pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0027669**
Facility Type	**Municipal**	APS ID	**791610**
Major / Minor	**Major**	Authorization ID	**1215764**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**McCandless Township Sanitary Authority MTSA**	Facility Name	**Pine Creek STP**
Applicant Address	418 W Arcadia Drive	Facility Address	2160 Wildwood Road
	Pittsburgh, PA 15237-5506		Gibsonia, PA 15044-7414
Applicant Contact	William Youngblood	Facility Contact	Edward Bricker
Applicant Phone	(412) 366-2700	Facility Phone	(724) 935-8050
Client ID	75745	Site ID	252665
Ch 94 Load Status	Not Overloaded	Municipality	Hampton Township
Connection Status	No Limitations	County	Allegheny
Date Application Received	January 30, 2018	EPA Waived?	No
Date Application Accepted	February 9, 2018	If No, Reason	Major Facility

Purpose of Application: Application for renewal of a NPDES Permit for discharge of treated sewage effluent.

Summary of Review

The McCandless Township Sanitary Authority (MTSA) has applied for a renewal of the NPDES Permit No. PA0027669. The application was sent on January 30, 2018 and it was on time before the renewal due date. NPDES Permit No. PA0027669 was issued on July 11, 2013 and authorized a discharge of 6.0 MGD.

The sewage treatment within this facility can be described as follows: Raw Sewage enters the headworks of the Pine Creek Sewage Treatment Plant (STP) and passes through a mechanical bar screen to the raw sewage wet well. It is then pumped to distribution chamber by three raw sewage pumps operating singly or in duplex. The raw sewage is regularly distributed to twelve (12) aeration tanks in trains for biological treatment using the activated sludge process in an extended aeration mode. Aerated mixed liquor is then settled in four (4) settling tanks. The clarified effluent is then disinfected with liquid chlorine and dechlorinated in one (1) of the four (4) contact tanks before discharge through the effluent sampler unit and finally the outfall to Pine Creek the receiving stream.

The applicant's engineer was changed from Buchart Horn Inc, to KLH Engineers, Kevin M. Creagh, P.E. from KLH Engineers, Inc. reported on January 24, 2022 that Buchart Horn is no more representing MTSA and KLH is the Consultant for this application, eFACTS was updated accordingly.

Compliance Review

The Operations compliance report listed a numerous limits exceedance for Fecal Coliform, and Total Suspended Solids. Also, the report listed administrative violations and asked for resolving these issues prior to the renewal permit issuance. (See page 6).

Approve	Deny	Signatures	Date
X		Hazim Aldalli / Environmental Engineering Specialist	March 20, 2025
X		Mahbuba Iasmin / Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	May 23, 2025

Summary of Review

WQBELs Development

DEP asked the MTSA to resample for parameters that failed to achieve its quantitation levels (QLs) to meet or exceed the target quantitation levels (TQLs) on November 15, 2021 and resampling information was received on March 28, 2022. Upon the initial water quality modeling of the toxic pollutants using Department's Toxic Management Screening Analysis model (TMS), a pre-draft survey letter was sent to MTSA on May 18, 2022 to notify the reasonable potential and was given an opportunity to conduct another round of resampling and investigate the potential pollution source(s) for these toxic pollutants. No response was received on the pre-draft survey. The WQBELs were developed based on the renewal application, eDMRs, and the resampling event information from 2022.

TRC was modeled for this permit cycle with DEP preset values. The site-specific criteria for TRC is outdated based on the DEP SOP- *Establishing Effluent Limitations for Individual Sewage Permits*, revised on February 5, 2024.

Stormwater Permitting

Pursuant to 25 Pa. Code § 91.34 and in order to re-permit the stormwater outfall (101), the previous NPDES permit stated under Part C.IV.C, a Preparedness, Prevention and Contingency (PPC) Plan is required to be submitted for review and approval by DEP. This document was not delivered, and it is required prior to permit issuance for existing facilities per 25 Pa. Code § 91.34. After several reviews, the PPC plan was approved on August 31, 2022.

Pretreatment & Industrial Users

MTSA has been exempt from pretreatment requirements. The reason is the authority does not have any categorical industrial users discharging to their system. The application lists no industrial dischargers, and EPA has not informed the Department that the pretreatment requirement is now required. Therefore, pretreatment requirements will not be incorporated into this renewal permit. To preserve the residential status of the conveyance system, MTSA has included a section in its ordinance which required all applicants where industrial waste is involved to report the waste characteristics, rates, etc. to let the authority properly analyze and evaluate such waste.

WET Testing

The WET lab results attached to the renewal application were outdated. Per the EPA recently received comments on similar cases, DEP asked the applicant to submit the last four years tests (see page 9). The applicant made a note for the failing tests within 2024 due to the upgrade works within the facility.

Anti-Backsliding

The applicant is not seeking (through this renewal application) to revise the previously permitted effluent limits.

The Applicant did not mention any peak flow events in the application but provided a High Flow Management Plan (HFMP) for managing peak flows within the treatment plant facility.

The application also includes a Sanitary System Overflow (SSO) prevention plan with a number of BMPs which was submitted with the permit renewal application. The plan aims to control the intrusion of potential harmful pollutants from the raw sewage to the stormwater system.

The applicant has fulfilled the Act 14 Notifications, and no comments were received.

The applicant is currently enrolled in and will continue to use eDMR.

Sludge use and disposal description and location(s): Pine Creek STP receives hauled in waste from other McCandless Plants (A & B, Longvue #1, Longvue #2,) and the Ohio Township plants (Windy Knoll and Kilbuck Run) for dewatering. Biosolids are

Summary of Review

thickened and aerobically digested then dewatered by the centrifuge following the addition of polymer. Dewatered biosolids are mixed with lime for pathogen reduction and stabilization. Lime stabilized Class B biosolids are then hauled by truck to a PADEP permitted landfill for final disposal. A back up belt press is available for dewatering operations.

Public Participation

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

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	6.0
Latitude	40º 35' 43"	Longitude	-79º 58' 50"
Quad Name	Glenshaw	Quad Code	40079E8
Wastewater Description:	Treated Sewage Effluent		

Receiving Waters	Pine Creek (TSF)	Stream Code	42136
NHD Com ID	123972125	RMI	13.7
Drainage Area	30.6	Yield (cfs/mi^2)	0.018
Q_{7-10} Flow (cfs)	0.55	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1169	Slope (ft/ft)	0.0013
Watershed No.	18-A	Chapter 93 Class.	TSF
Existing Use	TSF (TROUT STOCKING)	Existing Use Qualifier	
Exceptions to Use	None.	Exceptions to Criteria	None.
Assessment Status	Impaired		
Cause(s) of Impairment	NUTRIENTS, PATHOGENS, FECAL COLIFORM, SILTATION		
Source(s) of Impairment	RURAL (RESIDENTIAL AREAS), SITE CLEARANCE (LAND DEVELOPMENT OR REDEVELOPMENT), SOURCE UNKNOWN		
TMDL Status	Final	Name	Pine Creek Watershed

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

Nearest Downstream Public Water Supply Intake	WEST VIEW WATER AUTHORITY		
PWS Waters	Ohio River	Flow at Intake (cfs)	4,730
PWS RMI	35.26	Distance from Outfall (mi)	>15.0

Changes Since Last Permit Issuance:

- Q_{7-10} flow, elevation, drainage area, and low flow yield were all updated to match USGS Stream Stats new data (see Appendix E).
- DEP updated its WQM 7.0 criteria for Ammonia-Nitrogen (NH_3-N) in 2019. Limits and conditions of this permit need to be redeveloped to an adequate level to protect water quality.
- *E. Coli* monitoring requirements will be introduced to this renewal which is in compliance with DEP SOP No. BCW-PMT-033 revised February 5, 2024.

Other Comments: None.

Treatment Facility Summary				
Treatment Facility Name: McCandless Township San Authority - Pine Creek STP				
WQM Permit No.	**Issuance Date**			
0272419	August 11,2020			
0219404	May 12, 2020			
0219404 A-1	3/30/2023			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Tertiary	Contact Stabilization W/Solids Removal	Chlorine with Dichlorination	3.58
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
6.0	10,208	Not Overloaded	Aerobic digestion/centrifuge	Landfill

Changes Since Last Permit Issuance: WQM 0272419 suggests several updates to the treatment plant as follows:

- 2 new Bardenpho aeration tanks;
- Ultraviolet radiation disinfection system;
- 5 new 125 hp hybrid positive displacement blowers;
- Conversion of two aeration trains into aerated sludge digestion tanks;
- Installation of a SCADA system
- Installation of scum pumps, RAS pumps and miscellaneous piping.

The applicant's engineer informed DEP that the construction works was mainly done through 2024.

Other Comments: None.

Compliance History

Operations Compliance Check Summary Report

Facility: Pine Creek STP

NPDES Permit No.: PA0027669

Compliance Review Period: 10/2016 – 07/2018

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
2726453	04/17/2018	Chapter 94 Inspection	PA Dept of Environmental Protection	Administratively Closed
2612178	06/13/2017	Compliance Evaluation	County Health Dept	Violation(s) Noted
2592041	05/03/2017	Chapter 94 Inspection	County Health Dept	Administratively Closed

Violation Summary:

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE
790886	06/13/2017	92A.44	NPDES - Violation of effluent limits in Part A of permit	10/15/2018
790887	06/13/2017	92A.41(A)1	NPDES - Non-compliance with an issued permit, not classified by any other code	10/15/2018
790888	06/13/2017	92A.41(A)10B	NPDES - Failure to utilize approved analytical methods	10/15/2018

Open Violations by Client ID:

No reports.

DMR Violation Summary:

MONITORING START DATE	MONITORING END DATE	NON COMPLIANCE CATEGORY	PARAMETER	SAMPLE VALUE	PERMIT VALUE	UNIT OF MEASURE	STATISTICAL BASE CODE
04/01/2018	04/30/2018	Concentration 1 Effluent Violation	pH	5.9	6.0	S.U.	Minimum
01/01/2018	01/31/2018	Concentration 3 Effluent Violation	Fecal Coliform	55000	10000	CFU/100 ml	Instantaneous Maximum
12/01/2017	12/31/2017	Concentration 2 Effluent Violation	Total Suspended Solids	33	30	mg/L	Average Monthly
12/01/2017	12/31/2017	Concentration 3 Effluent Violation	Total Suspended Solids	46	45	mg/L	Weekly Average
05/01/2017	05/31/2017	Concentration 3 Effluent Violation	Total Suspended Solids	53	45	mg/L	Weekly Average

Summary of Inspections:	**Enforcement Summary:** No open enforcements **Compliance Status:** Permittee has outstanding violations that will need to be resolved prior to permit issuance. **Completed by:** John Murphy **Completed date:** 10/25/2021

Other Comments: DMRs and Compliance reports showed that several limits exceedances of (TSS, pH, Fecal Coliform, and TRC) for the reviewed period (07/01/2013-12/01/2021), also Operations compliance reports recommends due to other facility violations to resolve those violations upon issuing the Final permit.

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	6.0
Latitude	40º 35' 43.0"	**Longitude**	-79º 58' 50.0"
Wastewater Description:	Sewage Effluent		

Technology-Based Limitations

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

Table 1 Regulatory TBELs for Sanitary Wastewaters

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
E. Coli (No./100 ml)	Report	IMAX	-	92a.61
D.O. (mg/L)	4.0	Min	-	BPJ
NH_3-N (mg/L)	25	Average Monthly	-	BPJ
	50	IMAX		
Total N (mg/L)	Report	Average Monthly	-	92a.61
Total P (mg/L)	Report	Average Monthly	-	92a.61

Comments: The stream is effluent dominated, Dilution Ratio=(0.355/6.0)=0.059; the ratio is less than 3:1. Per the dry stream definition that can be checked over the DEP's regulation (*Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers*, 2008), the STP receiving stream (Pine Creek) is not a dry stream; therefore Advanced Treatment Requirements stated under DEP's SOP "*Establishing Effluent Limitations for Individual Sewage Permits,* Revised February 5, 2024" Part I.C.1 & 3 is not applicable.

DEP WQM 7.0 ver. 1.1 was used to determine the newly imposed seasonal limits for Ammonia Nitrogen NH_3-N, also to redevelop $CBOD_5$ and DO limits.

The Total Suspended Solids, pH, and Fecal Coliform parameters are not evaluated using WQM 7.0. The bases for the proposed technology-based limitations are listed in the above table.

Water Quality-Based Limitations

Table 2 lists the WQM7.0 modeling inputs and assumptions. The limitations determined through water quality modeling are presented in Table 3. The WQM 7.0 output files attached in Appendices A and D.

Table 2 WQM 7.0 Modeling Inputs and Assumptions

Modeling Input Parameters	
Discharge Flow (MGD)	6.0

Parameter	Upstream Point (Outfall 001)		Downstream Point (End of Segment)	
Stream Code	42136		42136	
River Mile Index	13.70		10.16	
Drainage Area (mi^2)	30.6		41.6	
Q_{7-10} (cfs)	0.55		0.80	
Elevation (ft)	1169		1155	
Slope (ft/ft)	0.0013		0.0013	
Stream Width (ft)	52		60	
Stream Depth (ft)	5.0		5.4	
PWS Intake (MGD)	_		4730	
Low-flow yield (cfs/mi^2)	0.018		0.019	
Seasonal Input Parameters				
Parameter	Summer		Winter	
	Stream	001	Stream	001
Temperature (°C)	25	20	5	15
pH (S.U.)	7.0	7.0	7.0	7.0
D.O. (mg/L)	8.24	4.0	12.51	4.0
$CBOD_5$ (mg/L)	2.0	25.0	2.0	25.0
NH_3-N (mg/L)	0.0	25.0	0.0	25.0
D.O. Goal (mg/L)	6.0	6.0	6.0	6.0

Table 3 shows that a minimum Dissolved Oxygen (DO) WQBEL of 6.0 mg/L should be maintained based on DEP water quality model WQM 7.0 version 1.10 (Appendix A).

WQM 7.0 generated Ammonia-Nitrogen (NH_3-N) WQBEL warm period WQBEL seasonal limits of AML 2.0 mg/L, Weekly Average of 3.0 mg/L, and Ins. Max of 4.0 mg/L, also the model generated cold period seasonal limits of AML 3.1 mg/L, Weekly Average of 4.6 mg/L, and Ins. Max of 6.2 mg/L. Checking on the eDMRs; no compliance schedule is necessary.

WQM 7.0 generated $CBOD_5$ WQBEL warm period seasonal limits of AML 7.9 mg/L, Weekly Average of 11.8 mg/L, and Ins. Max of 15.8 mg/L, and cold period seasonal limits of AML 11.4 mg/L, Weekly Average of 17.1 mg/L, and Ins. Max of 22.8 mg/L. Checking on the eDMRs; no compliance schedule is necessary.

Table 3 WQM WQBELs for Outfall 001

Parameter	Limit (mg/l)	SBC	Model
TRC	0.3	Average Monthly	DEP TRC
$CBOD_5$ (May1-Oct 31)	7.9	Average Monthly	WQM7.0
$CBOD_5$ (Nov 1- Apr 30)	11.4	Average Monthly	WQM7.0
NH_3-N (May1-Oct 31)	2.0	Average Monthly	WQM7.0
NH_3-N (Nov 1- Apr 30)	3.1	Average Monthly	WQM7.0
Dissolved Oxygen	6.0	Minimum	WQM7.0

Anti-Backsliding

The previously imposed limits for pH Effluent Limitation of (6.0 Minimum, and 9.0 Maximum SIU), Fecal Coliform AML seasonal limits Geo Mean of (200 & 2000 CFU/100 ml), TSS AML Weekly Average and Ins. Max of (30, 45, and 60 mg/l), and Ammonia-Nitrogen NH_3-N WQBEL warm period seasonal limits of AML 1.5 mg/L, Weekly Average of 2.3 mg/L, and Ins. Max of 3.0 mg/L; will be all unchanged due to Anti-Backsliding as stated in 40 CFR Section 122.44(l).

Whole Effluent Toxicity (WET)

Per DEP-SOP Whole Effluent Toxicity (WET) SOP No. BPNPSM-PMT-031, revised May 13, 2014, the facility tests for the most recent four years tests 2020-2023 (see page 14) show that no reasonable potential exists, and no limits will be imposed for this renewal period. The 2024 tests show inconsistency due to the upgrade works within the facility (see page 5), therefore these tests were not used for this analysis.

The test frequency will be 1/year. Part C 114 will be included in the renewal permit.

Reasonable Potential (RP)

The Toxics Management Screening (TMS) Analysis Spreadsheet version 1.3 was used to evaluate toxic parameters of concern for water quality modeling and to facilitate determinations of "reasonable potential" to cause an excursion above water quality standards. Table 4 lists the TMS inputs. Some of the toxic parameter concentrations were tested above the Department QL or have detection issues as submitted in the Application Notice of Intent.

Table 4 TMS Inputs

Discharge Characteristics	
Parameter	**Value**
River Mile Index	13.7
Discharge Flow (MGD)	6.0
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	30.6
$Q_{7\text{-}10}$ (cfs)	0.55
Low-flow yield (cfs/mi^2)	0.018
Elevation (ft)	1169
Slope (ft/ft)	0.0013
Stream Width (ft)	52
Width/Depth Ratio	10.4

TMS module produced a total of 34 pollutants which were determined potential parameters of concern and 5 pollutants showed no RP (Appendix B).

To further evaluate these parameters, DEP asked MTSA to resample to address Target Quantitation Limit (TQL) issued for the nominated pollutant pollutants. Three rounds of resampling were submitted with one week apart. TMS was used again to model the resampling event, which suggested monitoring and/or limitations for a total of 25 pollutants with 5 pollutants having no RP. Total Boron, Total Iron, Dissolved Iron, Total Zinc, and Acenaphthene will have a weekly reporting requirements for this renewal The TMS resampling analysis is added in Appendix B.

DEP sent a pre-draft survey to MTSA for another opportunity to resample and investigate the source(s) of pollution related to the TMS generated WQBELs. No response was received by the end of the deadline.

The applicant will have three years to comply with the new limits, a schedule and final WQBEL compliance report are detailed within part C.III.D.

Copper:

T Following DEP's current SOP, statewide criterion was applied in determining the reasonable potential for Total Copper. The submitted application effluent sampling results showed max. discharge concentration value of 13.70 µg/l. TMS results suggests an average monthly limit of is 19.2 µg/l (see Appendix B).

Research suggests that copper in the influent water most likely originates from public water supplies caused by corrosion of household plumbing. (EPA publication EPA-600/2-81-224 "*Heavy Metal Sources And Flows In A Municipal Sewage System Literature Survey And Field Investigation Of The Kokomo Indiana Sewage System,1981*")

A new TRE study (Part C112A) requirement has been added to the permit for new Total Copper limits. After the 3 years of compliance schedule, if the permittee fails to meet the limits developed based on statewide criteria, development of a Site-Specific criteria is recommended in the permit. According to Chapter 93.8d "The development of new or updated site-specific criteria for copper in freshwater systems shall be performed using the biotic ligand model (BLM)".

Commented [MI1]: For Total Copper, we need to add the Part C condition for Copper WER>10 years old. See Page 14 of Toxics SOP.

Commented [HA2R1]: I will, thanks.

Chloroform:

The average monthly effluent concentration produced by DEP TMS (see Appendix B) is 8.41 µg/l. The submitted application effluent sampling results showed Max. discharge concentration value of 7.74 µg/l.

In wastewater treatment plants, chloroform can be formed as a byproduct during the process of chlorine disinfection. Other sources might be from an industrial origin like chemical product factories or paper mills. MTSA reported in the application Notice of Intent (NOI) that there are no industrial users served by this facility.

An average monthly limit of 8.41 µg/l and a daily maximum limit of 21 µg/l have been applied at Outfall 001 with 1/week sampling frequency.

1,2,4-Trichlorobenzene:

The average monthly effluent concentration produced by DEP TMS (see Appendix B) is 0.074 µg/l. The submitted application effluent sampling results showed max. discharge concentration value of <5.0 µg/l.

1,2,4-Trichlorobenzene is used as a dye carrier, an herbicide intermediate, a heat-transfer medium, a dielectric fluid in transformers, a degreaser, a lubricant, in synthetic transformer oils, and as a solvent in chemical manufacturing. 1,2,4-Trichlorobenzene was formerly used as an insecticide against termites (EPA's IRIS accessed on February 15, 2022).

Such contamination can be due to poor maintenance or operation for the mechanical compartments in the WWTP, or excessive violation from car wash and oil change shops.

An average monthly limit of 0.074 µg/l with a sampling frequency of 1/week has been imposed at Outfall 001.

Nitrite and Nitrate Evaluation

The nearest downstream drinking water treatment plant intake (i.e., West View Water Authority) is > 15.0 miles away from the effluent discharge location of the facility. The Nitrite-Nitrate concentration from the STP is 21.6 mg/L. No significant effects are expected to the water quality at the drinking water plant intake due to large dilution available in the Ohio River.

Pine Creek River Basin TMDL

There is a TMDL for Pathogens, Escherichia Coli (E. Coli), and Fecal Coliform to address recreational use impairments with unknown causes in the Pine Creek River watershed. These TMDLs were established in accordance with Section 303 (d)(1)(c) and (2) of the Clean Water Act to address impairments of water quality as identified on the Pennsylvania's Section 303(d) lists.

This facility is considered a "Significant Discharge Facility" as identified in Pine Creek River Watershed TMDL (approved on March 8, 2013), and the aggregate WLAs were based on the sum of the available information regarding flow from each facility multiplied by the applicable numeric water quality criterion. The contribution for bacteria from a sewage plant of this nature is expected to be exceeding the water quality criteria and therefore this facility been considered the larger contributors to stream impairment within the Pine creek Watershed. The application effluent sampling for Fecal Coliform didn't show any exceedances within the permit set limits, the monthly monitoring for E.Coli and seasonal Fecal Coliform limits are applied at Outfall 001 as control measures for pathogens and bacteria in the treated sewage effluent.

Total Dissolved Solids (TDS) and its Major Constituents

Total Dissolved Solids (TDS) and its major constituents including sulfate, chloride, and bromide have emerged as pollutants of concern. The conservative nature of these solids allows them to accumulate in surface waters and they may remain a concern even if the immediate downstream public water supply is not directly impacted. Bromide has been linked to formation of disinfection byproducts at increased levels in public water systems.

Because of actions associated with Triennial Review 13, the Environmental Quality Board has directed DEP to collect additional data if the Bromide is greater than 1 mg/L (0.09 mg/L as of 01/26/2018) and the TDS is greater than 1000 mg/L (544 mg/L as of 01/26/2018) or the TDS exceeds 20,000 lbs/day.

Monitoring is not required for TDS, Bromide, Chloride, and Sulfate. Bromide is less than 1 mg/L.

Disinfection

Per the issued WQM permit No. 0219404, and by the end of the proposed facility upgrades, the existing chlorine contact tanks will be replaced with a UV disinfection system. The UV system is designed to handle the future peak flow of 24 MGD (existing peak flow is 15 MGD).

Total Residual Chlorine (TRC) limits are updated based on the new $Q_{7\text{-}10}$ flow and using DEP-TRC spreadsheet; the generated limits of AML (0.30 mg/l), and IMAX of (1.0) match with the existing permit limits. (See Appendix D).
Total Residual Chlorine (TRC) limits are imposed in this renewed draft permit since it is not confirmed whether UV system is presently installed and operational.

The permittee needs to notify DEP during the draft permit comment period if the TRC limits need to be replaced with the UV monitoring parameter. Otherwise, an NPDES permit amendment will need to be submitted at least 90 days prior to the UV unit becomes operational.

E. Coli

Pursuant to 25 Pa. code § 92a.61 monthly monitoring for *E. Coli* will be imposed at Outfall 001, which is consistent with DEP SOP No. BCW-PMT-033 revised February 5, 2024.

The Pine Creek TMDL for pathogens as described on the previous page will trigger the most stringent limitations for Fecal Coliform, and *E. Coli*. Using ORSANCO discharge requirement for Bacteria will be adequate since the Pine Creek Watershed (Lower Allegheny River) is adjacent to Ohio River watershed.

Fecal Coliform

The 2019 ORSANCO's Final Standards made changes to Bacteria discharge requirements to include an *E. coli* bacteria limit of 130/100 ml as a 90-day geometric mean for the period April through October, and not to exceed 240/100 ml in more than 25% of the samples.

The following correlation analysis (Published on December 2006 by Ohio EPA/Division of Surface Water) was made to show that extending the warmer period Fecal Coliform limits to include the month of April will be adequate to meet the above *E. coli* limit. ORSANCO has not objected to the use of this analysis:

The equations below are taken from the Ohio Environmental Protection Agency:

Current Warmer Period Avg. Monthly limit for Fecal Coliform (FC) = 200/100 ml
Using the equation for NE area of Ohio, *E. coli* = 0.667 x (FC)^1.034 = 159.73/100 ml
Using the equation for the rest of Ohio, *E. Coli* = 0.403 x (FC)^1.028 = 93.49/100 ml
Average of two values = (159.73 + 93.49)/2 = 126.61/100 ml < 130/100 ml

In summary, the discharge meets the ORSANCO *E. Coli* effluent standard of 130/100 ml by maintaining an effluent Fecal Coliform Avg. Monthly limit of 200/100 ml from April through October, which becomes the new recreational season period. Using the same equations for a maximum Fecal Coliform count of 400/100 ml at 10% of the time exceedance is more restrictive than the 25% exceedance at 240/100 ml *E. Coli*.

The treatment plant can meet the new stringent limits for Fecal Coliform as it achieved lower values through the reviewed DMRs; no compliance schedule is necessary. Part C 136 will be added to the permit.

TN and TP Monitoring

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). Sewage discharges with design flows > 2,000 gpd require monitoring, at a minimum, for Total Nitrogen and Total Phosphorus in new and reissued permits.

Total Phosphorus load, and Total Nitrogen load reporting will be continued for this renewal permit and since the renewal application's effluent sampling and DMRs showed no water criteria limit violations, no limits are needed to be imposed or frequency increments.

A frequency of 1/quarter is recommended for major individual sewage permits.

PFAS

Pursuant to 25 Pa. code § 92a.61(b), annual monitoring for PFAS will be imposed at Outfall 001 to determine if PFAS will be a pollutant of concern, which is consistent with DEP SOP No. BCW-PMT-033 revised February 5, 2024 under Section G.3.

The permittee shall conduct monitoring at its treatment plant that, at a minimum, includes annual effluent analysis for the four (4) PFAS parameters detectable by EPA Method 1633. Monitoring data for any analytes listed in EPA Method 1633 shall be summarized and submitted as part of the Discharge Monitoring Report (DMR).

Influent Monitoring

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.

Mass Loadings

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).

Monitoring Frequency Considerations

For pH, TRC, CBOD5, Ammonia-Nitrogen, Fecal Coliform and Dissolved Oxygen (DO), a monitoring frequency of 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. The permittee may remain in compliance with the permit by using a No Discharge Indicator (NODI) code on the "Daily Effluent Monitoring" supplemental form to identify the lack of a discharge on a particular day. The daily monitoring frequencies are consistent with current policy and Table 6-3 of DEP's Technical Guidance for the Development and Specification of Effluent Limitations.

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%, 96%, 91%, 46%, and 23%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 91% (see Appendix C).

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
8/3/2020	Pass	Pass	Pass	Pass
8/2/2021	Pass	Pass	Pass	Pass
5/30/2022	Pass	Pass	Pass	Pass
5/9/2023	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: None.

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

Acute Partial Mix Factor (PMFa): **1.0** Chronic Partial Mix Factor (PMFc): **1.0**

1. Determine IWC – Acute (IWCa):

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

[(6.0 MGD x 1.547) / ((0.55 cfs x 1.0) + (6.0 MGD x 1.547))] x 100 = 94.4 **%**

Is IWCa < 1%? ☐ **YES** ☒ **NO**

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

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

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

[(6.0 MGD x 1.547) / ((0.55 cfs x 1.0) + (6.0 MGD x 1.547))] x 100 = 94.4**%**

3. Determine Dilution Series

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

Dilution Series = 100%, 97%, 94%, 47%, and 24%.

TIWC= 0.94

WET Summary and Evaluation

Facility Name	McCandelss TWP SA-Pine Creek STP
Permit No.	PA0027669
Design Flow (MGD)	6
Q_{7-10} Flow (cfs)	0.55
PMF_a	1
PMF_c	1

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/3/20	8/2/21	5/30/22	5/9/23
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/3/20	8/2/21	5/30/22	5/9/23
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/3/20	8/2/21	5/30/22	5/9/23
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/3/20	8/2/21	5/30/22	5/9/23
Pimephales	Growth	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**
TIWC	**94** % Effluent
Dilution Series	**24, 47, 94, 97, 100** % Effluent
Permit Limit	**None**
Permit Limit Species	

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

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

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 End of Thirty-Sixth (36th) Month Following Permit Issuance.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Benzene (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Total Copper (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Carbon Tetrachloride (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Chlorodibromomethane (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Chloroform (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Dichlorobromomethane (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
1,2-Dichloropropane (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
1,1,2,2-Tetrachloroethane (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
1,1,2-Trichloroethane (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Trichloroethylene (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Vinyl Chloride (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Benzo(a)Anthracene (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Benzo(a)Pyrene (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
3,4-Benzofluoranthene (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite

Outfall 001 , Continued (from Permit Effective Date through End of Interim Period 1)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2)	Required
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Measurement Frequency	Sample Type
Benzo(k)Fluoranthene (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Chrysene (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Dibenzo(a,h)Anthracene (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
1,3-Dichlorobenzene (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Indeno(1,2,3-cd)Pyrene (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Phenanthrene (µg/L)	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 001.

Other Comments: None.

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: Beginning of Thirty Seventh (37th) Month Following Permit Issuance through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Benzene (µg/L)	0.04	XXX	XXX	0.86	2.14	XXX	1/week	24-Hr Composite
Total Copper (µg/L)	0.96	XXX	XXX	19.2	48	XXX	1/week	24-Hr Composite
Carbon Tetrachloride (µg/L)	0.03	XXX	XXX	0.59	1.47	XXX	1/week	24-Hr Composite
Chlorodibromomethane (µg/L)	0.05	XXX	XXX	1.18	2.95	XXX	1/week	24-Hr Composite
Chloroform (µg/L)	0.42	XXX	XXX	8.41	21	XXX	1/week	24-Hr Composite
Dichlorobromomethane (µg/L)	0.07	XXX	XXX	1.4	3.5	XXX	1/week	24-Hr Composite
1,2-Dichloropropane (µg/L)	0.06	XXX	XXX	1.33	3.3	XXX	1/week	24-Hr Composite
1,1,2,2-Tetrachloroethane (µg/L)	0.01	XXX	XXX	0.29	0.74	XXX	1/week	24-Hr Composite
1,1,2-Trichloroethane (µg/L)	0.04	XXX	XXX	0.81	2.03	XXX	1/week	24-Hr Composite
Trichloroethylene (µg/L)	0.04	XXX	XXX	0.88	2.21	XXX	1/week	24-Hr Composite
Vinyl Chloride (µg/L)	0.001	XXX	XXX	0.029	0.074	XXX	1/week	24-Hr Composite
Benzo(a)Anthracene (µg/L)	0.00007	XXX	XXX	0.001	0.004	XXX	1/week	24-Hr Composite
Benzo(a)Pyrene (µg/L)	0.000007	XXX	XXX	0.0001	0.0004	XXX	1/week	24-Hr Composite
3,4-Benzofluoranthene (µg/L)	0.00007	XXX	XXX	0.001	0.004	XXX	1/week	24-Hr Composite

Outfall 001 , Continued (from End of Interim Period 1 through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Benzo(k)Fluoranthene (µg/L)	0.0007	XXX	XXX	0.015	0.037	XXX	1/week	24-Hr Composite
Chrysene (µg/L)	0.009	XXX	XXX	0.18	0.44	XXX	1/week	24-Hr Composite
Dibenzo(a,h)Anthracene (µg/L)	0.000007	XXX	XXX	0.0001	0.0004	XXX	1/week	24-Hr Composite
1,3-Dichlorobenzene (µg/L)	0.37	XXX	XXX	7.41	18.5	XXX	1/week	24-Hr Composite
Indeno(1,2,3-cd)Pyrene (µg/L)	0.00007	XXX	XXX	0.001	0.004	XXX	1/week	24-Hr Composite
Phenanthrene (µg/L)	0.053	XXX	XXX	1.06	2.65	XXX	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 001.

Other Comments: The limits that needs special attention to have WMS enabled to enter values below its criteria will ask Central Office to allow such process.

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]	Required
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
CBOD5 Nov 1 - Apr 30	570.4	855.6	XXX	11.4	17.1	22.8	1/day	24-Hr Composite
CBOD5 May 1 - Oct 31	395.3	592.9	XXX	7.9	11.8	15.8	1/day	24-Hr Composite
Dissolved Oxygen	XXX	XXX	6.0	XXX	XXX	XXX	1/day	Grab
Total Suspended Solids	1502	2253	XXX	30	45	60	1/day	24-Hr Composite
Total Residual Chloride	XXX	XXX	XXX	0.3	XXX	1.0	1/day	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/day	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/day	Grab
Ammonia-Nitrogen (NH_3-N) Nov 1 - Apr 30	155.0	232.5	XXX	3.1	4.6	6.2	1/day	24-Hr Composite
Ammonia-Nitrogen (NH_3-N) May 1 - Oct 31	75	115	XXX	1.5	2.3	3.0	1/day	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	Report	XXX	1/day	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	Report	XXX	1/day	24-Hr Composite
Total Boron (µg/L)	Report	XXX	XXX	Report	XXX	Report	1/week	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Dissolved Iron (µg/L)	Report	XXX	XXX	Report	XXX	Report	1/week	24-Hr Composite
Total Iron (µg/L)	Report	XXX	XXX	Report	XXX	Report	1/week	24-Hr Composite
Total Zinc (µg/L)	Report	XXX	XXX	Report	XXX	Report	1/week	24-Hr Composite
Acenaphthene (µg/L)	Report	XXX	XXX	Report	XXX	Report	1/week	24-Hr Composite
E.Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
PFOA* (ng/L)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
PFOS* (ng/L)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
HFPO-DA* (ng/L)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
PFBS* (ng/L)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab

** The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in 4 consecutive monitoring periods indicate non-detect results at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittees must enter a No Discharge Indicator (NODI) Code of "GG" on DMRs.*

Compliance Sampling Location: Outfall 001

Appendix A – WQM 7.0 Modeling – Summer Conditions

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
18A	42136	PINE CREEK	**13.700**	1169.00	30.60	0.00130	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.018	0.55	0.00	0.000	0.000	10.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Pine Creek STP	PA0027669	6.0000	6.0000	6.0000	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
18A	42136	PINE CREEK	**10.160**	1155.00	41.60	0.00130	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.019	0.80	0.00	0.000	0.000	10.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Pine Creek STP	PA0027669	0.0000	0.0000	0.0000	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
18A	42136	PINE CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
13.700	0.55	0.00	0.55	9.282	0.00130	.737	41.92	56.9	0.32	0.680	20.28	7.00
Q1-10 Flow												
13.700	0.35	0.00	0.35	9.282	0.00130	NA	NA	NA	0.31	0.687	20.18	7.00
Q30-10 Flow												
13.700	0.75	0.00	0.75	9.282	0.00130	NA	NA	NA	0.32	0.672	20.37	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
18A	42136	PINE CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
13.700	6.000	20.280	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
41.920	0.737	56.895	0.318
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
7.60	0.468	2.25	0.715
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.125	3.958	Tsivoglou	6
Reach Travel Time (days)			
0.680			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.068	7.36	2.14	6.09
0.136	7.13	2.04	6.09
0.204	6.90	1.94	6.12
0.272	6.68	1.85	6.17
0.340	6.47	1.76	6.23
0.408	6.27	1.68	6.31
0.476	6.07	1.60	6.39
0.544	5.88	1.52	6.47
0.612	5.69	1.45	6.56
0.680	5.51	1.38	6.65

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WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
18A	42136	PINE CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
13.700	Pine Creek STP	9.55	9.91	9.55	9.91	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
13.700	Pine Creek STP	1.87	2.02	1.87	2.02	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
13.70	Pine Creek STP	7.94	7.94	2.38	2.38	6	6	0	0

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WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
18A	42136	PINE CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
13.700	Pine Creek STP	PA0027669	6.000	CBOD5	7.94		
				NH3-N	2.02	4.04	
				Dissolved Oxygen			6

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Appendix A – WQM 7.0 Modeling – Winter Conditions

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
18A	42136	PINE CREEK	**13.700**	1169.00	30.60	0.00130	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.036	0.55	0.00	0.000	0.000	10.0	0.00	0.00	5.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Pine Creek STP	PA0027669	6.0000	6.0000	6.0000	0.000	15.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	12.51	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
18A	42136	PINE CREEK	**10.160**	1155.00	41.60	0.00130	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.038	0.80	0.00	0.000	0.000	10.0	0.00	0.00	5.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Pine Creek STP	PA0027669	0.0000	0.0000	0.0000	0.000	15.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	12.51	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
18A	42136	PINE CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
13.700	0.55	0.00	0.55	9.282	0.00130	.737	41.92	56.9	0.32	0.680	14.44	7.00
Q1-10 Flow												
13.700	0.35	0.00	0.35	9.282	0.00130	NA	NA	NA	0.31	0.687	14.63	7.00
Q30-10 Flow												
13.700	0.75	0.00	0.75	9.282	0.00130	NA	NA	NA	0.32	0.672	14.25	7.00

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WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
18A	42136	PINE CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
13.700	6.000	14.441	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
41.920	0.737	56.895	0.318
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
10.89	0.677	3.23	0.456
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.364	3.446	Tsivoglou	6
Reach Travel Time (days)			
0.680			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.068	10.51	3.14	6.26
0.136	10.14	3.04	6.20
0.204	9.79	2.95	6.19
0.272	9.45	2.86	6.21
0.340	9.11	2.77	6.25
0.408	8.80	2.68	6.31
0.476	8.49	2.60	6.38
0.544	8.19	2.52	6.46
0.612	7.90	2.45	6.55
0.680	7.63	2.37	6.64

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WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
18A	42136	PINE CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
13.700	Pine Creek STP	14.41	14.95	14.41	14.95	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
13.700	Pine Creek STP	2.94	3.18	2.94	3.18	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
13.70	Pine Creek STP	11.42	11.42	3.43	3.43	6	6	0	0

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WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
18A	42136	PINE CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
13.700	Pine Creek STP	PA0027669	6.000	CBOD5	11.42		
				NH3-N	3.18	6.36	
				Dissolved Oxygen			6

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Appendix B – Toxics Management Spreadsheet (TMS) Analysis –

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Pine Creek STP** NPDES Permit No.: **PA0027669** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Municipal 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
6	225	6.97						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		569									
	Chloride (PWS)	mg/L		137									
	Bromide	mg/L		0.09									
	Sulfate (PWS)	mg/L		67									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		6.2									
	Total Antimony	µg/L	<	1									
	Total Arsenic	µg/L	<	2.5									
	Total Barium	µg/L		31.2									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L	<	206									
	Total Cadmium	µg/L	<	0.6									
	Total Chromium (III)	µg/L	<	2.33									
	Hexavalent Chromium	µg/L	<	13									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L		13.7									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		10									
	Dissolved Iron	µg/L	<	50									
	Total Iron	µg/L		201									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		100									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L	<	4									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	1									
	Total Silver	µg/L	<	1									
	Total Thallium	µg/L	<	0.2									
	Total Zinc	µg/L		75.7									
	Total Molybdenum	µg/L	<	10									
	Acrolein	µg/L	<	100									
	Acrylamide	µg/L											
	Acrylonitrile	µg/L	<	5									
	Benzene	µg/L	<	1									
	Bromoform	µg/L	<	1									
	Carbon Tetrachloride	µg/L	<	1									
	Chlorobenzene	µg/L	<	1									

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Group 3	Chlorodibromomethane	µg/L	<	1									
	Chloroethane	µg/L	<	1									
	2-Chloroethyl Vinyl Ether	µg/L	<	5									
	Chloroform	µg/L		7.74									
	Dichlorobromomethane	µg/L	<	1									
	1,1-Dichloroethane	µg/L	<	1									
	1,2-Dichloroethane	µg/L	<	1									
	1,1-Dichloroethylene	µg/L	<	1									
	1,2-Dichloropropane	µg/L	<	1									
	1,3-Dichloropropylene	µg/L	<	1									
	1,4-Dioxane	µg/L	<	100									
	Ethylbenzene	µg/L	<	5									
	Methyl Bromide	µg/L	<	1									
	Methyl Chloride	µg/L	<	1									
	Methylene Chloride	µg/L	<	1									
	1,1,2,2-Tetrachloroethane	µg/L	<	1									
	Tetrachloroethylene	µg/L	<	1									
	Toluene	µg/L	<	2.42									
	1,2-trans-Dichloroethylene	µg/L	<	1									
	1,1,1-Trichloroethane	µg/L	<	1									
	1,1,2-Trichloroethane	µg/L	<	1									
	Trichloroethylene	µg/L	<	1									
	Vinyl Chloride	µg/L	<	1									
Group 4	2-Chlorophenol	µg/L	<	5									
	2,4-Dichlorophenol	µg/L	<	5									
	2,4-Dimethylphenol	µg/L	<	5									
	4,6-Dinitro-o-Cresol	µg/L	<	25									
	2,4-Dinitrophenol	µg/L	<	25									
	2-Nitrophenol	µg/L	<	5									
	4-Nitrophenol	µg/L	<	25									
	p-Chloro-m-Cresol	µg/L	<	5									
	Pentachlorophenol	µg/L	<	25									
	Phenol	µg/L	<	5									
	2,4,6-Trichlorophenol	µg/L	<	5									
Group 5	Acenaphthene	µg/L	<	5									
	Acenaphthylene	µg/L	<	5									
	Anthracene	µg/L	<	5									
	Benzidine	µg/L	<	25									
	Benzo(a)Anthracene	µg/L	<	5									
	Benzo(a)Pyrene	µg/L	<	5									
	3,4-Benzofluoranthene	µg/L	<	5									
	Benzo(ghi)Perylene	µg/L	<	5									
	Benzo(k)Fluoranthene	µg/L	<	5									
	Bis(2-Chloroethoxy)Methane	µg/L	<	5									
	Bis(2-Chloroethyl)Ether	µg/L	<	5									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5									
	4-Bromophenyl Phenyl Ether	µg/L	<	5									
	Butyl Benzyl Phthalate	µg/L	<	5									
	2-Chloronaphthalene	µg/L	<	5									
	4-Chlorophenyl Phenyl Ether	µg/L	<	5									
	Chrysene	µg/L	<	5									
	Dibenzo(a,h)Anthrancene	µg/L	<	5									
	1,2-Dichlorobenzene	µg/L	<	5									
	1,3-Dichlorobenzene	µg/L	<	5									
	1,4-Dichlorobenzene	µg/L	<	5									
	3,3-Dichlorobenzidine	µg/L	<	5									
	Diethyl Phthalate	µg/L	<	5									
	Dimethyl Phthalate	µg/L	<	5									
	Di-n-Butyl Phthalate	µg/L	<	5									
	2,4-Dinitrotoluene	µg/L	<	5									
	2,6-Dinitrotoluene	µg/L	<	5									
	Di-n-Octyl Phthalate	µg/L	<	5									
	1,2-Diphenylhydrazine	µg/L	<	5									

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

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Pine Creek STP, NPDES Permit No. PA0027669, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Pine Creek (TSF)**

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	041236	13.7	1169	30.6	0.0013		Yes
End of Reach 1	041236	10.16	1155	41.6	0.0013		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	13.7	0.0197	0.55			52	5					100	7		
End of Reach 1	10.16	0.01918	0.798			60	5.4					100	7		

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	13.7														
End of Reach 1	10.16														

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Toxics Management Spreadsheet
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Model Results

Pine Creek STP, NPDES Permit No. PA0027669, 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)
13.7	0.55		0.55	9.282	0.001	5.	52.	10.4	0.038	5.721	0.029
10.16	0.80		0.798								

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)
13.7	4.41		4.41	9.282	0.001	5.784	52.	8.991	0.046	4.753	0.766
10.16	6.1		6.10								

Wasteload Allocations

AFC CCT (min): 0.029 PMF: 1 Analysis Hardness (mg/l): 218.01 Analysis pH: 6.97

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	794	
Total Antimony	0	0		0	1,100	1,100	1,165	
Total Arsenic	0	0		0	340	340	360	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	22,244	
Total Boron	0	0		0	8,100	8,100	8,580	
Total Cadmium	0	0		0	4.294	4.71	4.99	Chem Translator of 0.911 applied
Total Chromium (III)	0	0		0	1078.705	3,414	3,616	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	17.3	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	101	
Total Copper	0	0		0	28.008	29.2	30.9	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	

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Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	149.168	220	233	Chem Translator of 0.677 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	1.74	Chem Translator of 0.85 applied
Total Nickel	0	0		0	905.340	907	961	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	12.291	14.5	15.3	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	68.9	
Total Zinc	0	0		0	226.799	232	246	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	3.18	
Acrylonitrile	0	0		0	650	650	689	
Benzene	0	0		0	640	640	678	
Bromoform	0	0		0	1,800	1,800	1,907	
Carbon Tetrachloride	0	0		0	2,800	2,800	2,966	
Chlorobenzene	0	0		0	1,200	1,200	1,271	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	19,067	
Chloroform	0	0		0	1,900	1,900	2,013	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	15,889	
1,1-Dichloroethylene	0	0		0	7,500	7,500	7,944	
1,2-Dichloropropane	0	0		0	11,000	11,000	11,652	
1,3-Dichloropropylene	0	0		0	310	310	328	
Ethylbenzene	0	0		0	2,900	2,900	3,072	
Methyl Bromide	0	0		0	550	550	583	
Methyl Chloride	0	0		0	28,000	28,000	29,659	
Methylene Chloride	0	0		0	12,000	12,000	12,711	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	1,059	
Tetrachloroethylene	0	0		0	700	700	741	
Toluene	0	0		0	1,700	1,700	1,801	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	7,203	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	3,178	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	3,601	
Trichloroethylene	0	0		0	2,300	2,300	2,436	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	593	
2,4-Dichlorophenol	0	0		0	1,700	1,700	1,801	
2,4-Dimethylphenol	0	0		0	660	660	699	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	84.7	
2,4-Dinitrophenol	0	0		0	660	660	699	
2-Nitrophenol	0	0		0	8,000	8,000	8,474	
4-Nitrophenol	0	0		0	2,300	2,300	2,436	
p-Chloro-m-Cresol	0	0		0	160	160	169	
Pentachlorophenol	0	0		0	8.478	8.48	8.98	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	487	
Acenaphthene	0	0		0	83	83.0	87.9	

Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	318	
Benzo(a)Anthracene	0	0		0	0.5	0.5	0.53	
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	31,778	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	4,767	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	286	
Butyl Benzyl Phthalate	0	0		0	140	140	148	
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	869	
1,3-Dichlorobenzene	0	0		0	350	350	371	
1,4-Dichlorobenzene	0	0		0	730	730	773	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	4,237	
Dimethyl Phthalate	0	0		0	2,500	2,500	2,648	
Di-n-Butyl Phthalate	0	0		0	110	110	117	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	1,695	
2,6-Dinitrotoluene	0	0		0	990	990	1,049	
1,2-Diphenylhydrazine	0	0		0	15	15.0	15.9	
Fluoranthene	0	0		0	200	200	212	
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	10.6	
Hexachlorocyclopentadiene	0	0		0	5	5.0	5.3	
Hexachloroethane	0	0		0	60	60.0	63.6	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	10,593	
Naphthalene	0	0		0	140	140	148	
Nitrobenzene	0	0		0	4,000	4,000	4,237	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	18,007	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	318	
Phenanthrene	0	0		0	5	5.0	5.3	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	138	

☐ ***CFC*** CCT (min): 0.029 PMF: 1 Analysis Hardness (mg/l): 218.01 Analysis pH: 6.97

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	233	
Total Arsenic	0	0		0	150	150	159	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	4,343	
Total Boron	0	0		0	1,600	1,600	1,695	
Total Cadmium	0	0		0	0.423	0.48	0.51	Chem Translator of 0.876 applied
Total Chromium (III)	0	0		0	140.317	163	173	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	11.0	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	20.1	
Total Copper	0	0		0	17.431	18.2	19.2	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,589	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	5.813	8.58	9.09	Chem Translator of 0.677 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	0.96	Chem Translator of 0.85 applied
Total Nickel	0	0		0	100.555	101	107	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	5.28	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	13.8	
Total Zinc	0	0		0	228.655	232	246	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	3.18	
Acrylonitrile	0	0		0	130	130	138	
Benzene	0	0		0	130	130	138	
Bromoform	0	0		0	370	370	392	
Carbon Tetrachloride	0	0		0	560	560	593	
Chlorobenzene	0	0		0	240	240	254	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	3,707	
Chloroform	0	0		0	390	390	413	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	3,284	
1,1-Dichloroethylene	0	0		0	1,500	1,500	1,589	
1,2-Dichloropropane	0	0		0	2,200	2,200	2,330	
1,3-Dichloropropylene	0	0		0	61	61.0	64.6	
Ethylbenzene	0	0		0	580	580	614	
Methyl Bromide	0	0		0	110	110	117	
Methyl Chloride	0	0		0	5,500	5,500	5,826	
Methylene Chloride	0	0		0	2,400	2,400	2,542	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	222	
Tetrachloroethylene	0	0		0	140	140	148	
Toluene	0	0		0	330	330	350	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	1,483	
1,1,1-Trichloroethane	0	0		0	610	610	646	
1,1,2-Trichloroethane	0	0		0	680	680	720	
Trichloroethylene	0	0		0	450	450	477	

Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	117	
2,4-Dichlorophenol	0	0		0	340	340	360	
2,4-Dimethylphenol	0	0		0	130	130	138	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	16.9	
2,4-Dinitrophenol	0	0		0	130	130	138	
2-Nitrophenol	0	0		0	1,600	1,600	1,695	
4-Nitrophenol	0	0		0	470	470	498	
p-Chloro-m-Cresol	0	0		0	500	500	530	
Pentachlorophenol	0	0		0	6.504	6.5	6.89	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	96.4	
Acenaphthene	0	0		0	17	17.0	18.0	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	62.5	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.11	
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	6,000	6,000	6,356	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	964	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	57.2	
Butyl Benzyl Phthalate	0	0		0	35	35.0	37.1	
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	169	
1,3-Dichlorobenzene	0	0		0	69	69.0	73.1	
1,4-Dichlorobenzene	0	0		0	150	150	159	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	847	
Dimethyl Phthalate	0	0		0	500	500	530	
Di-n-Butyl Phthalate	0	0		0	21	21.0	22.2	
2,4-Dinitrotoluene	0	0		0	320	320	339	
2,6-Dinitrotoluene	0	0		0	200	200	212	
1,2-Diphenylhydrazine	0	0		0	3	3.0	3.18	
Fluoranthene	0	0		0	40	40.0	42.4	
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	2.12	
Hexachlorocyclopentadiene	0	0		0	1	1.0	1.06	
Hexachloroethane	0	0		0	12	12.0	12.7	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	2,224	
Naphthalene	0	0		0	43	43.0	45.5	

Nitrobenzene	0	0		0	810	810	858	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	3,601	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	62.5	
Phenanthrene	0	0		0	1	1.0	1.06	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	27.5	

☑ ***THH*** CCT (min): 0.029 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	5.93	
Total Arsenic	0	0		0	10	10.0	10.6	
Total Barium	0	0		0	2,400	2,400	2,542	
Total Boron	0	0		0	3,100	3,100	3,284	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	318	
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	1,059	
Total Mercury	0	0		0	0.050	0.05	0.053	
Total Nickel	0	0		0	610	610	646	
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	0.25	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	3.18	
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	106	
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	35.0	
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	72.0	
Methyl Bromide	0	0		0	100	100.0	106	
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	60.4	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	106	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	10,593	
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	31.8	
2,4-Dichlorophenol	0	0		0	10	10.0	10.6	
2,4-Dimethylphenol	0	0		0	100	100.0	106	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	2.12	
2,4-Dinitrophenol	0	0		0	10	10.0	10.6	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	4,237	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	74.1	
Anthracene	0	0		0	300	300	318	
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	212	
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	0.11	
2-Chloronaphthalene	0	0		0	800	800	847	
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	1,059	
1,3-Dichlorobenzene	0	0		0	7	7.0	7.41	
1,4-Dichlorobenzene	0	0		0	300	300	318	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	

Diethyl Phthalate	0	0		0	600	600	636	
Dimethyl Phthalate	0	0		0	2,000	2,000	2,119	
Di-n-Butyl Phthalate	0	0		0	20	20.0	21.2	
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	21.2	
Fluorene	0	0		0	50	50.0	53.0	
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	4.24	
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	36.0	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	10.6	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	21.2	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.074	

☑ ***CRL*** CCT (min): 0.766 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	
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	

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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	0.088	
Benzene	0	0		0	0.58	0.58	0.86	
Bromoform	0	0		0	7	7.0	10.3	
Carbon Tetrachloride	0	0		0	0.4	0.4	0.59	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	1.18	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	8.41	
Dichlorobromomethane	0	0		0	0.95	0.95	1.4	
1,2-Dichloroethane	0	0		0	9.9	9.9	14.6	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	1.33	
1,3-Dichloropropylene	0	0		0	0.27	0.27	0.4	
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	29.5	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	0.29	
Tetrachloroethylene	0	0		0	10	10.0	14.7	
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	0.81	
Trichloroethylene	0	0		0	0.6	0.6	0.88	
Vinyl Chloride	0	0		0	0.02	0.02	0.029	
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	0.044	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	2.21	
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	0.0001	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.001	

Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.0001	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.001	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.015	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.044	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	0.47	
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	0.18	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.0001	
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	0.074	
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	0.074	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	0.074	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.044	
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	0.0001	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.015	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	0.15	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.001	
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	0.001	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.007	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	4.87	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Boron	Report	Report	Report	Report	Report	µg/L	1.695	CFC	Discharge Conc > 10% WQBEL (no RP)

Total Cadmium	0.026	0.04	0.51	0.8	1.28	µg/L	0.51	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Hexavalent Chromium	0.55	0.86	11.0	17.2	27.5	µg/L	11.0	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	0.96	1.5	19.2	30.0	48.1	µg/L	19.2	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Dissolved Iron	Report	Report	Report	Report	Report	µg/L	318	THH	Discharge Conc > 10% WQBEL (no RP)
Total Iron	Report	Report	Report	Report	Report	µg/L	1,589	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	232	AFC	Discharge Conc > 10% WQBEL (no RP)
Acrolein	0.15	0.16	3.0	3.18	3.18	µg/L	3.0	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Benzene	0.043	0.067	0.86	1.33	2.14	µg/L	0.86	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Carbon Tetrachloride	0.03	0.046	0.59	0.92	1.47	µg/L	0.59	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Chlorodibromomethane	0.059	0.092	1.18	1.84	2.95	µg/L	1.18	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Chloroform	0.42	0.66	8.41	13.1	21.0	µg/L	8.41	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Dichlorobromomethane	0.07	0.11	1.4	2.19	3.5	µg/L	1.4	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,2-Dichloropropane	0.066	0.1	1.33	2.07	3.32	µg/L	1.33	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,3-Dichloropropylene	0.02	0.031	0.4	0.62	1.	µg/L	0.4	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,1,2,2-Tetrachloroethane	0.015	0.023	0.29	0.46	0.74	µg/L	0.29	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,1,2-Trichloroethane	0.041	0.063	0.81	1.27	2.03	µg/L	0.81	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Trichloroethylene	0.044	0.069	0.88	1.38	2.21	µg/L	0.88	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Vinyl Chloride	0.001	0.002	0.029	0.046	0.074	µg/L	0.029	CRL	Discharge Conc ≥ 50% WQBEL (RP)
4,6-Dinitro-o-Cresol	0.11	0.17	2.12	3.31	5.3	µg/L	2.12	THH	Discharge Conc ≥ 50% WQBEL (RP)
2,4-Dinitrophenol	0.53	0.83	10.6	16.5	26.5	µg/L	10.6	THH	Discharge Conc ≥ 50% WQBEL (RP)
Pentachlorophenol	0.002	0.003	0.044	0.069	0.11	µg/L	0.044	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Acenaphthene	Report	Report	Report	Report	Report	µg/L	18.0	CFC	Discharge Conc > 25% WQBEL (no RP)
Benzo(a)Anthracene	0.00007	0.0001	0.001	0.002	0.004	µg/L	0.001	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(a)Pyrene	0.000007	0.00001	0.0001	0.0002	0.0004	µg/L	0.0001	CRL	Discharge Conc ≥ 50% WQBEL (RP)
3,4-Benzofluoranthene	0.00007	0.0001	0.001	0.002	0.004	µg/L	0.001	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(k)Fluoranthene	0.0007	0.001	0.015	0.023	0.037	µg/L	0.015	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Chrysene	0.009	0.014	0.18	0.28	0.44	µg/L	0.18	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Dibenzo(a,h)Anthrancene	0.000007	0.00001	0.0001	0.0002	0.0004	µg/L	0.0001	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,3-Dichlorobenzene	0.37	0.58	7.41	11.6	18.5	µg/L	7.41	THH	Discharge Conc ≥ 50% WQBEL (RP)
Hexachlorobutadiene	0.0007	0.001	0.015	0.023	0.037	µg/L	0.015	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Indeno(1,2,3-cd)Pyrene	0.00007	0.0001	0.001	0.002	0.004	µg/L	0.001	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Phenanthrene	0.053	0.083	1.06	1.65	2.65	µg/L	1.06	CFC	Discharge Conc ≥ 50% WQBEL (RP)
1,2,4-Trichlorobenzene	0.004	0.006	0.074	0.12	0.19	µg/L	0.074	THH	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	750	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	2,542	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Chromium (III)	173	µg/L	Discharge Conc < TQL
Total Cobalt	20.1	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Total Lead	9.09	µg/L	Discharge Conc < TQL
Total Manganese	1,059	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.053	µg/L	Discharge Conc < TQL
Total Nickel	107	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	5.28	µg/L	Discharge Conc < TQL
Total Silver	14.5	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	0.25	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrylonitrile	0.088	µg/L	Discharge Conc < TQL
Bromoform	10.3	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	106	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	3,707	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	14.6	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethylene	35.0	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	72.0	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Bromide	106	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	5,826	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	29.5	µg/L	Discharge Conc ≤ 25% WQBEL
Tetrachloroethylene	14.7	µg/L	Discharge Conc ≤ 25% WQBEL
Toluene	60.4	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	106	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	646	µg/L	Discharge Conc ≤ 25% WQBEL
2-Chlorophenol	31.8	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	10.6	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	106	µg/L	Discharge Conc < TQL
2-Nitrophenol	1,695	µg/L	Discharge Conc < TQL
4-Nitrophenol	498	µg/L	Discharge Conc ≤ 25% WQBEL
p-Chloro-m-Cresol	160	µg/L	Discharge Conc < TQL
Phenol	4,237	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	2.21	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	318	µg/L	Discharge Conc ≤ 25% WQBEL
Benzidine	0.0001	µg/L	Discharge Conc < TQL

Benzo(ghi)Perylene	N/A	N/A	No WQS
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.044	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	212	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	0.47	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	57.2	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.11	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	847	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
1,2-Dichlorobenzene	169	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	159	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	0.074	µg/L	Discharge Conc < TQL
Diethyl Phthalate	636	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	530	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	21.2	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	0.074	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	0.074	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.044	µg/L	Discharge Conc < TQL
Fluoranthene	21.2	µg/L	Discharge Conc ≤ 25% WQBEL
Fluorene	53.0	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorobenzene	0.0001	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	1.06	µg/L	Discharge Conc < TQL
Hexachloroethane	0.15	µg/L	Discharge Conc < TQL
Isophorone	36.0	µg/L	Discharge Conc < TQL
Naphthalene	45.5	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	10.6	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.001	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.007	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	4.87	µg/L	Discharge Conc < TQL
Pyrene	21.2	µg/L	Discharge Conc ≤ 25% WQBEL

Appendix B – Toxics Management Spreadsheet (TMS) Analysis – Resampling

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: Pine Creek STP NPDES Permit No.: PA0027669 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Municipal 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
6	225	6.97						

	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: Stream CV	0 if left blank: Fate Coeff	0 if left blank: FOS	1 if left blank: Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		569									
	Chloride (PWS)	mg/L		137									
	Bromide	mg/L		0.09									
	Sulfate (PWS)	mg/L		67									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		6.2									
	Total Antimony	µg/L	<	1									
	Total Arsenic	µg/L	<	2.5									
	Total Barium	µg/L		31.2									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L	<	206									
	Total Cadmium	µg/L	<	0.148									
	Total Chromium (III)	µg/L		2.33									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L		13.9									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		10									
	Dissolved Iron	µg/L	<	50									
	Total Iron	µg/L		201									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		100									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L	<	0.4									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	1									
	Total Silver	µg/L	<	1									
	Total Thallium	µg/L	<	0.2									
	Total Zinc	µg/L		75.7									
	Total Molybdenum	µg/L	<	10									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	5									
	Benzene	µg/L	<	1									
	Bromoform	µg/L	<	1									
	Carbon Tetrachloride	µg/L	<	1									
	Chlorobenzene	µg/L		1									

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Group 3	Chlorodibromomethane	µg/L	<	1										
	Chloroethane	µg/L	<	1										
	2-Chloroethyl Vinyl Ether	µg/L	<	5										
	Chloroform	µg/L		9.53										
	Dichlorobromomethane	µg/L	<	1										
	1,1-Dichloroethane	µg/L	<	1										
	1,2-Dichloroethane	µg/L	<	1										
	1,1-Dichloroethylene	µg/L	<	1										
	1,2-Dichloropropane	µg/L	<	1										
	1,3-Dichloropropylene	µg/L	<	0.5										
	1,4-Dioxane	µg/L	<	100										
	Ethylbenzene	µg/L	<	5										
	Methyl Bromide	µg/L	<	1										
	Methyl Chloride	µg/L	<	1										
	Methylene Chloride	µg/L	<	1										
	1,1,2,2-Tetrachloroethane	µg/L	<	1										
	Tetrachloroethylene	µg/L	<	1										
	Toluene	µg/L		2.42										
	1,2-trans-Dichloroethylene	µg/L	<	1										
	1,1,1-Trichloroethane	µg/L	<	1										
	1,1,2-Trichloroethane	µg/L	<	1										
	Trichloroethylene	µg/L	<	1										
	Vinyl Chloride	µg/L	<	1										
Group 4	2-Chlorophenol	µg/L	<	5										
	2,4-Dichlorophenol	µg/L	<	5										
	2,4-Dimethylphenol	µg/L	<	5										
	4,6-Dinitro-o-Cresol	µg/L	<	10										
	2,4-Dinitrophenol	µg/L	<	10										
	2-Nitrophenol	µg/L	<	5										
	4-Nitrophenol	µg/L	<	25										
	p-Chloro-m-Cresol	µg/L	<	5										
	Pentachlorophenol	µg/L	<	10										
	Phenol	µg/L	<	5										
	2,4,6-Trichlorophenol	µg/L	<	5										
Group 5	Acenaphthene	µg/L	<	5										
	Acenaphthylene	µg/L	<	5										
	Anthracene	µg/L	<	5										
	Benzidine	µg/L	<	25										
	Benzo(a)Anthracene	µg/L	<	2.55										
	Benzo(a)Pyrene	µg/L	<	2.55										
	3,4-Benzofluoranthene	µg/L	<	2.55										
	Benzo(ghi)Perylene	µg/L	<	5										
	Benzo(k)Fluoranthene	µg/L	<	2.55										
	Bis(2-Chloroethoxy)Methane	µg/L	<	5										
	Bis(2-Chloroethyl)Ether	µg/L	<	5										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5										
	4-Bromophenyl Phenyl Ether	µg/L	<	5										
	Butyl Benzyl Phthalate	µg/L	<	5										
	2-Chloronaphthalene	µg/L	<	5										
	4-Chlorophenyl Phenyl Ether	µg/L	<	5										
	Chrysene	µg/L	<	2.55										
	Dibenzo(a,h)Anthrancene	µg/L	<	2.55										
	1,2-Dichlorobenzene	µg/L	<	5										
	1,3-Dichlorobenzene	µg/L	<	5										
	1,4-Dichlorobenzene	µg/L	<	5										
	3,3-Dichlorobenzidine	µg/L	<	5										
	Diethyl Phthalate	µg/L	<	5										
	Dimethyl Phthalate	µg/L	<	5										
	Di-n-Butyl Phthalate	µg/L	<	5										
	2,4-Dinitrotoluene	µg/L	<	5										
	2,6-Dinitrotoluene	µg/L	<	5										
	Di-n-Octyl Phthalate	µg/L	<	5										
	1,2-Diphenylhydrazine	µg/L	<	5										

	Fluoranthene	µg/L	<	5									
	Fluorene	µg/L	<	5									
	Hexachlorobenzene	µg/L	<	5									
	Hexachlorobutadiene	µg/L	<	0.5									
	Hexachlorocyclopentadiene	µg/L	<	5									
	Hexachloroethane	µg/L	<	5									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	5									
	Isophorone	µg/L	<	5									
	Naphthalene	µg/L	<	5									
	Nitrobenzene	µg/L	<	5									
	n-Nitrosodimethylamine	µg/L	<	5									
	n-Nitrosodi-n-Propylamine	µg/L	<	5									
	n-Nitrosodiphenylamine	µg/L	<	5									
	Phenanthrene	µg/L	<	5									
	Pyrene	µg/L	<	5									
	1,2,4-Trichlorobenzene	µg/L	<	0.5									
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Pine Creek STP, NPDES Permit No. PA0027669, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Pine Creek (TSF)**

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	041236	13.7	1169	30.6	0.0013		Yes
End of Reach 1	041236	10.16	1155	41.6	0.0013		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	13.7	0.018	0.55			52	5					100	7		
End of Reach 1	10.16	0.01918	0.798			60	5.4					100	7		

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	13.7														
End of Reach 1	10.16														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Pine Creek STP, NPDES Permit No. PA0027669, 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)
13.7	0.55		0.55	9.282	0.001	5.	52.	10.4	0.038	5.721	0.029
10.16	0.80		0.798								

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)
13.7	4.41		4.41	9.282	0.001	5.784	52.	8.991	0.046	4.753	0.766
10.16	6.1		6.10								

Wasteload Allocations

AFC CCT (min): 0.029 PMF: 1 Analysis Hardness (mg/l): 218.01 Analysis pH: 6.97

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	794	
Total Antimony	0	0		0	1,100	1,100	1,165	
Total Arsenic	0	0		0	340	340	360	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	22,244	
Total Boron	0	0		0	8,100	8,100	8,580	
Total Cadmium	0	0		0	4.294	4.71	4.99	Chem Translator of 0.911 applied
Total Chromium (III)	0	0		0	1078.705	3,414	3,616	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	17.3	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	101	
Total Copper	0	0		0	28.008	29.2	30.9	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	

Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	149.168	220	233	Chem Translator of 0.677 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	1.74	Chem Translator of 0.85 applied
Total Nickel	0	0		0	905.340	907	961	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	12.291	14.5	15.3	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	68.9	
Total Zinc	0	0		0	226.799	232	246	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	3.18	
Acrylonitrile	0	0		0	650	650	689	
Benzene	0	0		0	640	640	678	
Bromoform	0	0		0	1,800	1,800	1,907	
Carbon Tetrachloride	0	0		0	2,800	2,800	2,966	
Chlorobenzene	0	0		0	1,200	1,200	1,271	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	19,067	
Chloroform	0	0		0	1,900	1,900	2,013	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	15,889	
1,1-Dichloroethylene	0	0		0	7,500	7,500	7,944	
1,2-Dichloropropane	0	0		0	11,000	11,000	11,652	
1,3-Dichloropropylene	0	0		0	310	310	328	
Ethylbenzene	0	0		0	2,900	2,900	3,072	
Methyl Bromide	0	0		0	550	550	583	
Methyl Chloride	0	0		0	28,000	28,000	29,659	
Methylene Chloride	0	0		0	12,000	12,000	12,711	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	1,059	
Tetrachloroethylene	0	0		0	700	700	741	
Toluene	0	0		0	1,700	1,700	1,801	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	7,203	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	3,178	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	3,601	
Trichloroethylene	0	0		0	2,300	2,300	2,436	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	593	
2,4-Dichlorophenol	0	0		0	1,700	1,700	1,801	
2,4-Dimethylphenol	0	0		0	660	660	699	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	84.7	
2,4-Dinitrophenol	0	0		0	660	660	699	
2-Nitrophenol	0	0		0	8,000	8,000	8,474	
4-Nitrophenol	0	0		0	2,300	2,300	2,436	
p-Chloro-m-Cresol	0	0		0	160	160	169	
Pentachlorophenol	0	0		0	8.478	8.48	8.98	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	487	
Acenaphthene	0	0		0	83	83.0	87.9	

Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	318	
Benzo(a)Anthracene	0	0		0	0.5	0.5	0.53	
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	31,778	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	4,767	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	286	
Butyl Benzyl Phthalate	0	0		0	140	140	148	
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	869	
1,3-Dichlorobenzene	0	0		0	350	350	371	
1,4-Dichlorobenzene	0	0		0	730	730	773	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	4,237	
Dimethyl Phthalate	0	0		0	2,500	2,500	2,648	
Di-n-Butyl Phthalate	0	0		0	110	110	117	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	1,695	
2,6-Dinitrotoluene	0	0		0	990	990	1,049	
1,2-Diphenylhydrazine	0	0		0	15	15.0	15.9	
Fluoranthene	0	0		0	200	200	212	
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	10.6	
Hexachlorocyclopentadiene	0	0		0	5	5.0	5.3	
Hexachloroethane	0	0		0	60	60.0	63.6	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	10,593	
Naphthalene	0	0		0	140	140	148	
Nitrobenzene	0	0		0	4,000	4,000	4,237	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	18,007	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	318	
Phenanthrene	0	0		0	5	5.0	5.3	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	138	

☑ ***CFC*** CCT (min): 0.029 PMF: 1 Analysis Hardness (mg/l): 218.01 Analysis pH: 6.97

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	233	
Total Arsenic	0	0		0	150	150	159	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	4,343	
Total Boron	0	0		0	1,600	1,600	1,695	
Total Cadmium	0	0		0	0.423	0.48	0.51	Chem Translator of 0.876 applied
Total Chromium (III)	0	0		0	140.317	163	173	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	11.0	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	20.1	
Total Copper	0	0		0	17.431	18.2	19.2	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,589	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	5.813	8.58	9.09	Chem Translator of 0.677 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	0.96	Chem Translator of 0.85 applied
Total Nickel	0	0		0	100.555	101	107	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	5.28	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	13.8	
Total Zinc	0	0		0	228.655	232	246	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	3.18	
Acrylonitrile	0	0		0	130	130	138	
Benzene	0	0		0	130	130	138	
Bromoform	0	0		0	370	370	392	
Carbon Tetrachloride	0	0		0	560	560	593	
Chlorobenzene	0	0		0	240	240	254	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	3,707	
Chloroform	0	0		0	390	390	413	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	3,284	
1,1-Dichloroethylene	0	0		0	1,500	1,500	1,589	
1,2-Dichloropropane	0	0		0	2,200	2,200	2,330	
1,3-Dichloropropylene	0	0		0	61	61.0	64.6	
Ethylbenzene	0	0		0	580	580	614	
Methyl Bromide	0	0		0	110	110	117	
Methyl Chloride	0	0		0	5,500	5,500	5,826	
Methylene Chloride	0	0		0	2,400	2,400	2,542	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	222	
Tetrachloroethylene	0	0		0	140	140	148	
Toluene	0	0		0	330	330	350	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	1,483	
1,1,1-Trichloroethane	0	0		0	610	610	646	
1,1,2-Trichloroethane	0	0		0	680	680	720	
Trichloroethylene	0	0		0	450	450	477	

Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	117	
2,4-Dichlorophenol	0	0		0	340	340	360	
2,4-Dimethylphenol	0	0		0	130	130	138	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	16.9	
2,4-Dinitrophenol	0	0		0	130	130	138	
2-Nitrophenol	0	0		0	1,600	1,600	1,695	
4-Nitrophenol	0	0		0	470	470	498	
p-Chloro-m-Cresol	0	0		0	500	500	530	
Pentachlorophenol	0	0		0	6.504	6.5	6.89	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	96.4	
Acenaphthene	0	0		0	17	17.0	18.0	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	62.5	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.11	
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	6,000	6,000	6,356	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	964	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	57.2	
Butyl Benzyl Phthalate	0	0		0	35	35.0	37.1	
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	169	
1,3-Dichlorobenzene	0	0		0	69	69.0	73.1	
1,4-Dichlorobenzene	0	0		0	150	150	159	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	847	
Dimethyl Phthalate	0	0		0	500	500	530	
Di-n-Butyl Phthalate	0	0		0	21	21.0	22.2	
2,4-Dinitrotoluene	0	0		0	320	320	339	
2,6-Dinitrotoluene	0	0		0	200	200	212	
1,2-Diphenylhydrazine	0	0		0	3	3.0	3.18	
Fluoranthene	0	0		0	40	40.0	42.4	
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	2.12	
Hexachlorocyclopentadiene	0	0		0	1	1.0	1.06	
Hexachloroethane	0	0		0	12	12.0	12.7	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	2,224	
Naphthalene	0	0		0	43	43.0	45.5	

Nitrobenzene	0	0		0	810	810	858	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	3,601	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	62.5	
Phenanthrene	0	0		0	1	1.0	1.06	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	27.5	

☑ ***THH*** CCT (min): 0.029 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	5.93	
Total Arsenic	0	0		0	10	10.0	10.6	
Total Barium	0	0		0	2,400	2,400	2,542	
Total Boron	0	0		0	3,100	3,100	3,284	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	318	
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	1,059	
Total Mercury	0	0		0	0.050	0.05	0.053	
Total Nickel	0	0		0	610	610	646	
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	0.25	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	3.18	
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	106	
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	35.0	
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	72.0	
Methyl Bromide	0	0		0	100	100.0	106	
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	60.4	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	106	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	10,593	
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	31.8	
2,4-Dichlorophenol	0	0		0	10	10.0	10.6	
2,4-Dimethylphenol	0	0		0	100	100.0	106	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	2.12	
2,4-Dinitrophenol	0	0		0	10	10.0	10.6	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	4,237	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	74.1	
Anthracene	0	0		0	300	300	318	
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	212	
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	0.11	
2-Chloronaphthalene	0	0		0	800	800	847	
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	1,059	
1,3-Dichlorobenzene	0	0		0	7	7.0	7.41	
1,4-Dichlorobenzene	0	0		0	300	300	318	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	

Diethyl Phthalate	0	0		0	600	600	636	
Dimethyl Phthalate	0	0		0	2,000	2,000	2,119	
Di-n-Butyl Phthalate	0	0		0	20	20.0	21.2	
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	21.2	
Fluorene	0	0		0	50	50.0	53.0	
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	4.24	
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	36.0	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	10.6	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	21.2	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.074	

☐ ***CRL*** CCT (min): 0.766 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	
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	0.088	
Benzene	0	0		0	0.58	0.58	0.86	
Bromoform	0	0		0	7	7.0	10.3	
Carbon Tetrachloride	0	0		0	0.4	0.4	0.59	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	1.18	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	8.41	
Dichlorobromomethane	0	0		0	0.95	0.95	1.4	
1,2-Dichloroethane	0	0		0	9.9	9.9	14.6	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	1.33	
1,3-Dichloropropylene	0	0		0	0.27	0.27	0.4	
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	29.5	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	0.29	
Tetrachloroethylene	0	0		0	10	10.0	14.7	
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	0.81	
Trichloroethylene	0	0		0	0.6	0.6	0.88	
Vinyl Chloride	0	0		0	0.02	0.02	0.029	
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	0.044	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	2.21	
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	0.0001	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.001	

Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.0001	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.001	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.015	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.044	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	0.47	
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	0.18	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.0001	
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	0.074	
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	0.074	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	0.074	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.044	
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	0.0001	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.015	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	0.15	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.001	
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	0.001	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.007	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	4.87	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Boron	Report	Report	Report	Report	Report	µg/L	1,695	CFC	Discharge Conc > 10% WQBEL (no RP)

Total Copper	0.96	1.5	19.2	30.0	48.1	µg/L	19.2	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Dissolved Iron	Report	Report	Report	Report	Report	µg/L	318	THH	Discharge Conc > 10% WQBEL (no RP)
Total Iron	Report	Report	Report	Report	Report	µg/L	1,589	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	232	AFC	Discharge Conc > 10% WQBEL (no RP)
Benzene	0.043	0.067	0.86	1.33	2.14	µg/L	0.86	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Carbon Tetrachloride	0.03	0.046	0.59	0.92	1.47	µg/L	0.59	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Chlorodibromomethane	0.059	0.092	1.18	1.84	2.95	µg/L	1.18	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Chloroform	0.42	0.66	8.41	13.1	21.0	µg/L	8.41	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Dichlorobromomethane	0.07	0.11	1.4	2.19	3.5	µg/L	1.4	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,2-Dichloropropane	0.066	0.1	1.33	2.07	3.32	µg/L	1.33	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,1,2,2-Tetrachloroethane	0.015	0.023	0.29	0.46	0.74	µg/L	0.29	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,1,2-Trichloroethane	0.041	0.063	0.81	1.27	2.03	µg/L	0.81	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Trichloroethylene	0.044	0.069	0.88	1.38	2.21	µg/L	0.88	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Vinyl Chloride	0.001	0.002	0.029	0.046	0.074	µg/L	0.029	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Acenaphthene	Report	Report	Report	Report	Report	µg/L	18.0	CFC	Discharge Conc > 25% WQBEL (no RP)
Benzo(a)Anthracene	0.00007	0.0001	0.001	0.002	0.004	µg/L	0.001	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(a)Pyrene	0.000007	0.00001	0.0001	0.0002	0.0004	µg/L	0.0001	CRL	Discharge Conc ≥ 50% WQBEL (RP)
3,4-Benzofluoranthene	0.00007	0.0001	0.001	0.002	0.004	µg/L	0.001	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(k)Fluoranthene	0.0007	0.001	0.015	0.023	0.037	µg/L	0.015	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Chrysene	0.009	0.014	0.18	0.28	0.44	µg/L	0.18	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Dibenzo(a,h)Anthrancene	0.000007	0.00001	0.0001	0.0002	0.0004	µg/L	0.0001	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,3-Dichlorobenzene	0.37	0.58	7.41	11.6	18.5	µg/L	7.41	THH	Discharge Conc ≥ 50% WQBEL (RP)
Indeno(1,2,3-cd)Pyrene	0.00007	0.0001	0.001	0.002	0.004	µg/L	0.001	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Phenanthrene	0.053	0.083	1.06	1.65	2.65	µg/L	1.06	CFC	Discharge Conc ≥ 50% WQBEL (RP)

☐ ***Other Pollutants without Limits or Monitoring***

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS

Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	750	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	2,542	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Cadmium	0.51	µg/L	Discharge Conc < TQL
Total Chromium (III)	173	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	11.0	µg/L	Discharge Conc < TQL
Total Cobalt	20.1	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Total Lead	9.09	µg/L	Discharge Conc < TQL
Total Manganese	1,059	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.053	µg/L	Discharge Conc < TQL
Total Nickel	107	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	5.28	µg/L	Discharge Conc < TQL
Total Silver	14.5	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	0.25	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	3.0	µg/L	Discharge Conc < TQL
Acrylonitrile	0.088	µg/L	Discharge Conc < TQL
Bromoform	10.3	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	106	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	3,707	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	14.6	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethylene	35.0	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichloropropylene	0.4	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	72.0	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Bromide	106	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	5,826	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	29.5	µg/L	Discharge Conc ≤ 25% WQBEL
Tetrachloroethylene	14.7	µg/L	Discharge Conc ≤ 25% WQBEL
Toluene	60.4	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	106	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	646	µg/L	Discharge Conc ≤ 25% WQBEL
2-Chlorophenol	31.8	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	10.6	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	106	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	2.12	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	10.6	µg/L	Discharge Conc < TQL
2-Nitrophenol	1,695	µg/L	Discharge Conc < TQL
4-Nitrophenol	498	µg/L	Discharge Conc ≤ 25% WQBEL

p-Chloro-m-Cresol	160	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.044	µg/L	Discharge Conc < TQL
Phenol	4,237	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	2.21	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	318	µg/L	Discharge Conc ≤ 25% WQBEL
Benzidine	0.0001	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.044	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	212	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	0.47	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	57.2	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.11	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	847	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
1,2-Dichlorobenzene	169	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	159	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	0.074	µg/L	Discharge Conc < TQL
Diethyl Phthalate	636	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	530	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	21.2	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	0.074	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	0.074	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.044	µg/L	Discharge Conc < TQL
Fluoranthene	21.2	µg/L	Discharge Conc ≤ 25% WQBEL
Fluorene	53.0	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorobenzene	0.0001	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.015	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	1.06	µg/L	Discharge Conc < TQL
Hexachloroethane	0.15	µg/L	Discharge Conc < TQL
Isophorone	36.0	µg/L	Discharge Conc < TQL
Naphthalene	45.5	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	10.6	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.001	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.007	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	4.87	µg/L	Discharge Conc < TQL
Pyrene	21.2	µg/L	Discharge Conc ≤ 25% WQBEL
1,2,4-Trichlorobenzene	0.074	µg/L	Discharge Conc < TQL

Appendix C – DEP WET Analysis Spreadsheet –

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.91
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: McCandelss TWP SA-Pine Creek STP

Permit No.: PA0027669

Test Completion Date: 8/3/2020

Replicate No.	Control	TIWC
1	26	34
2	27	32
3	30	33
4	29	33
5	28	29
6	33	27
7	20	32
8	29	29
9	37	20
10	31	28
11		
12		
13		
14		
15		
Mean	29.000	29.700
Std Dev.	4.472	4.165
# Replicates	10	10

T-Test Result	4.7014
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	PASS

Test Completion Date: 8/2/2021

Replicate No.	Control	TIWC
1	21	29
2	11	32
3	29	33
4	23	32
5	27	29
6	23	33
7	35	31
8	25	32
9	11	28
10	33	26
11		
12		
13		
14		
15		
Mean	23.800	30.500
Std Dev.	8.066	2.369
# Replicates	10	10

T-Test Result	6.1571
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	PASS

Test Completion Date: 5/30/2022

Replicate No.	Control	TIWC
1	25	25
2	24	28
3	25	26
4	24	23
5	26	23
6	16	24
7	22	25
8	25	22
9	20	24
10	24	21
11		
12		
13		
14		
15		
Mean	23.100	24.100
Std Dev.	3.035	2.025
# Replicates	10	10

T-Test Result	7.0324
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Test Completion Date: 5/9/2023

Replicate No.	Control	TIWC
1	26	0
2	30	30
3	25	24
4	28	26
5	21	28
6	22	24
7	0	2
8	0	0
9	29	31
10	14	29
11		
12		
13		
14		
15		
Mean	19.500	19.400
Std Dev.	11.277	13.142
# Replicates	10	10

T-Test Result	0.9662
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	PASS

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.91
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: McCandeiss TWP SA-Pine Creek STP

Permit No.: PA0027669

Replicate No.	Test Completion Date: 8/3/2020 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	

Replicate No.	Test Completion Date: 8/2/2021 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	

Replicate No.	Test Completion Date: 5/30/2022 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	

Replicate No.	Test Completion Date: 5/9/2023 Control	TIWC
1	1	0
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	1	1
11		
12		
13		
14		
15		
Mean	0.900	0.900
Std Dev.	0.316	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)	0.91
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: McCandelss TWP SA-Pine Creek STP

Permit No.: PA0027669

Test Completion Date: 8/3/2020

Replicate No.	Control	TIWC
1	0.8	1
2	1	0.9
3	1	0.9
4	1	0.6
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.950	0.850
Std Dev.	0.100	0.173
# Replicates	4	4

T-Test Result	3.4210
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	**PASS**

Test Completion Date: 8/2/2021

Replicate No.	Control	TIWC
1	1	1
2	0.9	1
3	1	1
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.975	1.000
Std Dev.	0.050	0.000
# Replicates	4	4

T-Test Result	26.1497
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	**PASS**

Test Completion Date: 5/30/2022

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	0.8
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	1.000	0.950
Std Dev.	0.000	0.100
# Replicates	4	4

T-Test Result	8.1944
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	**PASS**

Test Completion Date: 5/9/2023

Replicate No.	Control	TIWC
1	1	1
2	1	0.9
3	1	0.9
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	1.000	0.950
Std Dev.	0.000	0.058
# Replicates	4	4

T-Test Result	14.6031
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)	0.91
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name
McCandelss TWP SA-Pine Creek STP

Permit No.
PA0027669

Test Completion Date: 8/3/2020

Replicate No.	Control	TIWC
1	0.324	0.405
2	0.302	0.379
3	0.344	0.327
4	0.332	0.288
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.326	0.350
Std Dev.	0.018	0.052
# Replicates	4	4

T-Test Result	3.9078
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	PASS

Test Completion Date: 8/2/2021

Replicate No.	Control	TIWC
1	0.26	0.282
2	0.248	0.259
3	0.268	0.26
4	0.246	0.259
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.256	0.265
Std Dev.	0.010	0.011
# Replicates	4	4

T-Test Result	10.6680
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 5/30/2022

Replicate No.	Control	TIWC
1	0.304	0.344
2	0.331	0.37
3	0.36	0.309
4	0.321	0.34
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.329	0.341
Std Dev.	0.023	0.025
# Replicates	4	4

T-Test Result	6.1481
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 5/9/2023

Replicate No.	Control	TIWC
1	0.327	0.459
2	0.398	0.4
3	0.329	0.402
4	0.341	0.425
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.349	0.422
Std Dev.	0.033	0.027
# Replicates	4	4

T-Test Result	8.6059
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

WET Summary and Evaluation

Facility Name	McCandelss TWP SA-Pine Creek STP
Permit No.	PA0027669
Design Flow (MGD)	6
Q_{7-10} Flow (cfs)	0.55
PMF_a	1
PMF_c	1

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/3/20	8/2/21	5/30/22	5/9/23
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/3/20	8/2/21	5/30/22	5/9/23
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/3/20	8/2/21	5/30/22	5/9/23
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/3/20	8/2/21	5/30/22	5/9/23
Pimephales	Growth	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**
TIWC	**94** % Effluent
Dilution Series	**24**, **47**, **94**, **97**, **100** % Effluent
Permit Limit	**None**
Permit Limit Species	

Appendix D – DEP Total Residual Chlorine Sheet–

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.55	= Q stream (cfs)	0.5	= CV Daily
6	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.4	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0.63	= Chlorine Demand of Discharg	15	= AFC_Criteria Compliance Time (mi
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (mi
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	0.674	1.3.2.iii	WLA cfc =	0.665
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.251	5.1d	LTA_cfc =	0.387

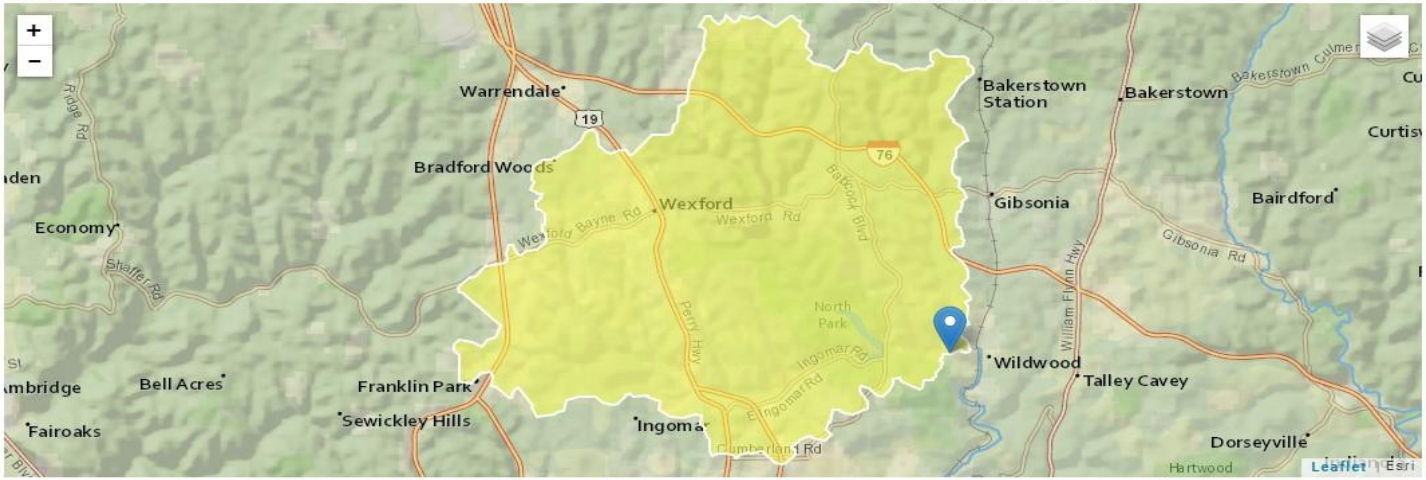
Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.309	AFC
		INST MAX LIMIT (mg/l) =	1.011	

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

Appendix E – StreamStats Report–

StreamStats Report

Region ID:	PA
Workspace ID:	PA20211013164539403000
Clicked Point (Latitude, Longitude):	40.59502, -79.98053
Time:	2021-10-13 12:45:59 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	30.6	square miles
ELEV	Mean Basin Elevation	1169	feet

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	30.6	square miles	2.26	1400
ELEV	Mean Basin Elevation	1169	feet	1050	2580

Low-Flow Statistics Flow Report [Low Flow Region 4]

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.35	ft^3/s	43	43
30 Day 2 Year Low Flow	2.22	ft^3/s	38	38
7 Day 10 Year Low Flow	0.55	ft^3/s	66	66
30 Day 10 Year Low Flow	0.909	ft^3/s	54	54
90 Day 10 Year Low Flow	1.56	ft^3/s	41	41

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.

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2