Pennsylvania Department of Environmental Protection

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0091138**
Facility Type	**Municipal**	APS ID	**1102033**
Major / Minor	**Minor**	Authorization ID	**1463841**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Cecil Township Municipal Authority**	Facility Name	**Teodori STP**
Applicant Address	375 Southpointe Boulevard Suite 350	Facility Address	Teodori STP
	Canonsburg, PA 15317-8587		Lawrence, PA 15055
Applicant Contact	Michael Zrenchak	Facility Contact	
Applicant Phone	(724) 746-4848	Facility Phone	
Client ID	74993	Site ID	250636
Ch 94 Load Status	Not Overloaded	Municipality	Cecil Township
Connection Status	No Limitations	County	Washington
Date Application Received	December 1, 2023	EPA Waived?	Yes
Date Application Accepted	December 5, 2023	If No, Reason	
Purpose of Application	Renewal of existing NPDES permit for discharge of treated sewage.		

Summary of Review

Applicant has applied for renewal of NPDES Permit No. PA0091138 on December 1, 2023. The application was accepted on December 5, 2023.

Act 14 Notification was provided to Cecil Township and Washington County in the letters dated October 30th, 2023.

The receiving stream, Chartiers Creek, is classified as a WWF and is located in State Watershed 20-F.

The existing facility consists of one comminutor/bar screen, two equalization tanks, three parallel extended aeration basins, three clarifiers, one chlorine contact chamber, and one dechlorination tank. Sludge management includes three sludge wasting tanks for holding before disposal.

Sludge use and disposal description and location(s): Hauled to other WWTP.

Issuance of the draft permit is recommended.

Public Participation

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

Approve	Deny	Signatures	Date
x		John Price Jack Price / Environmental Engineering Specialist	December 10, 2024
x		Mahbuba Iasmin Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineering Manager	December 10, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.149
Latitude	40º 18' 14.00"	Longitude	-80º 7' 58.00"
Quad Name	Canonsburg	Quad Code	40080C2
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Chartiers Creek (WWF)	Stream Code	36777
NHD Com ID	99691354	RMI	24.09
Drainage Area	143	Yield (cfs/mi^2)	0.026
Q_{7-10} Flow (cfs)	3.66	Q_{7-10} Basis	USGS StreamStats (Attachment 1)
Elevation (ft)	865.39	Slope (ft/ft)	0.002
Watershed No.	20-F	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	NUTRIENTS, SILTATION, ACID MINE DRAINAGE, PCBs, CHLORDANE		
Source(s) of Impairment	AGRICULTURE, CONSTRUCTION		
TMDL Status	Final, Final	Name	Chartiers Creek, Chartiers 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 PWSID 5020043 (40 MGD)		
PWS Waters	Ohio River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	13.4 Linear Miles

Changes Since Last Permit Issuance: The water quality models for this discharge were last run in 2012. The discharge to Chartiers Creek was modeled with WQM 7.0, TRC_Calc, and TMS. The recommendations from these models support the existing limits for $CBOD_5$, Dissolved Oxygen, Total Residual Chlorine, and Wintertime Ammonia-Nitrogen.

The following changes to permit limitations resulted from an Updated WQM 7.0 Model of the discharge:

- Average monthly Summer Ammonia Nitrogen concentration limit was reduced from 25.0 mg/L to 23.3 mg/L.
- Instantaneous Summer Ammonia concentration limit was reduced from 50.0 mg/L to 46.6 mg/L.
- Average monthly Summer Ammonia Nitrogen mass limit was reduced from 31.1 lbs/day to 28.9 lbs/day.

The following changes to permit limitations resulted as a result of rounding down according to accepted rounding procedures.

- Average Monthly $CBOD_5$ mass loading was revised from 31.1 lbs/day to 31.0 lbs/day.
- Weekly Average $CBOD_5$ mass loading was revised from 46.6 lbs/day to 46.5 lbs/day.
- Average Monthly TSS mass loading was revised from 37.3 lbs/day to 37.2 lbs/day.
- Weekly Average TSS mass loading was revised from 56.0 lbs/day to 55.9 lbs/day.
- Average Monthly Winter Ammonia Nitrogen mass loading was revised from 31.1 lbs/day to 31.0 lbs/day.

The following limitations were added based on the SOP for Sewage Effluent Limitations.

- Quarterly *E. Coli* monitoring is now added.
- Weekly Average Ammonia-Nitrogen limits are now added.
- Instantaneous Ammonia-Nitrogen limits are now added.

Other Comments: The PWS intake is sufficiently far downstream from the discharge that modelling of this effluent effect on the intake is not necessary.

Treatment Facility Summary

Treatment Facility Name: Cecil Township Municipal Authority - Teodori STP

WQM Permit No.	Issuance Date
6399405	07/30/1999

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Activated Sludge With Solids Removal	Chlorine With Dechlorination	0.042

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.149	298	Not Overloaded	Combination	Other WWTP

Changes Since Last Permit Issuance: None

Operations Compliance Check Summary Report

Facility: Teodori STP

NPDES Permit No.: PA0091138

Compliance Review Period: 10/01/2019-10/01/2024

Inspection Summary:

INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
08/16/2022	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted
07/16/2021	Routine/Partial Inspection	PA Dept of Environmental Protection	No Violations Noted

Violation Summary:

No eFACTS violations within the compliance review period.

Open Violations by Client ID:

No open violations for Client ID 74993.

Enforcement Summary:

No WMS Enforcement Actions within the compliance review period.

Compliance Status:

Facility does not currently have any open violations or pending enforcements. A final compliance status will be determined at permit issuance.

Compliance History

DMR Data for Outfall 001 (from September 1, 2023 to August 31, 2024)

Parameter	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23
Flow (MGD) Average Monthly	0.0495	0.047222	0.049325	0.058435	0.107483	0.063955	0.051492	0.068029	0.050046	0.044836	0.044026	0.042638
Flow (MGD) Daily Maximum	0.0793	0.062067	0.06538	0.09359	0.381673	0.103213	0.07126	0.14859	0.092987	0.08468	0.07035	0.08612
pH (S.U.) Instantaneous Minimum	6.6	6.54	6.9	6.9	6.9	7.0	6.5	6.9	6.9	6.9	6.8	6.8
pH (S.U.) Instantaneous Maximum	7.4	7.37	7.3	7.2	7.5	7.6	7.6	7.5	7.5	7.4	7.4	7.1
DO (mg/L) Instantaneous Minimum	4.2	4.47	4.84	4.33	4.56	4.81	4.7	4.19	4.42	4.64	4.86	5.01
TRC (mg/L) Average Monthly	0.01	< 0.02	< 0.01	0.02	< 0.03	0.02	< 0.03	< 0.03	< 0.02	0.02	< 0.03	0.02
TRC (mg/L) Instantaneous Maximum	0.03	0.08	0.03	0.05	0.08	0.10	0.08	0.31	0.05	0.08	0.06	0.04
CBOD5 (lbs/day) Average Monthly	2.2	2.0	4.3	4.3	5.7	7.3	2.2	< 1.7	3.3	2.6	< 3.3	5.0
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly	82	70	72	91	78	88	76	65	78	66	80	93
CBOD5 (lbs/day) Raw Sewage Influent Daily Maximum	91	86	98	112	118	96	93	92	97	73	108	134
CBOD5 (lbs/day) Weekly Average	3.1	2.4	8.7	6.3	13.0	13.4	2.7	2.9	4.7	3.6	3.8	7.3
CBOD5 (mg/L) Average Monthly	5.3	4.9	10.7	10.0	10.3	13.9	6.1	< 4.5	9.5	8.5	< 8.2	14.8
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	201	173	174	208	135	165	205	162	213	216	216	269
CBOD5 (mg/L) Weekly Average	7.7	6.3	22.4	15.6	23.7	24.2	8.3	8.0	15.1	12.0	9.3	22.7
TSS (lbs/day) Average Monthly	< 2.6	2.1	< 2.1	< 3.5	< 5.3	< 4.6	< 1.9	< 2.0	< 2.0	< 1.5	< 2.4	5.2

TSS (lbs/day) Raw Sewage Influent Average Monthly	100	91	94	105	84	95	96	96	80	70	65	95
TSS (lbs/day) Raw Sewage Influent Daily Maximum	135	113	128	147	107	128	129	138	89	92	86	108
TSS (lbs/day) Weekly Average	3.6	< 2.5	2.6	4.8	14.8	8.3	< 2.1	< 2.9	2.3	< 1.7	< 2.1	8.5
TSS (mg/L) Average Monthly	< 6.3	< 5.0	< 5.2	< 8.0	< 9.4	< 8.5	< 5.0	< 5.0	< 5.5	< 5.0	< 6.2	15.3
TSS (mg/L) Raw Sewage Influent Average Monthly	240	227	227	244	146	176	258	236	224	229	172	279
TSS (mg/L) Weekly Average	9.0	< 5.0	6.0	12.0	27.0	15.0	5.0	< 5.0	7.0	10.0	6.0	25.0
Fecal Coliform (No./100 ml) Geometric Mean	7	< 2	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	4
Fecal Coliform (No./100 ml) Instantaneous Maximum	58	48.0	< 2.0	2.0	4	< 1.0	< 1.0	6	< 2.0	< 2.0	5	14
Total Nitrogen (mg/L) Daily Maximum									31.01			
Ammonia-Nitrogen (lbs/day) Average Monthly	< 0.07	< 1.1	< 0.7	0.8	< 0.4	< 1.2	< 0.05	< 0.05	2.9	0.08	0.4	0.5
Ammonia-Nitrogen (mg/L) Average Monthly	< 0.2	< 2.3	< 1.9	1.9	< 0.7	< 2.2	< 0.2	< 0.1	7.9	0.3	0.9	1.6
Total Phosphorus (mg/L) Daily Maximum									3.4			
Total Aluminum (mg/L) Daily Maximum									< 0.03			
Total Iron (mg/L) Daily Maximum									< 0.03			
Total Manganese (mg/L) Daily Maximum									0.042			

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.149
Latitude 40º 18' 14.00" **Longitude** -80º 7' 58.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Comments: The proposed discharge was evaluated using WQM 7.0 to evaluate CBOD5, Ammonia-Nitrogen, and Dissolved Oxygen Parameters. The model recommended technology-based limitations for CBOD5, Ammonia-Nitrogen, and TRC.

Water Quality-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Model
Ammonia-Nitrogen (May 1 to Oct 31)	23.3	Average Monthly	WQM 7.0 Version 1.1
Ammonia-Nitrogen (Nov 1 to Apr 30)	25.0	Average Monthly	WQM 7.0 Version 1.1
$CBOD_5$	25.0	Average Monthly	WQM 7.0 Version 1.1
Dissolved Oxygen	4.0	Average Monthly	WQM 7.0 Version 1.1
TRC	0.5	Average Monthly	TRC_Calc
Total Al, Total Iron, Total Mn	N/A	Average Monthly	TMS Version 1.4

Comments: DMR Data shows that the applicant will be able to continue compliance with the existing limits.

The WQM Model was run for both winter and summer conditions. The Universal Electric Bus LLC STP (0.06 MGD) located 0.21 River Miles upstream was included in the model. The model recommended that TBELs are sufficient for this discharge except for wintertime Ammonia-Nitrogen. DMR Data indicates that the facility will be able to meet the new effluent limitation.

The TRC_Calc Model recommends the TBEL for TRC for this discharge.

The TMS Model for Aluminum, Iron, and Manganese did not recommend effluent limitations for these parameters. The existing requirement for annual effluent testing will be re-imposed.

Best Professional Judgment (BPJ) Limitations

Comments: None.

Anti-Backsliding

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

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

(40 CFR 122.44 (l)(2) Establishing limitations, standards, and other permit conditions., 40 CFR Ch. I (7-1-21 Edition))

No permit limits have been made less stringent in the renewal draft permit.

Chartiers Creek TMDL-Acid Mine Drainage

The receiving stream for this discharge is Chartiers Creek. The receiving stream for this discharge is located in the Chartiers Creek Watershed. In April, 2003, the PA Department of Environmental Protection (DEP) published a final TMDL for Acid Mine Drainage (AMD) in the Chartiers Creek Watershed. Acid Mine Drainage parameters in this TMDL consist of Total Aluminum, Total Iron, Total Manganese, and pH.

The TMDL does not contain a waste load allocation for sewage facilities in general, nor the Teodori STP specifically. This discharge of treated sewage effluent is not expected to contribute to the impairment for AMD within the Chartiers Creek TMDL.

Under Section II.I of the SOP for Sewage Effluent Limitations and the Chartiers Creek TMDL, monitoring for Total Aluminum, Total Iron, and Total Manganese will be established for this discharge. Monitoring for these parameters will have the same sample type as is used for the other main parameters such as $CBOD_5$ and TSS. Monitoring for these parameters will be specified as Daily Max Reporting.

A TMS Model for the discharge was run using DMR Data from the last 5 years. The maximum reported detection from Application Notice of Intent (NOI) for Total Aluminum, Total Iron, and Total Manganese was used in TMS. TMS did not recommend establishment of effluent limits for these parameters.

The Chartiers Creek AMD TMDL may be found at the following URL:
https://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/TMDL/Chartiers_Wshd_TMDL.pdf

Chartiers Creek TMDL-PCBs and Chlordane

The Chartiers Creek Chlordane and PCB TMDL was finalized on April 9, 2001 and regulates the discharge of PCBs and Chlordane to Chartiers Creek. The source assessment section of the TMDL states that the production and use of chlordane and PCBs have been banned for decades. The source assessment further states that nonpoint sources in the form of contaminated river sediment from historical discharges are the primary cause of impairment and that no known point sources exist in the Chartiers Creek Watershed. Accordingly, PCB and Chlordane effluent limits are not applicable to this facility.

The Chartiers Creek PCB and Chlordane TMDL may be found at the following URL:
https://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/TMDL/ChartiersLitt_TMDL.pdf

Chlorine Disinfection

Disinfection at this facility is provided by Chlorine Contact Chamber with a dechlorination tank. Per the SOP for effluent limitations and the recommendations from the TRC_Calc Model, a monthly limit of 0.5 mg/L and an instantaneous maximum of 1.6 mg/L is established.

(*Section I.A, Note 3, SOP for Clean Water Program, Establishing Effluent Limitations for Individual Sewage Permits, Final November 9, 2012, Revised March 24, 2021, Version 1.9* and *25 PA Code 92a.61(b)*.)

Mass Loadings

Mass loading limits are applicable for publicly owned treatment works. Current policy requires average monthly mass loading limits be established for $CBOD_5$, TSS, and NH_3-N and average weekly mass loading limits be established for $CBOD_5$ 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).

(*Section IV, SOP for Clean Water Program, Establishing Effluent Limitations for Individual Sewage Permits, Final November 9, 2012, Revised March 24, 2021, Version 1.9*)

Additional Considerations

Sewage discharges will include monitoring, at a minimum, for *E. Coli*, in new and reissued permits, with a monitoring frequency of 1/quarter for design flows ≥0.05 and <1 MGD.

(*Note 12 SOP-Establishing Effluent Limitations for Individual Sewage Permits Final November 9, 2012, Revised February 5, 2024, Version 2.0.* and *25 PA Code 92a.61(b).)*

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. BOD_5 and TSS influent loads will once again be reported for monthly average and daily maximum values in lbs/day and monthly average concentrations in mg/L.

(Section *IV.E.8. SOP – New and Reissuance Individual Sewage NPDES Permits Final November 9, 2012, Revised February 3, 2022, Version 2.0.)*

Nutrient monitoring is required by the SOP for Effluent Limitations for Individual Sewage Permits. Monitoring is included 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). The receiving stream is listed as impaired for Total Nitrogen and Total Phosphorus, therefore a monitoring frequency equivalent to conventional pollutants in Table 6-3 of the Permit Writer's Manual has been selected.

(*Section I.A, Note 7 & 8, SOP for Clean Water Program, Establishing Effluent Limitations for Individual Sewage Permits, Final November 9, 2012, Revised March 24, 2021, Version 1.9* and *25 PA Code 92a.61(b)*.)

Rounding-Off Mathematical Values. Section 5 C.2. of the Permit Writers Manual contains general guidelines for rounding conventional and toxic pollutants, with instructions to round down to the nearest decimal place indicated. Note: Ammonia Nitrogen and Total Residual Chlorine are Non-Conventional Pollutants and limits are established based on the direct recommendations from WQM 7.0 and TRC_CALC.

General Magnitude	Conventional Pollutants	Toxic Pollutants
<0.01	to nearest 0.001	to nearest 0.001
0.01 - 0.1	to nearest 0.01	to nearest 0.01
0.1 - 1.0	to nearest 0.1	to nearest 0.01
1.0 - 10.0	to nearest 0.5	to nearest 0.01
10.0 - 60.0	to nearest 1.0	to nearest 0.01
60.0 or greater	to nearest 5.0	to nearest 0.10

(Department Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits, Updated June 28, 2023 (Document No. 362-0400-001))

Section 2.C of the Permit Writers Manual contains the procedure for converting average monthly effluent limitations to average weekly, maximum daily, and instantaneous maximum effluent limitations. The average monthly limit is multiplied according to the following chart:

Discharge Solution	Parameters	Average Weekly	Maximum Daily	Instantaneous Maximum Multiplier
Sewage	All	1.5		2.0
Industrial	All		2.0	2.5*

(Department Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits, Updated June 28, 2023 (Document No. 362-0400-001))

Table 5-3: Methods of Expressing Effluent Limits for Sewage Discharges

Discharge Situation	Mass Loadings (lbs/day)			Concentrations (mg/L)				
	Average Monthly	Average Weekly[3]	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Instant Maximum[4]	Limit On Flow[6]
A. POTW DISCHARGES:								
1. Technology Based concentration limits	x	x[3]		x	x[3]		x	Yes
2. Water Quality Based limits	x	x[3]		x	x[3]		x	Yes
3. Water Quality Based limits (Toxics)	x		x	x		x		
B. NON-POTW DISCHARGES:								
1. Technology Based concentration limits	x[5]			x			x	Yes
2. Water Quality based limits	x[5]			x			x	Yes

1. This table is for all pollutants, conventional, non-conventional, toxic and all other pollutants that may be regulated by the permit. (Also refer to the toxics management strategy when specifying toxic WQBELs.)

2. X indicates need for an effluent limitation.

3. Only CBOD and TSS limitation.

4. Only include Instantaneous maximum limitations on the DMR forms if grab a sample is specified in the permit, otherwise do not include instantaneous maximum limitations on the DMR.

   Also, the permit page could include the following language for when composite samples are required "Instantaneous maximum limitations are imposed to allow for a grab sample to be collected by the appropriate regulatory agency to determine compliance. The permittee does not have to monitor for the instantaneous maximum limitations, however, if grab samples are collected by the permittee, the results must be reported."

5. This is for all sewage permits with design flow greater than 100,000 gpd since 25 Pa. Code § 94.13 requires flow monitoring.

6. The maximum monthly average flow limitation is the permitted flow that is to be placed in the NPDES permit. Generally, the annual average flow (AAF) is to be used for water quality modeling and to be used to determine the allowable mass loading in NPDES permits (i.e., AAF x 8.34 x mg/l = #/day) (Refer to the Domestic Wastewater Facilities Manual).

(Department Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits, Updated June 28, 2023 (Document No. 362-0400-001))

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers.

Table 6-3 – Self-Monitoring Requirements for SEWAGE Discharges

Plant Design Flow (MGD)	Flow Monitoring	C-BOD_5 or BOD_5	Suspended Solids	pH	Fecal Coliform	Chlorine Residual	NH_3-N	Phosphorus	DO	Toxics
Single Residence (Individual Permit)	2/year by estimate	2/year*	2/year*	1/month*	2/year*	1/month*	2/year*	2/year*	2/year*	N/A
.0005 to .002	weekly, using average pump rate or weir (a)	1/month*	1/month*	daily*	1/month*	daily*	1/month*	1/month*	daily*	N/A
.002 to .01	weekly, using average pump rate or weir (a)	2/month*	2/month*	daily*	2/month*	daily*	2/month*	2/month*	daily*	N/A
0.01 to 0.1	weekly, using average pump rate or weir (a)	2/month*	2/month*	daily*	2/month*	daily*	2/month*	2/month*	Daily*	1/week*
0.1 to 1.0	meter	1/week**	1/week**	daily*	1/week*	daily*	1/week**	1/week**	daily*	1/week****
1.0 to 5.0	meter	2/week***	2/week***	daily*	2/week*	daily*	2/week***	2/week***	daily*	1/week****
5.0 to 25.0	meter	daily***	daily***	daily*	daily*	1/shift*	daily***	daily***	daily*	1/week****
over 25.0	meter	daily***	daily***	1/shift*	daily*	1/shift*	1/shift***	1/shift***	1/shift*	1/week****

* Grab sample-these should be most representative of the effluent and are to be taken at a time when the normal daily maximum flow would reach the sampling point.

** 8-hour composite sample.

*** 24-hour composite sample.

**** Same sample type as for Industrial Process Wastewater (See Table 6-4).

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5 Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	1/week	8-Hr Composite
CBOD5	31.0	46.5	XXX	25.0	37.5	50.0	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	1/week	8-Hr Composite
TSS	37.2	55.9	XXX	30.0	45.0	60.0	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ammonia-Nitrogen May 1 - Oct 31	28.9	43.3	XXX	23.3	34.9	46.6	1/week	8-Hr Composite

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia-Nitrogen Nov 1 - Apr 30	31.0	46.5	XXX	25.0	37.5	50.0	1/week	8-Hr Composite
Total Aluminum	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite
Total Iron	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite
Total Manganese	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite

Compliance Sampling Location: 001

Other Comments: None.

Attachment 1-StreamStats Report

StreamStats Report-Upstream

Region ID: PA
Workspace ID: PA20241029110450022000
Clicked Point (Latitude, Longitude): 40.30344, -80.13278
Time: 2024-10-29 07:05:14 -0400

PA0091138 Basin Outlet Elevation: 865.39'

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	143	square miles
ELEV	Mean Basin Elevation	1154	feet
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	-181286.7087	meters
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	146910.8365	meters

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	143	square miles	2.26	1400
ELEV	Mean Basin Elevation	1154	feet	1050	2580

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

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	7.76	ft^3/s	43	43
30 Day 2 Year Low Flow	11.8	ft^3/s	38	38
7 Day 10 Year Low Flow	3.66	ft^3/s	66	66
30 Day 10 Year Low Flow	5.37	ft^3/s	54	54
90 Day 10 Year Low Flow	8.56	ft^3/s	41	41

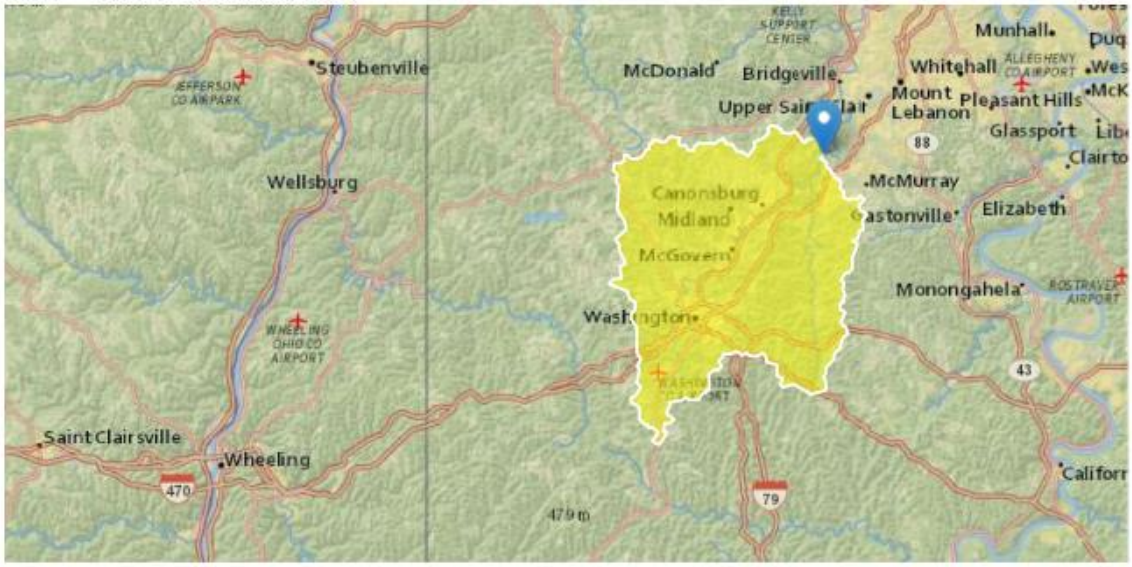
Low-Flow Statistics Citations

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. (http://pubs.usgs.gov/sir/2006/5130/)

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

StreamStats Report-Downstream

Region ID: PA
Workspace ID: PA20241029110944518000
Clicked Point (Latitude, Longitude): 40.29972, -80.12754
Time: 2024-10-29 07:10:07 -0400



PA0091138 Outlet Elevation: 861.39

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	143	square miles
ELEV	Mean Basin Elevation	1154	feet
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	-180846.6663	meters
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	146483.6109	meters

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	143	square miles	2.26	1400
ELEV	Mean Basin Elevation	1154	feet	1050	2580

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

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	7.76	ft^3/s	43	43
30 Day 2 Year Low Flow	11.8	ft^3/s	38	38
7 Day 10 Year Low Flow	3.66	ft^3/s	66	66
30 Day 10 Year Low Flow	5.37	ft^3/s	54	54
90 Day 10 Year Low Flow	8.56	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. (http://pubs.usgs.gov/sir/2006/5130/)

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

Attachment 2-WQM 7.0 Report

Summer

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
20F	36777	CHARTIERS CREEK	**24.300**	867.60	143.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.026	0.00	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
UnivElecBusLLC	PAO253081	0.0600	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	8.38	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
20F	36777	CHARTIERS CREEK	**24.090**	865.39	143.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.026	0.00	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
Cecil Twp Auth	PA0255696	0.1490	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	8.38	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
20F	36777	CHARTIERS CREEK	**23.710**	861.39	143.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.026	0.00	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
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.38	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
20F	36777	CHARTIERS CREEK	**23.000**	853.92	143.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.026	0.00	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
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.38	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
20F	36777	CHARTIERS CREEK	**22.750**	851.28	143.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.026	0.00	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
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.38	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20F	36777	CHARTIERS CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
24.300	0.060	24.878	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
16.607	1.661	10.000	0.138
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.56	0.334	0.57	1.019
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.273	2.938	Tsivoglou	5
Reach Travel Time (days)			
0.093			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.009	2.55	0.56	7.55
0.019	2.54	0.56	7.55
0.028	2.53	0.55	7.55
0.037	2.52	0.55	7.55
0.046	2.51	0.54	7.55
0.056	2.50	0.54	7.55
0.065	2.49	0.53	7.55
0.074	2.48	0.53	7.55
0.084	2.47	0.52	7.55
0.093	2.46	0.52	7.55

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
24.090	0.209	24.600	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
16.822	1.682	10.000	0.143
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.75	0.707	1.82	0.997
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.351	3.017	Tsivoglou	5
Reach Travel Time (days)			
0.163			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.016	3.70	1.79	7.20
0.033	3.64	1.76	7.05
0.049	3.59	1.73	6.92
0.065	3.54	1.70	6.79
0.081	3.49	1.67	6.67
0.098	3.44	1.65	6.57
0.114	3.39	1.62	6.47
0.130	3.35	1.59	6.37
0.146	3.30	1.57	6.29
0.163	3.25	1.54	6.21

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20F	36777	CHARTIERS CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
23.710	0.209	24.600	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
16.823	1.682	10.000	0.143
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.25	0.551	1.54	0.997
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.211	3.015	Tsivoglou	5
Reach Travel Time (days)			
0.304			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.030	3.19	1.50	6.11
0.061	3.12	1.45	6.02
0.091	3.06	1.41	5.95
0.122	2.99	1.37	5.90
0.152	2.93	1.33	5.85
0.182	2.87	1.29	5.82
0.213	2.81	1.25	5.80
0.243	2.76	1.21	5.78
0.273	2.70	1.18	5.78
0.304	2.64	1.14	5.78

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
23.000	0.209	24.600	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
16.820	1.682	10.000	0.143
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.64	0.426	1.14	0.997
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.776	3.027	Tsivoglou	5
Reach Travel Time (days)			
0.107			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.011	2.63	1.13	5.78
0.021	2.61	1.12	5.79
0.032	2.60	1.10	5.80
0.043	2.59	1.09	5.81
0.053	2.57	1.08	5.82
0.064	2.56	1.07	5.83
0.075	2.54	1.06	5.84
0.086	2.53	1.05	5.85
0.096	2.51	1.04	5.87
0.107	2.50	1.02	5.88

Winter

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
20F	36777	CHARTIERS CREEK	**24.300**	867.60	143.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.052	0.00	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
UnivElecBusLLC	PAO253081	0.0600	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	12.80	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
20F	36777	CHARTIERS CREEK	**24.090**	865.39	143.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.052	0.00	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
Cecil Twp Auth	PA0255696	0.1490	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	12.80	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
20F	36777	CHARTIERS CREEK	**23.710**	861.39	143.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.052	0.00	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
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	12.80	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
20F	36777	CHARTIERS CREEK	**23.000**	853.92	143.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.052	0.00	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
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	12.80	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
20F	36777	CHARTIERS CREEK	**22.750**	851.28	143.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.052	0.00	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
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	12.80	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20F	36777	CHARTIERS CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
24.300	0.060	5.123	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
19.290	1.929	10.000	0.202
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.28	0.198	0.31	0.223
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
12.692	2.693	Tsivoglou	5
Reach Travel Time (days)			
0.063			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.006	2.28	0.31	11.42
0.013	2.28	0.31	11.42
0.019	2.28	0.31	11.42
0.025	2.28	0.31	11.42
0.032	2.28	0.31	11.42
0.038	2.27	0.31	11.42
0.044	2.27	0.31	11.42
0.051	2.27	0.30	11.42
0.057	2.27	0.30	11.42
0.063	2.27	0.30	11.42

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
24.090	0.209	5.417	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
19.418	1.942	10.000	0.206
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.94	0.509	1.04	0.228
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
11.198	2.758	Tsivoglou	5
Reach Travel Time (days)			
0.113			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.011	2.94	1.03	11.22
0.023	2.93	1.03	11.23
0.034	2.92	1.03	11.25
0.045	2.91	1.03	11.27
0.056	2.90	1.02	11.28
0.068	2.89	1.02	11.30
0.079	2.88	1.02	11.31
0.090	2.88	1.02	11.33
0.102	2.87	1.01	11.33
0.113	2.86	1.01	11.33

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20F	36777	CHARTIERS CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
23.710	0.209	5.417	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
19.419	1.942	10.000	0.206
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.86	0.468	1.01	0.228
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
11.332	2.757	Tsivoglou	5
Reach Travel Time (days)			
0.211			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.021	2.84	1.01	11.33
0.042	2.83	1.00	11.33
0.063	2.82	1.00	11.33
0.084	2.80	0.99	11.33
0.105	2.79	0.99	11.33
0.127	2.77	0.98	11.33
0.148	2.76	0.98	11.33
0.169	2.75	0.97	11.33
0.190	2.73	0.97	11.33
0.211	2.72	0.96	11.33

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
23.000	0.209	5.417	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
19.416	1.942	10.000	0.206
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.72	0.434	0.96	0.228
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
11.332	2.768	Tsivoglou	5
Reach Travel Time (days)			
0.074			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.007	2.71	0.96	11.33
0.015	2.71	0.96	11.33
0.022	2.70	0.96	11.33
0.030	2.70	0.96	11.33
0.037	2.70	0.96	11.33
0.045	2.69	0.95	11.33
0.052	2.69	0.95	11.33
0.059	2.68	0.95	11.33
0.067	2.68	0.95	11.33
0.074	2.67	0.95	11.33

Attachment 3-TRC_Calc Report

Attachment 4-TMS Model Report

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Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Teodori STP** NPDES Permit No.: **PA0091138** Outfall No.: **001**

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

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.149	100	7						

					0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		0.2									
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	mg/L											
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L		0.25									
	Total Lead	µg/L											
	Total Manganese	µg/L		0.042									
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L											
	Total Silver	µg/L											
	Total Thallium	µg/L											
	Total Zinc	mg/L											
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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

	2,6-Dinitrotoluene	µg/L	<										
	Di-n-Octyl Phthalate	µg/L	<										
	1,2-Diphenylhydrazine	µg/L	<										
	Fluoranthene	µg/L	<										
	Fluorene	µg/L	<										
	Hexachlorobenzene	µg/L	<										
	Hexachlorobutadiene	µg/L	<										
	Hexachlorocyclopentadiene	µg/L	<										
	Hexachloroethane	µg/L	<										
	Indeno(1,2,3-cd)Pyrene	µg/L	<										
	Isophorone	µg/L	<										
	Naphthalene	µg/L	<										
	Nitrobenzene	µg/L	<										
	n-Nitrosodimethylamine	µg/L	<										
	n-Nitrosodi-n-Propylamine	µg/L	<										
	n-Nitrosodiphenylamine	µg/L	<										
	Phenanthrene	µg/L	<										
	Pyrene	µg/L	<										
	1,2,4-Trichlorobenzene	µg/L	<										
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 1.4, May 2023

Stream / Surface Water Information

Teodori STP, NPDES Permit No. PA0091138, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Chartiers Creek**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	036777	24.09	865.39	143			Yes
End of Reach 1	036777	23.71	861.39	143.001			Yes

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

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	24.09	0.026										100	7		
End of Reach 1	23.71	0.026													

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	24.09														
End of Reach 1	23.71														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Teodori STP, NPDES Permit No. PA0091138, 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)
24.09	3.72		3.72	0.231	0.002	0.723	38.727	53.542	0.141	0.165	66.36
23.71	3.72		3.718026								

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)
24.09	23.41		23.41	0.231	0.002	1.59	38.727	24.361	0.384	0.06	22.524
23.71	23.412		23.41								

Wasteload Allocations

AFC CCT (min): 15 PMF: 0.475 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	750	750	6,502	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	

CFC CCT (min): 66.360 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	25,695	WQC = 30 day average; PMF = 1
Total Manganese	0	0		0	N/A	N/A	N/A	

THH CCT (min): 66.360 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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	17,130	

☑ *CRL* CCT (min): 22.524 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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

Pollutants	*Mass Limits*		*Concentration Limits*				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			

☑ ***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 Aluminum	4,167	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	25,695	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	17,130	µg/L	Discharge Conc ≤ 10% WQBEL