portage Area Sewage Authority WWTP is affecting the aquatic life, water quality, and/or physical characteristics of the Little Conemaugh River.

Findings from this survey suggest that the river is heavily impacted by the AMD discharge. Therefore, any impacts, if present, from the WWTP discharge were not detected. The IBI scores for both sites could not be calculated with confidence because the individual count was below 180 individuals. The water quality parameters indicate that the river is impacted upstream of the outfall and the quality does not improve very much below the WWTP outfall. While we cannot use the IBI scores, the low abundance of organisms indicates toxic pollution.

The results from this survey indicate that the river is still not attaining its Chapter 93 Aquatic Life Use, with the cause being Metals (Iron and Aluminum) and the Source being AMD discharge.

Water Quality-Based Limitations

A "Reasonable Potential Analysis" (Toxic Management Spreadsheet Version 1.3) was conducted.

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

Parameter	Limit (ug/l)	SBC	Model
Total Copper (ug/L)	23.7	Average Monthly	TMS Version 1.3
Total Zinc (ug/L)	199.0	Average Monthly	TMS Version 1.3

Comments: Part C.III. (Titled "WQBELs for Toxic Pollutants) has been added to the permit. The Authority has the opportunity to collect site-specific data and conduct a TRE. The Authority will have 2 years to complete the required studies and submit a Final WQBEL Compliance Report to the Department before having to comply with Final Permit Limits for total zinc. A Pre-Draft Letter/Survey for Toxic Pollutants was mailed to the applicant on December 14, 2020 and Authority's Engineer responded on January 18, 2021.

A WQBEL for total copper (mass & concentration) was previously imposed on this facility based upon output data from PENTOXSD Version 2.0c. Mass limits were incorrectly calculated based upon a design flow rate of 1.0 MGD. eDMR data for total copper was reviewed and the Department's TMS Model, Version 1.3, was used to develop an updated WQBEL (mass & concentration) for total copper based upon a design flow rate of 2.0 MGD. Please see page 16 of the fact sheet for further details concerning this parameter.

The Toxic Management Spreadsheet Version 1.3 modeling results recommends Monitoring for hexavalent chromium.

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

Best Professional Judgment (BPJ) Limitations

Comments: 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:

Ultraviolet (UV) disinfection is used therefore Total Residual Chlorine (TRC) limits are not applicable. Routine monitoring of UV Transmittance will be at the same monitoring frequency that is used for TRC.

For pH, Dissolved Oxygen (DO) and UV Transmittance, 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.

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. Since technology-based effluent limitations are applicable for this facility, assume that a monthly warm period limit of 25 mg/L is acceptable for ammonia-nitrogen and impose a year-round monitoring requirement for ammonia-nitrogen that is consistent with Table 6-3 of the Permit Writers Manual. Application data for Outfall # 001 indicates that long-term average ammonia-nitrogen concentration in the discharge is less than 0.185 mg/L.

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 as per Chapter 92.a.61.

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%, 89%, 78%, 39%, and 20%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 78%.

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
11/04/2013	PASS	PASS	PASS	PASS
11/04/2014	PASS	PASS	PASS	PASS
12/08/2015	PASS	PASS	PASS	PASS
11/26/2016	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): **1** Chronic Partial Mix Factor (PMFc): **1**

1. Determine IWC – Acute (IWCa):

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

[(2.0 MGD x 1.547) / ((3.76 cfs x 1) + (2.0 MGD x 1.547))] x 100 = **45.14%**

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 Tests**

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

TIWCa = 45.14 / 0.3 = 100**%**

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

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

[(2.0 MGD x 1.547) / ((3.76 cfs x 1) + (2.0 MGD x 1.547))] x 100 = **45%**

3. Determine Dilution Series

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

Dilution Series = 100%, 73%, 45%, 23%, and 11%.

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: December 1, 2023 through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Zinc (ug/L)	3.32	5.18 Daily Max	XXX	199.0	310.0 Daily Max	497	1/week	24-Hr Composite

Compliance Sampling Location: Outfall # 001

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 November 30, 2023.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Zinc (ug/L)	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite

Compliance Sampling Location: Outfall # 001

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	Daily Maximum	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/week	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Grab
CBOD5	205	330 Wkly Avg	XXX	25.0	40.0	50	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS	250	375 Wkly Avg	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
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	24-Hr Composite
Ammonia	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	24-Hr Composite

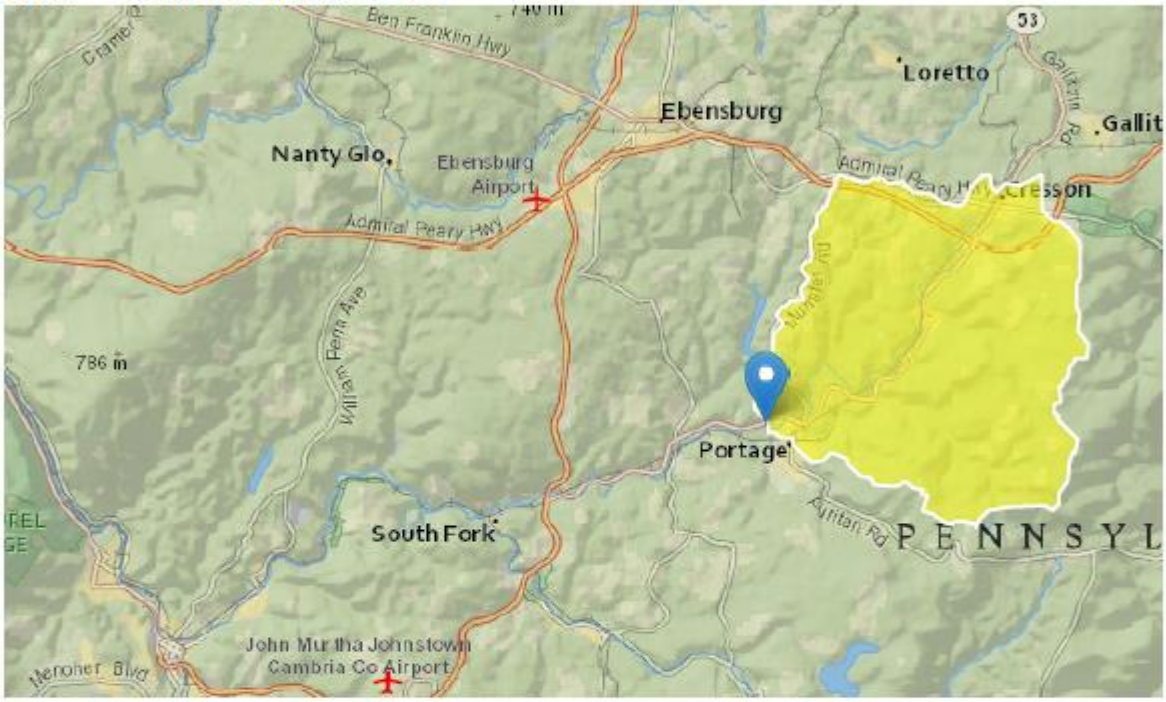
Outfall 001, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Aluminum	XXX	XXX	XXX	0.75	0.75 Daily Max	XXX	2/month	24-Hr Composite
Hexavalent Chromium (ug/L)	Report	Report	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite
Total Copper (ug/L)	0.39	0.62	XXX	23.7	36.9 Daily Max	59.1	1/week	24-Hr Composite
Total Iron	XXX	XXX	XXX	1.5	3.0 Daily Max	XXX	2/month	24-Hr Composite
Total Manganese	XXX	XXX	XXX	1.0	2.0 Daily Max	XXX	2/month	24-Hr Composite

Compliance Sampling Location: Outfall # 001

StreamStats Report

Region ID: PA
Workspace ID: PA20210623112146224000
Clicked Point (Latitude, Longitude): 40.39354, -78.68346
Time: 2021-06-23 07:22:04 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	37.2	square miles
ELEV	Mean Basin Elevation	2160	feet
PRECIP	Mean Annual Precipitation	48	inches

Low-Flow Statistics Parameters [100.0 Percent (37.2 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	37.2	square miles	2.33	1720
ELEV	Mean Basin Elevation	2160	feet	898	2700
PRECIP	Mean Annual Precipitation	48	inches	38.7	47.9

Low-Flow Statistics Disclaimers [100.0 Percent (37.2 square miles) Low Flow Region 3]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [100.0 Percent (37.2 square miles) Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	6.68	ft^3/s
30 Day 2 Year Low Flow	9.36	ft^3/s
7 Day 10 Year Low Flow	3.76	ft^3/s
30 Day 10 Year Low Flow	4.67	ft^3/s
90 Day 10 Year Low Flow	6.56	ft^3/s

Low-Flow Statistics Citations

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

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MEMO

TO	William Mitchell Project Manager Clean Water Program
FROM	Jamie Detweiler Aquatic Biologist 2 Clean Water Program
THROUGH	Richard Spear Aquatic Biologist 3 Clean Water Program
DATE	July 13, 2021
RE	Cause and Effect Survey Little Conemaugh River State Water Plan: 18E Hydrologic Unit Code: 05010007 Stream Code: 45815 Aquatic Life Use Designation: CWF Portage Area Sewage Authority Waste Water Treatment Plant Cambria Township, Cambria County

INTRODUCTION

On May 17, 2021, at the request of William Mitchell of the Clean Water Program, a cause and effect survey was conducted on Little Conemaugh River, in the vicinity of the Portage Area Sewage Authority Wastewater Treatment Plant (WWTP), located in Portage Township, Cambria County (Figure 1). The previous data collection and assessment efforts demonstrated that this reach of Little Conemaugh River was not attaining its designated aquatic life use as defined by Chapter 93, caused by metals and pH and the source being acid mine drainage (AMD) as listed in the 303(d) list of the Integrated Report. The limits of the previous National Pollutant Discharge Elimination System (NPDES) permit for the plant's discharge had been affected by the stream's non-attainment status. Mr. Mitchell wanted to know if instream conditions may have changed since the previous assessment that had indicted non-attainment.

The Portage Area Sewage Authority Wastewater Treatment Plant outfall (PA 0032611) is located at approximately Latitude: 40.3935198, Longitude: -78.684066. The water discharges to an approximately 20-meter-long open channel that flows into the Little Conemaugh River along the river's left descending bank (Figure 2). Since the WWTP is a batch plant and only discharges certain times of the day, the flow

in the channel is slow, except when the plant is discharging. Approximately 65 meters upstream from where the discharge reaches the Little Conemaugh River channel, a large AMD discharge enters the river, causing the river to turn orange. The floodplain where the Portage Wastewater Treatment Site is located is forested, except for the area occupied by the WWTP and State Route 53 (Portage Street).

According to Stream Stats, at the location where the outfall is located, the drainage area is approximately 37.2 square miles (Figure 3). Land use throughout the basin is predominantly forested (approximately 78%) and urban (approximately 8%). According to the aerial, the rest of the watershed appears to be agriculture (approximately 10%) and industrial (approximately 4%). Little Conemaugh River is in the Conemaugh River; Stony Creek River State Water Plan (SWP 18E) and the Conemaugh Hydrologic Unit (Hydrologic Unit Code 05010007). Currently, the Little Conemaugh River (Stream Code 45815) is listed as not attaining its designated Aquatic Life Use for Cold Water Fishery (CWF). The stream was previously assessed as not attaining its Chapter 93 designated use due to acid mine drainage, caused by metals and pH.

The Portage Area Sewer Authority Wastewater Treatment Plant is a Sequencing Batch Reactor with Ultraviolet disinfection that serves approximately 5,200 people in Portage Borough and Portage Township. The Average Annual Design flow for the plant is 2.0 Million Gallons per Day. The previous permit was issued on July 1, 2013 and expired on June 30, 2018.

SAMPLING METHODOLOGY

Cause and effect surveys are designed to investigate possible relationships between point or nonpoint sources of conventional pollutants and known or suspected instream water quality problems.

On May 17, 2021, basic water quality (Table 1) and macroinvertebrates (Table 2) were examined at two locations within the Little Conemaugh River (Figure 2). The upstream site was located approximately 5 meters upstream of where the Portage Area Sewage Authority's discharge enters the Little Conemaugh (Figures 4 & 5). The downstream location was approximately 100 meters downstream of the outfall location (Figures 6 & 7).

Basic water quality parameters were examined using a field meter and additional water chemistry and macroinvertebrates were collected and subsampled according to the Department's Water Quality Monitoring Protocols for Streams and Rivers 2018 (Monitoring Book), which can be found by following this link:
http://files.dep.state.pa.us/Water/Drinking%20Water%20and%20Facility%20Regulation/WaterQualityPortalFiles/Technical%20Documentation/MONITORING_BOOK.pdf

The results were analyzed according to the Department's Assessment Methodology for Rivers and Streams 2018 (Assessment Book), which can be found by following this link:
http://files.dep.state.pa.us/Water/Drinking%20Water%20and%20Facility%20Regulation/WaterQualityPortalFiles/Methodology/2015%20Methodology/Assessment_Book.pdf

RESULTS

Upstream station

The upstream station was located just upstream of where the WWTP's discharge enters the Little Conemaugh River. Since the entire downstream sample is affected by the aforementioned AMD discharge, care was taken to ensure that the upstream water sample and the entire upstream invertebrate sample was taken downstream of where the AMD enters the Little Conemaugh. At this location, the WWTP was located on the left descending bank and Rt 53 was on the right descending bank. pH taken with the field meter was 6.06, the temperature was 9.8°C, dissolved oxygen was 10.60 mg/L, and specific conductance was 410 umhos/cm. The habitat score was 172, which consisted of mostly optimal and sub optimal scores. The lowest score was due to lack of forested riparian zone.

The macroinvertebrate subsample contained 80.2 individuals that were picked from the entire sample (28 out of 28 possible grids) (Table 3). The dominant taxa were Chironomids, with a total of 16 taxa being identified. Two genera of mayflies, 2 genera of stoneflies, and 4 genera of caddisflies were all found in the sample, and together made up 25.6% of the sample. Because there were less than 160 organisms in the sample, the Assessment Book (2018) states that it may not be appropriate to use the Index of Biotic Integrity (IBI), which was calculated to be 38.1. The book also states that low abundance often indicates toxic pollution or severe habitat alterations, which must be considered in making holistic stream assessments. We found no evidence of severe habitat alterations, but AMD impacts were obvious, indicating that this may be the reason why this section of the Little Conemaugh River is not attaining its aquatic life use. From the water quality results, total aluminum (1170 ug/L) and total iron (3669 ug/L) exceeded Chapter 93 standards and also indicate AMD impacts.
While Chapter 93 does not have limits for specific conductance or total dissolved solids, the upstream results for these parameters are considered to be medium stressor (410 mg/L and 254 mg/L, respectively), according to Virginia Department of Environmental Quality's Stressor Analysis in Virginia:Data Collection and Stressor Thresholds (Stressor Analysis in Virginia, 2017), which can be found by following this link: https://www.deq.virginia.gov/water/water-quality/monitoring/probabilistic-monitoring

Downstream Station

The downstream station was approximately 100 meters downstream from the outfall. State Route 53 follows the right descending bank in this area. A wide, forested floodplain is on the left descending bank. The pH as this location was 6.16, the temperature was 10.60°C, the dissolved oxygen was 10.68 mg/L, and the specific conductance was 383.7 umhos/cm. The habitat score within this segment was 193, with all parameters being optimal or suboptimal.

The macroinvertebrate subsample consisted of 71 individuals from the entire sample (28 out of 28 grids) (Table 4). The dominant taxa was Oligochaeta, and 14 taxa were identified. One genera of mayfly, three genera of stonefly, and four genera of caddisflies were found in the sample. In total, they made up 31% of the sample. There were 6 taxa that were found in the upstream sample but not in the downstream

sample. There were 4 taxa that were found in the downstream sample that were not found in the upstream sample. Because there were less than 160 organisms in the sample, the Assessment Book (2018) states that it may not be appropriate to use the Index of Biotic Integrity (IBI), which was calculated to be 38.8. Again, we found no evidence of severe habitat alterations, but obvious AMD impacts, indicating that this section of the Little Conemaugh River is not attaining its aquatic life use. Total aluminum (1300 ug/L) and total iron (4330 ug/L) exceeded Chapter 93 standards and also indicate AMD impacts.

While Chapter 93 does not have limits for specific conductance, the downstream result for this parameter is considered to be medium (383.7 mg/L) by Stressor Analysis in Virginia, 2017.

DISCUSSION AND CONCLUSIONS

The objective of this survey was to determine if the discharge from the Portage Area Sewage Authority WWTP is affecting the aquatic life, water quality, and/or physical characteristics of the Little Conemaugh River.

Findings from this survey suggest that the river is heavily impacted by the AMD discharge. Therefore, any impacts, if present, from the WWTP discharge were not detected. The IBI scores for both sites could not be calculated with confidence because the individual count was below 180 individuals. The water quality parameters indicate that the river is impacted upstream of the outfall and the quality does not improve very much below the WWTP outfall. While we cannot use the IBI scores, the low abundance of organisms indicates toxic pollution.

The results from this survey indicate that the river is still not attaining its Chapter 93 Aquatic Life Use, with the cause being Metals (Iron and Aluminum) and the Source being AMD discharge.

cc: Stream File – South Branch Blacklick Creek
James Vanek – SWRO, Acting Environmental Group Manager
Christopher Kriley – SWRO, Environmental Program Manager
Mark Hogar– CO, Acting Environmental Group Manager

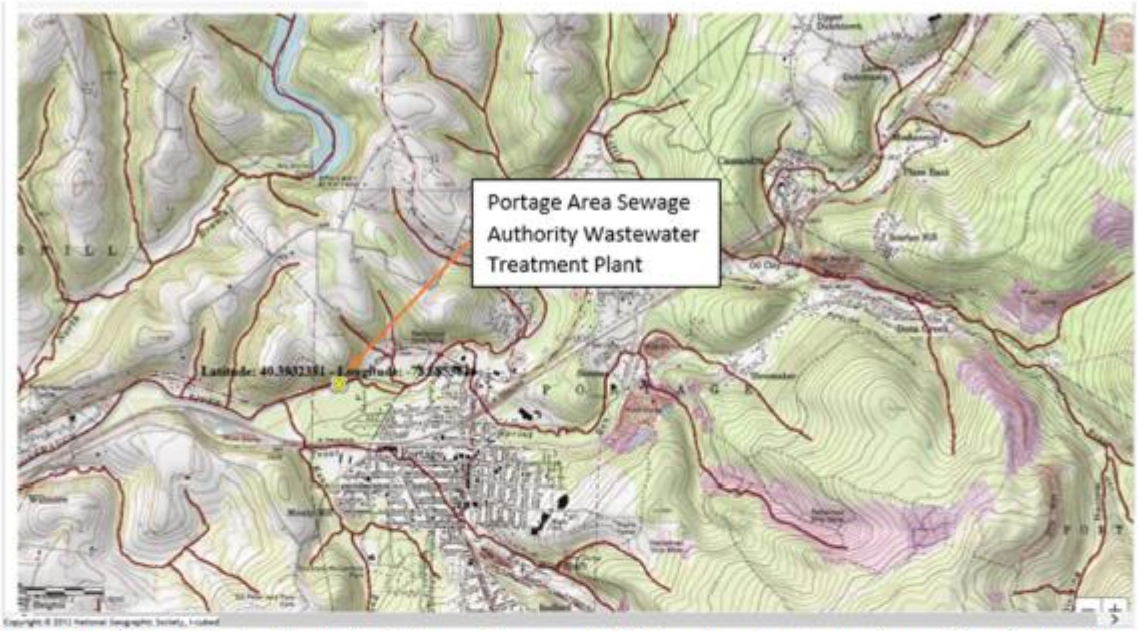

Figure 1. United States Geological Survey Topographic Map showing the location of the Portage Area Sewage Authority Wastewater Treatment Plant and Little Conemaugh River.

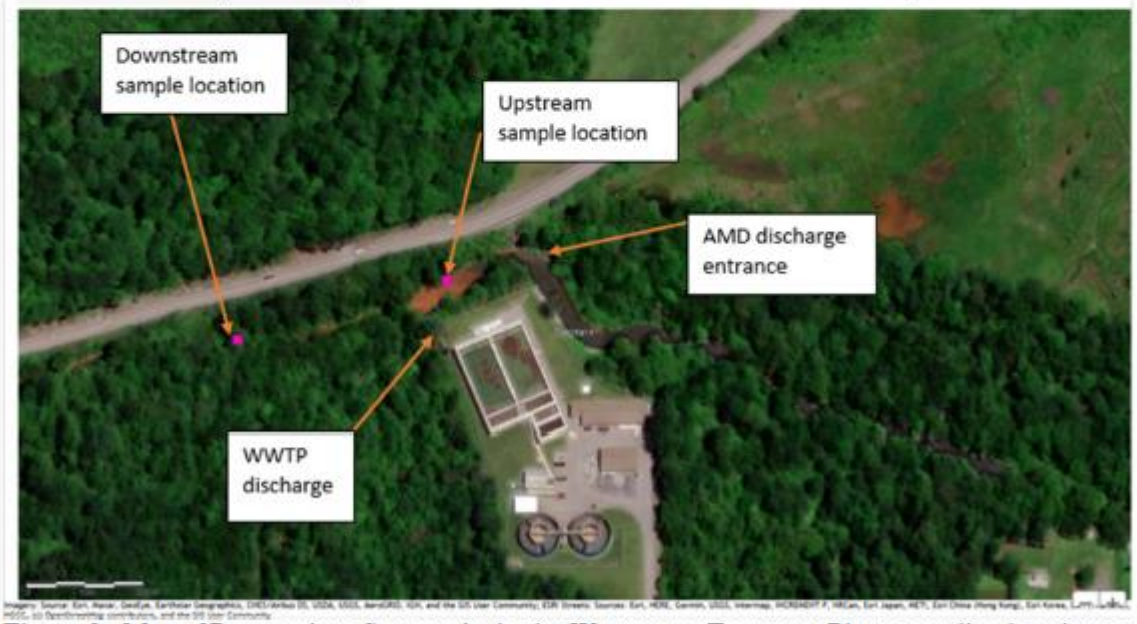

Figure 2. Map of Portage Area Sewage Authority Wastewater Treatment Plant, sampling locations, and Little Conemaugh River.

StreamStats Report

Region ID:	PA
Workspace ID:	PA20210706143501098000
Clicked Point (Latitude, Longitude):	40.39351, -78.68410
Time:	2021-07-06 10:35:18 -0400

Figure 3. USGS Streamstats report for the point of Portage Area Sewage Authority Discharge to Little Conemaugh River.

- 7 -

Table 1. Water quality parameters from the Little Conemaugh River at the survey locations, upstream and downstream of the Wastewater Treatment Plant.

TEST_LONG_DESC	Unit	Up stream result	Lab comment	Down stream result	Lab comment
DISSOLVED OXYGEN - FIELD BY MEMBRANE ELECTRODE****	mg/L	10.6		10.68	
PH - FIELD****	pH units	6.06		6.16	
Specific Conductance - Field	umhos/cm	410		383.7	
TEMPERATURE - FIELD - THERMOMETRIC****	C	9.8		10.6	
Turbidity, Field****	NTU	2.8		3.2	
ALKALINITY AS CaCO3 @ pH 4.5	mg/L	0		20.4	
ALUMINUM, DISSOLVED (WATER & WASTE) BY ICPMS	ug/L	65.7		43.9	
ALUMINUM, TOTAL (WATER & WASTE) ICPMS	ug/L	1170		1300	
AMMONIA DISSOLVED AS NITROGEN	mg/L	0.112	Answer Rechecked By Analyst	0.124	Answer Rechecked By Analyst
AMMONIA TOTAL AS NITROGEN	mg/L	0.09	Answer Rechecked By Analyst	0.08	Answer Rechecked By Analyst
BARIUM, TOTAL (WATER & WASTE) BY ICP	ug/L	35		34	
BORON, TOTAL (WATER & WASTE) BY ICP	ug/L	<200		<200	
CADMIUM, DISSOLVED (WATER & WASTE) BY ICPMS	ug/L	<0.2		<0.2	
CALCIUM, TOTAL (WATER & WASTE) BY ICP	mg/L	40.12		40.9	
COPPER, DISSOLVED (WATER & WASTE) BY ICPMS	ug/L	<4		<4	
COPPER, TOTAL (WATER & WASTE) BY ICPMS	ug/L	<4		<4	
Dissolve Nitrate & Nitrite Nitrogen	mg/L	0.46		0.47	
Dissolve Ortho Phosphorus	mg/L	<0.01		<0.01	Possible Matrix Interference

TEST_LONG_DESC	Unit	Up stream result	Lab comment	Down stream result	Lab comment
Dissolved Nitrogen as N	mg/L	0.661		0.919	Dissolved result > Total result by more than 10%
Dissolved Phosphorus as P	mg/L	<0.01		0.024	
HARDNESS, TOTAL (CALCULATED)	mg/L	154	Accredited by NJ only - accreditation not available from PA	157	Accredited by NJ only - accreditation not available from PA
IRON, DISSOLVED (WATER & WASTE) BY ICP	ug/L	4174		3585	
IRON, TOTAL (WATER & WASTE) BY ICP	ug/L	3669		4330	
LEAD, DISSOLVED (WATER & WASTE) BY ICPMS	ug/L	<1		<1	
LEAD, TOTAL (WATER & WASTE) BY ICPMS	ug/L	<1		<1	
LITHIUM, DISSOLVED (WATER &WASTE) BY ICP	ug/L	<25		<25	
LITHIUM, TOTAL (WATER & WASTE) BY ICP	ug/L	<25		<25	
Low Bromide by IC	ug/L	<25		<25	
MAGNESIUM, TOTAL (WATER & WASTE) BY ICP	mg/L	12.97		13.22	
MANGANESE, DISSOLVED (WATER & WASTE) BY ICP	ug/L	762		745	
MANGANESE, TOTAL (WATER & WASTE) BY ICP	ug/L	661		744	
NICKEL, DISSOLVED (WATER & WASTE) BY ICP	ug/L	<50		<50	
NICKEL, TOTAL (WATER & WASTE) BY ICP	ug/L	<50		<50	
OSMOTIC PRESSURE, MOSM/KG	mosm/kg	4		3	
pH, Lab (Electrometric)	pH units	6.6	Holding Time Exceeded	6.6	Holding Time Exceeded
POTASSIUM, TOTAL (WATER & WASTE) BY ICP	mg/L	1.93		2	

TEST_LONG_DESC	Unit	Up stream result	Lab comment	Down stream result	Lab comment
SELENIUM, TOTAL (WATER & WASTE) BY ICPMS	ug/L	<7		<7	
SODIUM, TOTAL (WATER & WASTE) BY ICP	mg/L	12.67		13.05	
SPECIFIC CONDUCTIVITY @ 25.0 C	umhos/cm	389		380	
STRONTIUM, TOTAL (WATER & WASTE) BY ICP	ug/L	187		190	
Temperature at which pH is measured	C	19.31		19.61	
Total Chloride-Ion Chromatograph	mg/L	16.34		16.73	
TOTAL DISSOLVED SOLIDS @ 180C BY USGS-I-1750	mg/L	254		248	
Total Nitrate & Nitrite Nitrogen	mg/L	0.46		0.44	
Total Nitrogen as N	mg/L	0.63		0.59	Dissolved result > Total result by more than 10%
Total Organic Carbon	mg/L	1.25		1.23	
Total Ortho Phosphorus as P	mg/L	0.01	Possible Matrix Interference	<0.01	
Total Phosphorus as P	mg/L	0.014		0.026	
Total Sulfate-Ion Chromatograph	mg/L	134.25		129.64	
TOTAL SUSPENDED SOLIDS	mg/L	12		10	
ZINC, DISSOLVED (WATER & WASTE) BY ICP	ug/L	60		58	
ZINC, TOTAL (WATER & WASTE) BY ICP	ug/L	55		54	

< indicates result is below reporting limit

Table 2. Aquatic macroinvertebrates observed the sampling locations upstream and downstream of the Portage Area Sewage Authority Wastewater Treatment Plant.

Taxa	Family	Upstream	Downstream
Isotomidae	Isotomidae (Springtails)	1	
Maccaffertium	Heptageniidae (Flatheaded Mayflies)	1	
Eurylophella	Ephemerellidae (Spiny Crawler Mayflies)	2	1
Amphinemura	Nemouridae (Forestflies)	1	2
Leuctra	Leucridae (Needleflies)		3
Alloperla	Chloroperlidae (Green Stoneflies)	1	1
Polycentropus	Polycentropodidae (Tube Maker Caddisflies)	2	2
Chimarra	Philopotamidae (Fingernet Caddisflies)		1
Cheumatopsyche	Hydropsychidae (Net Spinning Caddisflies)	1	1
Hydropsyche	Hydropsychidae (Net Spinning Caddisflies)	12	11
Lepidostoma	Lepidostomatidae (Little Brown Sedges)	1	
Staphylinidae	Staphilinidae (Rove Beetle)	1	
Psephenus	Psephenidae (Water Penny)		1
Oulimnius	Elmidae (Riffle Beetles)	2	2
Optioservus	Elmidae (Riffle Beetles)		2
Dolichopodidae	Dolichopodidae (Long-legged Flies)	1	
Hemerodromia	Empididae (Dance Fly)	1	
Chironomidae	Chironomidae (Non-Biting Midges)	39	20
Lymnaeidae	Lymnaeidae (Pond Snails)	1	1
Oligochaeta	Oligochaeta (Segmented Worms)	15	23
Total		82	71
IBI		38.1	38.8

Figure 4. Sampling location located upstream of the Portage Area Sewage Authority Wastewater Treatment Plant Outfall, facing upstream.

Figure 5. Sampling location located upstream of the Portage Area Sewage Authority Wastewater Treatment Plant Outfall, facing downstream.

- 12 -

Figure 6. Sampling location located downstream of the Portage Area Sewage Authority Wastewater Treatment Plant Outfall, facing upstream.

Figure 7. Sampling location located downstream of the Portage Area Sewage Authority Wastewater Treatment Plant Outfall, facing downstream.

Table 3. Bureau of Clean Water Macroinvertebrate Sample Summary for the location upstream of the Portage Area Sewage Authority Wastewater Treatment Plant Outfall.

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BUREAU OF CLEAN WATER
MACROINVERTEBRATE SAMPLE SUMMARY
7/7/2021 4:07:50 PM

Export Taxa to Excel | Export Data to Excel

SAMPLE SUMMARY

STATION ID:	SECONDARY STATION ID:	LATITUDE:	LONGITUDE:	
20210517-1030-jadehweile		40.39351980	-78.68406610	
STREAM NAME: Little Conemaugh River (01198086)		HUC8 05010007 Conemaugh, Pennsylvania		
SURVEY ID: 72933		METHOD: 6-Dframe Composite, 200 subsample		
SUBSAMPLED BY: Jamie Detweiler	IDENTIFIED BY: Jamie Detweiler	QUALITY ASSURED: N	QUALITY ASSURED BY:	PASSED QUALITY ASSURANCE: N

STATION LOCATION COMMENT:
upstream of Portage STP, downstream of borehole

BIOLOGY / HABITAT COMMENT:
fish eggs

LAND USE COMMENT:

IMPAIRMENT COMMENT:
There was an AMD seep discharging to the stream, approximately 200 yards upstream from the upstream water chemistry sample site. the water coming from the borehole was bright orange and can be seen in the aerial. Since this was a C&E study, focusing on the STP, we took care to keep the collection below the seep, but above the STP discharge
All grids were picked and only 82 organisms were found

TAXA

grids from first pan = 28 | # grids from second pan = 0 | Subsample Size = 82

TAXA NAME	INDIVIDUALS	PTV	FFG	BCG COLD	BCG WARM
Isotomidae	1				
Maccaffertium	1	3	SC	3	3
Eurylophella	2	4	SC	3	2
Amphinemura	1	3	SH	3	3
Alloperla	1	0	CG	1	1
Polycentropus	2	6	FC	4	4
Cheumatopsyche	1	6	FC	5	5
Hydropsyche	12	5	FC	5	5
Lepidostoma	1	1	SH	2	2
Staphylinidae	1	5	PR		
Oulimnius	2	5	SC	3	2
Dolichopodidae	1	4	PR		
Hexatoma	1	6	PR	4	4
Chironomidae	39	6	CG	5	5
Lumbricidae	1	7	SC	5	5
Oligochaeta	15	10	CG	5	5

METRICS

Subsample out of range!
Interpret metrics and IBI scores

Freestone Riffle-Run
6D200

SSRS SLIMS 043 Ver 1.1

Page 1 of 3

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BUREAU OF CLEAN WATER
MACROINVERTEBRATE SAMPLE SUMMARY
7/7/2021 4:07:50 PM

AT YOUR OWN PERIL!

METRIC NAME	RAW VALUE	2013 SMALL	2013 LARGE	2D100	MULTIHABITAT POOL GLIDE	LIMESTONE 2009
Total Richness	16	48.5	51.6		51.6	88.9
Ephemeroptera Richness	2				33.3	
Trichoptera Richness	4				36.4	
EPT Richness	8			52.3	47.1	100.0
Trichoptera Richness (PTV 0-4)	1			27.8		
EPT Richness (PTV 0-4)	5	26.3	31.3			
Becks Index (version 3)	5	13.2	22.7			
Becks Index (version 4)	8			40.2	36.4	66.7
FC + PR + SH Richness	8			69.0		
Hilsenhoff Biotic Index	6.21	46.7	54.5	56.2		61.5
% Sensitive Individuals (PTV 0-3)	4.90	5.8	7.3			
% Tolerant Individuals (PTV 7-10)	15.50					81.7
Shannon Diversity	1.75	61.2	61.2		72.0	82.2
	IBI SCORE	33.6	38.1	49.1	46.1	80.2

% Ephemeroptera	3.7	% Ephemeroptera (PTV 0-4)	3.7	% Dominant Taxon	47.6	BCG Richness Ratio	0.86
% Plecoptera	2.4	Ephemeroptera Richness (PTV 0-4)	2	% Chironomidae	47.6	BCG Individuals Ratio	0.11
% Trichoptera	19.5	Plecoptera Richness	2	% Simuliidae	0.0		
IMPAIRMENT							
Not Impaired	Y	Insufficient Data	Y				

HABITAT							
Instream Cover	19	Substrate / Cover		Frequency of Riffles	20	Bank Vegetation	10
Epifaunal Substrate	19	Velocity/Depth Regimes	19	Channel Flow Status	16	Disruptive Pressure	10
Embeddedness	13	Pool Variability		Channel Alteration	11	Riparian Zone	11
Pool Substrate		Sediment Deposition	13	Condition of Banks	11		
Pool-Glide Assessment? N		Instream Score = 64		Riparian Score = 32		Total Score = 172	

FIELD MEASUREMENTS					
Temperature (°C)	6.06	Dissolved Oxygen (mg/L)	10.6	Flow (CFS)	
pH	6.06	Total Alkalinity (mg/L as CaCO3)		Conductivity (uS/cm)	410

WATER CHEMISTRY			
Collector ID	0725	Sequence Number	313

SSRS SLIMS 043 Ver 1.1

Page 2 of 3

- 15 -

Table 4. Bureau of Clean Water Macroinvertebrate Sample Summary for the location downstream of the Portage Area Sewage Authority Wastewater Treatment Plant Outfall.

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BUREAU OF CLEAN WATER
MACROINVERTEBRATE SAMPLE SUMMARY
7/7/2021 4:13:41 PM

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SAMPLE SUMMARY

STATION ID: 20210517-1100-jadetweile	**SECONDARY STATION ID:**	**LATITUDE:** 40.39323810	**LONGITUDE:** -78.68536240	
STREAM NAME: Little Conemaugh River (01198086)		**HUC8** 05010007 Conemaugh, Pennsylvania		
SURVEY ID: 72932		**METHOD:** 6-Dframe Composite, 200 subsample		
SUBSAMPLED BY: Jamie Detweiler	**IDENTIFIED BY:** Jamie Detweiler	**QUALITY ASSURED:** N	**QUALITY ASSURED BY:**	**PASSED QUALITY ASSURANCE:** N
STATION LOCATION COMMENT: Downstream of the Portage STP; Downstream of a borehole				
BIOLOGY / HABITAT COMMENT:				
LAND USE COMMENT:				
IMPAIRMENT COMMENT: There was an AMD seep discharging to the stream, approximately 200 yards upstream from the upstream water chemistry sample site. the water coming from the borehole was bright orange and can be seen in the arials.				

TAXA

# grids from first pan = 28	# grids from second pan =	Subsample Size = 71

TAXA NAME	INDIVIDUALS	PTV	FFG	BCG COLD	BCG WARM
Eurylophella	1	4	SC	3	2
Amphinemura	2	3	SH	3	3
Leuctra	3	0	SH	2	2
Alloperla	1	0	CG	1	1
Chimarra	1	4	FC	4	4
Polycentropus	2	6	FC	4	4
Cheumatopsyche	1	6	FC	5	5
Hydropsyche	11	5	FC	5	5
Psephenus	1	4	SC	4	4
Optioservus	2	4	SC	4	4
Oulimnius	2	5	SC	3	2
Chironomidae	20	6	CG	5	5
Lymnaeidae	1	7	SC	5	5
Oligochaeta	23	10	CG	5	5

METRICS

Subsample out of range!
Interpret metrics and IBI scores
AT YOUR OWN PERIL!

Freestone Riffle-Run
6D200

METRIC NAME	RAW VALUE	2013 SMALL	2013 LARGE	2D100	MULTIHABITAT POOL GLIDE	LIMESTONE 2009
Total Richness	14	42.4	45.2		46.2	77.8

SSRS_SLIMS_043 Ver 1.1

Page 1 of 3

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MACROINVERTEBRATE SAMPLE SUMMARY
7/7/2021 4:13:41 PM

Ephemeroptera Richness	1				16.7	
Trichoptera Richness	4				36.4	
EPT Richness	8			52.3	47.1	100.0
Trichoptera Richness (PTV 0-4)	1			27.8		
EPT Richness (PTV 0-4)	5	26.3	31.3			
Becks Index (version 3)	6	15.8	27.3			
Becks Index (version 4)	9			45.2	40.9	75.0
FC + PR + SH Richness	6			51.7		
Hilsenhoff Biotic Index	6.56	42.4	49.5	51.0		55.8
% Sensitive Individuals (PTV 0-3)	8.50	10.1	12.7			
% Tolerant Individuals (PTV 7-10)	33.80					67.2
Shannon Diversity	1.91	66.8	66.8		78.6	89.7
	IBI SCORE	34.0	38.8	45.6	44.1	77.6

% Ephemeroptera	1.4	% Ephemeroptera (PTV 0-4)	1.4	% Dominant Taxon	32.4	BCG Richness Ratio	0.56
% Plecoptera	8.5	Ephemeroptera Richness (PTV 0-4)	1	% Chironomidae	28.2	BCG Individuals Ratio	0.15
% Trichoptera	21.1	Plecoptera Richness	3	% Simulidae	0.0		
IMPAIRMENT							
Not Impaired	Y	Insufficient Data	Y				

HABITAT							
Instream Cover	16	Substrate / Cover		Frequency of Riffles	20	Bank Vegetation	18
Epifaunal Substrate	15	Velocity/Depth Regimes	16	Channel Flow Status	15	Disruptive Pressure	17
Embeddedness	12	Pool Variability		Channel Alteration	16	Riparian Zone	15
Pool Substrate		Sediment Deposition	15	Condition of Banks	18		
Pool-Glide Assessment? N		Instream Score = 58		Riparian Score = 51		Total Score = 193	

FIELD MEASUREMENTS					
Temperature (°C)	10.6	Dissolved Oxygen (mg/L)	10.68	Flow (CFS)	
pH	6.16	Total Alkalinity (mg/L as CaCO3)		Conductivity (uS/cm)	383.7

WATER CHEMISTRY			
Collector ID	0725	Sequence Number	312

Toxics Management Spreadsheet Version 1.3 – Annual Design Flow 2.0 MGD

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Portage Area STP** NPDES Permit No.: **PA0032611** 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	145	7	1	1				

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc	0 if left blank: Stream Conc	0.5 if left blank: Daily CV	0.5 if left blank: Hourly CV	0 if left blank: Strea m CV	0 if left blank: Fate Coeff	0 if left blank: FOS	1 if left blank: Criteri a Mod	1 if left blank: Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		288									
	Chloride (PWS)	mg/L		62									
	Bromide	mg/L		0.21									
	Sulfate (PWS)	mg/L		63.4									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		9									
	Total Antimony	µg/L	<	2									
	Total Arsenic	µg/L	<	3									
	Total Barium	µg/L		51									
	Total Beryllium	µg/L	<	30									
	Total Boron	µg/L		167									
	Total Cadmium	µg/L	<	0.16									
	Total Chromium (III)	µg/L	<	0.4									
	Hexavalent Chromium	µg/L		3.2									
	Total Cobalt	µg/L		1									
	Total Copper	µg/L		52									
	Free Cyanide	µg/L	<	1.2									
	Total Cyanide	µg/L	<	5									
	Dissolved Iron	µg/L		28									
	Total Iron	µg/L		16									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		15									
	Total Mercury	µg/L	<	0.04									
	Total Nickel	µg/L		6									
	Total Phenols (Phenolics) (PWS)	µg/L	<	75									
	Total Selenium	µg/L	<	5									
	Total Silver	µg/L	<	0.33									
	Total Thallium	µg/L	<	1									
	Total Zinc	µg/L		116									
	Total Molybdenum	µg/L	<	2									
	Acrolein	µg/L	<	1.9									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	5									
	Benzene	µg/L	<	0.23									
	Bromoform	µg/L	<	1									

Group 3	Carbon Tetrachloride	µg/L	<	0.31									
	Chlorobenzene	µg/L		1									
	Chlorodibromomethane	µg/L	<	0.45									
	Chloroethane	µg/L	<	1									
	2-Chloroethyl Vinyl Ether	µg/L	<	2									
	Chloroform	µg/L	<	1									
	Dichlorobromomethane	µg/L	<	0.27									
	1,1-Dichloroethane	µg/L	<	1									
	1,2-Dichloroethane	µg/L	<	0.32									
	1,1-Dichloroethylene	µg/L	<	1									
	1,2-Dichloropropane	µg/L	<	1									
	1,3-Dichloropropylene	µg/L	<	0.47									
	1,4-Dioxane	µg/L	<	2.9									
	Ethylbenzene	µg/L	<	1									
	Methyl Bromide	µg/L		12.8									
	Methyl Chloride	µg/L	<	1									
	Methylene Chloride	µg/L	<	1									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.34									
	Tetrachloroethylene	µg/L	<	0.35									
	Toluene	µg/L	<	1									
	1,2-trans-Dichloroethylene	µg/L	<	1									
	1,1,1-Trichloroethane	µg/L	<	1									
	1,1,2-Trichloroethane	µg/L	<	0.33									
	Trichloroethylene	µg/L	<	1									
	Vinyl Chloride	µg/L	<	0.3									
Group 4	2-Chlorophenol	µg/L	<	2.9									
	2,4-Dichlorophenol	µg/L	<	2.9									
	2,4-Dimethylphenol	µg/L	<	2.9									
	4,6-Dinitro-o-Cresol	µg/L	<	5.9									
	2,4-Dinitrophenol	µg/L	<	5.9									
	2-Nitrophenol	µg/L	<	2.9									
	4-Nitrophenol	µg/L	<	2.9									
	p-Chloro-m-Cresol	µg/L	<	2.9									
	Pentachlorophenol	µg/L	<	5.9									
	Phenol	µg/L	<	7.8									
	2,4,6-Trichlorophenol	µg/L	<	3									
Group 5	Acenaphthene	µg/L	<	1.5									
	Acenaphthylene	µg/L	<	1.5									
	Anthracene	µg/L	<	1.5									
	Benzidine	µg/L	<	7.8									
	Benzo(a)Anthracene	µg/L	<	1.5									
	Benzo(a)Pyrene	µg/L	<	1.5									
	3,4-Benzofluoranthene	µg/L	<	1.5									
	Benzo(ghi)Perylene	µg/L	<	1.5									
	Benzo(k)Fluoranthene	µg/L	<	1.5									
	Bis(2-Chloroethoxy)Methane	µg/L	<	2.9									
	Bis(2-Chloroethyl)Ether	µg/L	<	2.9									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	2.9									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	2.2									
	4-Bromophenyl Phenyl Ether	µg/L	<	2.9									
	Butyl Benzyl Phthalate	µg/L	<	2.8									
	2-Chloronaphthalene	µg/L	<	2.9									
	4-Chlorophenyl Phenyl Ether	µg/L	<	2.9									
	Chrysene	µg/L	<	1.5									
	Dibenzo(a,h)Anthrancene	µg/L	<	1.5									
	1,2-Dichlorobenzene	µg/L	<	1									
	1,3-Dichlorobenzene	µg/L	<	1									
	1,4-Dichlorobenzene	µg/L	<	1									
	3,3-Dichlorobenzidine	µg/L	<	2.9									
	Diethyl Phthalate	µg/L	<	2.9									
	Dimethyl Phthalate	µg/L	<	2.9									
	Di-n-Butyl Phthalate	µg/L	<	2.8									
	2,4-Dinitrotoluene	µg/L	<	2.9									

	2,6-Dinitrotoluene	µg/L	<	2.9										
	Di-n-Octyl Phthalate	µg/L	<	2.9										
	1,2-Diphenylhydrazine	µg/L	<	2.9										
	Fluoranthene	µg/L	<	1.5										
	Fluorene	µg/L	<	1.5										
	Hexachlorobenzene	µg/L	<	2.9										
	Hexachlorobutadiene	µg/L	<	0.48										
	Hexachlorocyclopentadiene	µg/L	<	2.9										
	Hexachloroethane	µg/L	<	1										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	1.5										
	Isophorone	µg/L	<	2.9										
	Naphthalene	µg/L	<	2										
	Nitrobenzene	µg/L	<	2.9										
	n-Nitrosodimethylamine	µg/L	<	2.9										
	n-Nitrosodi-n-Propylamine	µg/L	<	2.9										
	n-Nitrosodiphenylamine	µg/L	<	2.9										
	Phenanthrene	µg/L	<	1.5										
	Pyrene	µg/L	<	7.8										
	1,2,4-Trichlorobenzene	µg/L	<	0.12										
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 1.3, March 2021

Stream / Surface Water Information

Portage Area STP, NPDES Permit No. PA0032611, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: **Little Conemaugh River**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	045815	19.83	1600	37.2			Yes
End of Reach 1	045815	16.99	1540	78.14			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	19.83	0.101			10							100	7		
End of Reach 1	16.99	0.101													

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	19.83														
End of Reach 1	16.99														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Portage Area STP, NPDES Permit No. PA0032611, 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)
19.83	3.76		3.76	3.094	0.004	0.696	6.962	10.	0.273	0.635	0.544
16.99	7.89		7.89214								

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)
19.83	23.63		23.63	3.094	0.004	1.267	6.962	5.494	0.586	0.296	0.576
16.99	45.2		45.20								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.544 PMF: 1 Analysis Hardness (mg/l): 120.32 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	1,661	
Total Antimony	0	0		0	1,100	1,100	2,436	
Total Arsenic	0	0		0	340	340	753	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	46,501	
Total Boron	0	0		0	8,100	8,100	17,936	
Total Cadmium	0	0		0	2.410	2.57	5.7	Chem Translator of 0.936 applied
Total Chromium (III)	0	0		0	662.975	2,098	4,646	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	36.1	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	210	
Total Copper	0	0		0	15.998	16.7	36.9	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	48.7	

Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	78.946	103	229	Chem Translator of 0.764 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	3.65	Chem Translator of 0.85 applied
Total Nickel	0	0		0	547.566	549	1,215	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	4.422	5.2	11.5	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	144	
Total Zinc	0	0		0	137.067	140	310	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	6.64	
Acrylonitrile	0	0		0	650	650	1,439	
Benzene	0	0		0	640	640	1,417	
Bromoform	0	0		0	1,800	1,800	3,986	
Carbon Tetrachloride	0	0		0	2,800	2,800	6,200	
Chlorobenzene	0	0		0	1,200	1,200	2,657	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	39,858	
Chloroform	0	0		0	1,900	1,900	4,207	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	33,215	
1,1-Dichloroethylene	0	0		0	7,500	7,500	16,608	
1,2-Dichloropropane	0	0		0	11,000	11,000	24,358	
1,3-Dichloropropylene	0	0		0	310	310	686	
Ethylbenzene	0	0		0	2,900	2,900	6,422	
Methyl Bromide	0	0		0	550	550	1,218	
Methyl Chloride	0	0		0	28,000	28,000	62,002	
Methylene Chloride	0	0		0	12,000	12,000	26,572	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	2,214	
Tetrachloroethylene	0	0		0	700	700	1,550	
Toluene	0	0		0	1,700	1,700	3,764	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	15,058	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	6,643	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	7,529	
Trichloroethylene	0	0		0	2,300	2,300	5,093	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,240	
2,4-Dichlorophenol	0	0		0	1,700	1,700	3,764	
2,4-Dimethylphenol	0	0		0	660	660	1,461	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	177	
2,4-Dinitrophenol	0	0		0	660	660	1,461	
2-Nitrophenol	0	0		0	8,000	8,000	17,715	
4-Nitrophenol	0	0		0	2,300	2,300	5,093	
p-Chloro-m-Cresol	0	0		0	160	160	354	
Pentachlorophenol	0	0		0	8.723	8.72	19.3	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	1,019	

Acenaphthene	0	0		0	83	83.0	184	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	664	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.11	
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	66,431	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	9,965	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	598	
Butyl Benzyl Phthalate	0	0		0	140	140	310	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	1,816	
1,3-Dichlorobenzene	0	0		0	350	350	775	
1,4-Dichlorobenzene	0	0		0	730	730	1,616	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	8,857	
Dimethyl Phthalate	0	0		0	2,500	2,500	5,536	
Di-n-Butyl Phthalate	0	0		0	110	110	244	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	3,543	
2,6-Dinitrotoluene	0	0		0	990	990	2,192	
1,2-Diphenylhydrazine	0	0		0	15	15.0	33.2	
Fluoranthene	0	0		0	200	200	443	
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	22.1	
Hexachlorocyclopentadiene	0	0		0	5	5.0	11.1	
Hexachloroethane	0	0		0	60	60.0	133	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	22,144	
Naphthalene	0	0		0	140	140	310	
Nitrobenzene	0	0		0	4,000	4,000	8,857	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	37,644	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	664	
Phenanthrene	0	0		0	5	5.0	11.1	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	288	

☑ *CFC* CCT (min): 0.544 PMF: 1 Analysis Hardness (mg/l): 120.32 Analysis pH: 7.00

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

Chloride (PWS)	0	0		0	N/A	N/A	N/A	
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	487	
Total Arsenic	0	0		0	150	150	332	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	9,079	
Total Boron	0	0		0	1,600	1,600	3,543	
Total Cadmium	0	0		0	0.280	0.31	0.69	Chem Translator of 0.901 applied
Total Chromium (III)	0	0		0	86.239	100	222	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	23.0	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	42.1	
Total Copper	0	0		0	10.490	10.9	24.2	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	11.5	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	3,322	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.076	4.03	8.92	Chem Translator of 0.764 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	2.01	Chem Translator of 0.85 applied
Total Nickel	0	0		0	60.818	61.0	135	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	11.0	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	28.8	
Total Zinc	0	0		0	138.188	140	310	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	6.64	
Acrylonitrile	0	0		0	130	130	288	
Benzene	0	0		0	130	130	288	
Bromoform	0	0		0	370	370	819	
Carbon Tetrachloride	0	0		0	560	560	1,240	
Chlorobenzene	0	0		0	240	240	531	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	7,750	
Chloroform	0	0		0	390	390	864	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	6,864	
1,1-Dichloroethylene	0	0		0	1,500	1,500	3,322	
1,2-Dichloropropane	0	0		0	2,200	2,200	4,872	
1,3-Dichloropropylene	0	0		0	61	61.0	135	
Ethylbenzene	0	0		0	580	580	1,284	
Methyl Bromide	0	0		0	110	110	244	
Methyl Chloride	0	0		0	5,500	5,500	12,179	
Methylene Chloride	0	0		0	2,400	2,400	5,314	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	465	
Tetrachloroethylene	0	0		0	140	140	310	
Toluene	0	0		0	330	330	731	

1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	3,100	
1,1,1-Trichloroethane	0	0		0	610	610	1,351	
1,1,2-Trichloroethane	0	0		0	680	680	1,506	
Trichloroethylene	0	0		0	450	450	996	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	244	
2,4-Dichlorophenol	0	0		0	340	340	753	
2,4-Dimethylphenol	0	0		0	130	130	288	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	35.4	
2,4-Dinitrophenol	0	0		0	130	130	288	
2-Nitrophenol	0	0		0	1,600	1,600	3,543	
4-Nitrophenol	0	0		0	470	470	1,041	
p-Chloro-m-Cresol	0	0		0	500	500	1,107	
Pentachlorophenol	0	0		0	6.693	6.69	14.8	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	202	
Acenaphthene	0	0		0	17	17.0	37.6	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	131	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.22	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	13,286	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	2,015	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	120	
Butyl Benzyl Phthalate	0	0		0	35	35.0	77.5	
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	354	
1,3-Dichlorobenzene	0	0		0	69	69.0	153	
1,4-Dichlorobenzene	0	0		0	150	150	332	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	1,771	
Dimethyl Phthalate	0	0		0	500	500	1,107	
Di-n-Butyl Phthalate	0	0		0	21	21.0	46.5	
2,4-Dinitrotoluene	0	0		0	320	320	709	
2,6-Dinitrotoluene	0	0		0	200	200	443	
1,2-Diphenylhydrazine	0	0		0	3	3.0	6.64	
Fluoranthene	0	0		0	40	40.0	88.6	
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	4.43	

Hexachlorocyclopentadiene	0	0		0	1	1.0	2.21	
Hexachloroethane	0	0		0	12	12.0	26.6	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	4,650	
Naphthalene	0	0		0	43	43.0	95.2	
Nitrobenzene	0	0		0	810	810	1,794	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	7,529	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	131	
Phenanthrene	0	0		0	1	1.0	2.21	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	57.6	

☑ ***THH*** CCT (min): 0.544 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	12.4	
Total Arsenic	0	0		0	10	10.0	22.1	
Total Barium	0	0		0	2,400	2,400	5,314	
Total Boron	0	0		0	3,100	3,100	6,864	
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	8.86	
Dissolved Iron	0	0		0	300	300	664	
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	2,214	
Total Mercury	0	0		0	0.050	0.05	0.11	
Total Nickel	0	0		0	610	610	1,351	
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	0.53	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	6.64	
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	221	
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	73.1	
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	151	
Methyl Bromide	0	0		0	100	100.0	221	
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	126	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	221	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	22,144	
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	66.4	
2,4-Dichlorophenol	0	0		0	10	10.0	22.1	
2,4-Dimethylphenol	0	0		0	100	100.0	221	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	4.43	
2,4-Dinitrophenol	0	0		0	10	10.0	22.1	
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	8,857	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	155	
Anthracene	0	0		0	300	300	664	
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	443	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	

Butyl Benzyl Phthalate	0	0		0	0.1	0.1	0.22	
2-Chloronaphthalene	0	0		0	800	800	1,771	
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	2,214	
1,3-Dichlorobenzene	0	0		0	7	7.0	15.5	
1,4-Dichlorobenzene	0	0		0	300	300	664	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	1,329	
Dimethyl Phthalate	0	0		0	2,000	2,000	4,429	
Di-n-Butyl Phthalate	0	0		0	20	20.0	44.3	
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	44.3	
Fluorene	0	0		0	50	50.0	111	
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	8.86	
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	75.3	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	22.1	
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	44.3	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.16	

☑ *CRL* CCT (min): 0.576 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	0.52	
Benzene	0	0		0	0.58	0.58	5.01	
Bromoform	0	0		0	7	7.0	60.5	
Carbon Tetrachloride	0	0		0	0.4	0.4	3.45	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	6.91	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	49.2	
Dichlorobromomethane	0	0		0	0.95	0.95	8.2	
1,2-Dichloroethane	0	0		0	9.9	9.9	85.5	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	7.77	
1,3-Dichloropropylene	0	0		0	0.27	0.27	2.33	
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	173	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	1.73	
Tetrachloroethylene	0	0		0	10	10.0	86.4	
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	4.75	
Trichloroethylene	0	0		0	0.6	0.6	5.18	
Vinyl Chloride	0	0		0	0.02	0.02	0.17	
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	0.26	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	13.0	
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	0.0009	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.009	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.0009	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.009	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.086	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.26	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	2.76	
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	1.04	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.0009	
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	0.43	
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	0.43	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	0.43	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.26	
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	0.0007	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.086	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	0.86	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.009	
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	0.006	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.043	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	28.5	

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
Hexavalent Chromium	Report	Report	Report	Report	Report	µg/L	23.0	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	0.39	0.62	23.7	36.9	59.1	µg/L	23.7	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	3.32	5.18	199	310	497	µg/L	199	AFC	Discharge Conc ≥ 50% WQBEL (RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	1,064	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	5,314	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	3,543	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	0.69	µg/L	Discharge Conc < TQL
Total Chromium (III)	222	µg/L	Discharge Conc < TQL
Total Cobalt	42.1	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	8.86	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	664	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	3,322	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	8.92	µg/L	Discharge Conc < TQL
Total Manganese	2,214	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.11	µg/L	Discharge Conc < TQL
Total Nickel	135	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	11.0	µg/L	Discharge Conc < TQL

Total Silver	7.38	µg/L	Discharge Conc < TQL
Total Thallium	0.53	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	4.26	µg/L	Discharge Conc < TQL
Acrylonitrile	0.52	µg/L	Discharge Conc < TQL
Benzene	5.01	µg/L	Discharge Conc < TQL
Bromoform	60.5	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	3.45	µg/L	Discharge Conc < TQL
Chlorobenzene	221	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	6.91	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	7,750	µg/L	Discharge Conc < TQL
Chloroform	49.2	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	8.2	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	85.5	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	73.1	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-Dichloropropane	7.77	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichloropropylene	2.33	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	151	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Bromide	221	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	12,179	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	173	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	1.73	µg/L	Discharge Conc < TQL
Tetrachloroethylene	86.4	µg/L	Discharge Conc < TQL
Toluene	126	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	221	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	1,351	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2-Trichloroethane	4.75	µg/L	Discharge Conc < TQL
Trichloroethylene	5.18	µg/L	Discharge Conc ≤ 25% WQBEL
Vinyl Chloride	0.17	µg/L	Discharge Conc < TQL
2-Chlorophenol	66.4	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	22.1	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	221	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	4.43	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	22.1	µg/L	Discharge Conc < TQL
2-Nitrophenol	3,543	µg/L	Discharge Conc < TQL
4-Nitrophenol	1,041	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	227	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.26	µg/L	Discharge Conc < TQL
Phenol	8,857	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	13.0	µg/L	Discharge Conc < TQL
Acenaphthene	37.6	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS

Anthracene	664	µg/L	Discharge Conc < TQL
Benzidine	0.0009	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.009	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.0009	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.009	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.086	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.26	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	443	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	2.76	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	120	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.22	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	1,771	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	1.04	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.0009	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	354	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	15.5	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	332	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	0.43	µg/L	Discharge Conc < TQL
Diethyl Phthalate	1,329	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	1,107	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	44.3	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	0.43	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	0.43	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.26	µg/L	Discharge Conc < TQL
Fluoranthene	44.3	µg/L	Discharge Conc < TQL
Fluorene	111	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.0007	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.086	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	2.21	µg/L	Discharge Conc < TQL
Hexachloroethane	0.86	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.009	µg/L	Discharge Conc < TQL
Isophorone	75.3	µg/L	Discharge Conc < TQL
Naphthalene	95.2	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	22.1	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.006	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.043	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	28.5	µg/L	Discharge Conc < TQL
Phenanthrene	2.21	µg/L	Discharge Conc < TQL
Pyrene	44.3	µg/L	Discharge Conc ≤ 25% WQBEL
1,2,4-Trichlorobenzene	0.16	µg/L	Discharge Conc < TQL

PMF - Annual Average Design Flow 2.0 MGD

Applicant:	Portage Area Sewer Authority
Name of plant:	Portage Area STP
Permit Number:	PA0032611
Municipality:	Portage Township
County:	Cambria
Receiving stream:	Little Conemaugh River

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

calculated fields

net stream flow (Qs cfs)=	3.76
discharge flow (Qd mgd)=	2
velocity (fps)=	0.273
width (feet) =	6.962
depth (feet) =	0.696
slope (ft/ft) =	0.004

complete mix time (min) = 0.54

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

PMFa = 1.000
or 100.00 %

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)] = 0.4514

Target IWCc=IWCc/1= 0.451 45.14 %

IWCa=[Qd * 1.547] / [(Qs*PMFa) + (Qd * 1.547)] = 0.4514

Target IWCa=IWCa/0.3= 1.000 or 100.00 %

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 August 30, 2021

For Department use only

WET Summary - Annual Average Design Flow 2.0 MGD

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.78
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name
Portage Area Sewer Authority

Permit No.
PA0032611

Replicate No.	Test Completion Date 11/4/2013 Control	TIWC
1	17	16
2	21	21
3	18	21
4	20	22
5	22	19
6	30	22
7	25	21
8	26	19
9	19	23
10	27	24
11		
12		
13		
14		
15		
Mean	22.500	20.800
Std Dev.	4.301	2.300
# Replicates	10	10

T-Test Result	3.1330
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	**PASS**

Replicate No.	Test Completion Date 11/4/2014 Control	TIWC
1	32	36
2	33	33
3		33
4	33	33
5	33	32
6	26	34
7	34	31
8	32	35
9	28	33
10	5	33
11		
12		
13		
14		
15		
Mean	28.444	33.300
Std Dev.	9.180	1.418
# Replicates	9	10

T-Test Result	5.1173
Deg. of Freedom	11
Critical T Value	0.8755
Pass or Fail	**PASS**

Replicate No.	Test Completion Date 12/8/2015 Control	TIWC
1	23	31
2	15	26
3	16	30
4	32	28
5	32	29
6	18	31
7	1	31
8	35	33
9	27	35
10		32
11		
12		
13		
14		
15		
Mean	22.111	30.600
Std Dev.	10.822	2.547
# Replicates	9	10

T-Test Result	4.9655
Deg. of Freedom	13
Critical T Value	0.8702
Pass or Fail	**PASS**

Replicate No.	Test Completion Date 11/26/2016 Control	TIWC
1	28	20
2	35	42
3	31	25
4	26	35
5	29	35
6	35	36
7	31	34
8	29	35
9	30	31
10	29	26
11		
12		
13		
14		
15		
Mean	30.300	31.900
Std Dev.	2.869	6.471
# Replicates	10	10

T-Test Result	4.2544
Deg. of Freedom	13
Critical T Value	0.8702
Pass or Fail	**PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.78
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Portage Area Sewer Authority

Permit No.: PA0032611

Test Completion Date: 11/4/2013

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: 11/4/2014

Replicate No.	Control	TIWC
1	1	1
2	1	1
3		1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	0	1
11		
12		
13		
14		
15		
Mean	0.889	1.000
Std Dev.	0.333	0.000
# Replicates	9	10
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Test Completion Date: 12/8/2015

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	0	1
9	1	1
10		
11		
12		
13		
14		
15		
Mean	0.889	1.000
Std Dev.	0.333	0.000
# Replicates	9	9
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Test Completion Date: 11/26/2016

Replicate No.	Control	TIWC
1	1	0
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	0.900
Std Dev.	0.000	0.316
# 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)	0.78
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Portage Area Sewer Authority

Permit No.: PA0032611

Replicate No.	Test Completion Date: 11/5/2013 Control	TIWC
1	1	0.9
2	0.9	0.8
3	1	0.9
4	1	0.9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.975	0.875
Std Dev.	0.050	0.050
# Replicates	4	4

T-Test Result	11.2738
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Replicate No.	Test Completion Date: 11/4/2014 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: 12/8/2015 Control	TIWC
1	1	0.8
2	1	0.6
3	0.9	0.9
4	1	0.9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.975	0.800
Std Dev.	0.050	0.141
# Replicates	4	4

T-Test Result	3.4466
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	**PASS**

Replicate No.	Test Completion Date: 11/29/2016 Control	TIWC
1	0.9	0.8
2	1	1
3	1	0.5
4	0.9	0.5
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.950	0.700
Std Dev.	0.058	0.245
# Replicates	4	4

T-Test Result	1.2429
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	**PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.78
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name
Portage Area Sewer Authority

Permit No.
PA0032611

Test Completion Date: 11/5/2013

Replicate No.	Control	TIWC
1	0.403	0.402
2	0.341	0.348
3	0.398	0.366
4	0.404	0.3
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.387	0.354
Std Dev.	0.030	0.042
# Replicates	4	4

T-Test Result	2.6618
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Test Completion Date: 11/4/2014

Replicate No.	Control	TIWC
1	0.327	0.383
2	0.34667	0.387
3	0.275	0.324
4	0.337	0.332
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.321	0.357
Std Dev.	0.032	0.033
# Replicates	4	4

T-Test Result	5.6475
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Test Completion Date: 12/8/2015

Replicate No.	Control	TIWC
1	0.4	0.366
2	0.381	0.281
3	0.39	0.38636
4	0.365	0.472
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.384	0.376
Std Dev.	0.015	0.078
# Replicates	4	4

T-Test Result	2.2307
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	**PASS**

Test Completion Date: 11/29/2016

Replicate No.	Control	TIWC
1	0.264	0.34
2	0.264	0.389
3	0.349	0.225
4	0.31	0.199
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.297	0.288
Std Dev.	0.041	0.091
# Replicates	4	4

T-Test Result	1.3688
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	**PASS**

WET Summary and Evaluation

Facility Name	Portage Area Sewer Authority
Permit No.	PA0032611
Design Flow (MGD)	2
Q_{7-10} Flow (cfs)	3.76
PMF_a	1
PMF_c	1

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/4/13	11/4/14	12/8/15	11/26/16
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/4/13	11/4/14	12/8/15	11/26/16
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/5/13	11/4/14	12/8/15	11/29/16
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/5/13	11/4/14	12/8/15	11/29/16
Pimephales	Growth	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**
TIWC	**45** % Effluent
Dilution Series	**11, 23, 45, 73, 100** % Effluent
Permit Limit	**None**
Permit Limit Species	