pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0252581**
Facility Type	**Municipal**	APS ID	**1057963**
Major / Minor	**Minor**	Authorization ID	**1387008**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Mahoning Township**	Facility Name	**Distant STP**
Applicant Address	987 State Route 1025	Facility Address	100 McKay Road
	New Bethlehem, PA 16242-7033		New Bethlehem, PA 16242-7033
Applicant Contact	Keith Schreckengost, Township Supervisor (mahoningtwparm@gmail.com)	Facility Contact	Keith Schreckengost, Township Supervisor (mahoningtwparm@gmail.com)
Applicant Phone	(814) 275-4334	Facility Phone	(814) 275-4334
Client ID	110501	Site ID	623678
Ch 94 Load Status	Not Overloaded	Municipality	Mahoning Township
Connection Status	No Limitations	County	Armstrong
Date Application Received	February 2, 2022	EPA Waived?	Yes
Date Application Accepted	February 22, 2022	If No, Reason	-
Purpose of Application	Renewal of an NPDES Permit for an existing discharge of treated sanitary wastewater.		

Summary of Review

Act 14 - Proof of Notification was submitted and received.

A Part II Water Quality Management permit is not required at this time.

The applicant should be able to meet the limits of this permit, which will protect the uses of the receiving stream.

I. OTHER REQUIREMENTS:

- A. Stormwater into Sewers
- B. Right of Way
- C. Solids Handling
- D. Effluent Chlorine Optimization and Minimization
- E. Little or No Assimilative Capacity

SPECIAL CONDITIONS:

- II. Solids Management
- III. Requirements for Total Residual Chlorine (TRC)
- IV. TRC Effluent Limitations Below Quantitation Limits

There are no open violations in efacts associated with the subject Client ID (110501) as of 10/12/2023. *10/13/2023 CWY*

Approve	Deny	Signatures	Date
X		Stephen A. McCauley Stephen A. McCauley, E.I.T. / Environmental Engineering Specialist	10/12/2023
X		Chad W. Yurisic Chad W. Yurisic, P.E. / Environmental Engineer Manager	10/13/2023

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.09
Latitude	40º 58' 12.00"	Longitude	-79º 21' 41.00"
Quad Name	-	Quad Code	-
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to the Redbank Creek (CWF)	Stream Code	N/A (48195)
NHD Com ID	123856638	RMI	N/A (0.5)
Drainage Area	0.05	Yield (cfs/mi^2)	0.1 (default)
Q_{7-10} Flow (cfs)	0.005	Q_{7-10} Basis	calculated
Elevation (ft)	1264	Slope (ft/ft)	0.0232
Watershed No.	17-C	Chapter 93 Class.	CWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	-		
Source(s) of Impairment	-		
TMDL Status	-	Name	-

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

Nearest Downstream Public Water Supply Intake	Templeton Water Company, Inc.		
PWS Waters	Allegheny River	Flow at Intake (cfs)	1,768
PWS RMI	54.8	Distance from Outfall (mi)	31.0

Sludge use and disposal description and location(s): All sludge is hauled to the Allegheny Valley Joint Sewer Authority, where it is ultimately disposed of at an approved landfill.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the Pennsylvania Bulletin in accordance with 25 Pa. Code § 92a.82. Upon publication in the Pennsylvania Bulletin, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-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.

Narrative: This Fact Sheet details the determination of draft NPDES permit limits for an existing discharge of 0.09 of treated sewage from a municipal STP in Mahoning Township, Armstrong County.

Treatment permitted under WQM Permit 0303404 consists of the following: A bar screen, flow equalization tank, a splitter box, two aeration basins, two settling tanks for clarification, sludge holding tanks, a chlorination and dechlorination basin, and an effluent aeration tank.

1. Streamflow:

Unnamed Tributary to the Redbank Creek at Outfall 001:

Yieldrate:	0.1	cfsm	(default)
Drainage Area:	0.05	sq. mi.	(USGS StreamStats)
% of stream allocated:	100%	Basis:	No nearby discharges
Q_{7-10}:	0.005	cfs	(Calculated)

2. Wasteflow:

Maximum discharge: 0.09 MGD = 0.13 cfs

Runoff flow period: 24 hours Basis: Runoff flow for municipal STPs

The calculated stream flow (Q7-10) is much less than 3 times the permitted discharge flow. In accordance with the SOP, the treatment requirements in document number 391-2000-014, titled, "Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers", dated April 12, 2008, were evaluated with this renewal. Based on eDMR data, the treatment requirements are not attainable with the treatment technology in place so the requirements will not be implemented in this NPDES Permit renewal.

Flow will be required to be monitored as authorized under Chapter 92a.61, and as recommended in the SOP.

3. Parameters:

The following parameters were evaluated: pH, Total Suspended Solids, Fecal Coliform, E. Coli, Total Phosphorus, Total Nitrogen, NH_3-N, $CBOD_5$, Dissolved Oxygen, and Disinfection.

a. pH

Between 6.0 and 9.0 at all times

Basis: Application of Chapter 93.7 technology-based limits.

The measurement frequency will be set as 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

b. Total Suspended Solids

Limits are 30.0 mg/l as a monthly average and 60.0 as an instantaneous maximum.

Basis: Application of Chapter 92a47 technology-based limits.

c. Fecal Coliform

05/01 - 09/30:	200/100ml	(monthly average geometric mean)
	1,000/100ml	(instantaneous maximum)

10/01 - 04/30: 2,000/100ml (monthly average geometric mean)
10,000/100ml (instantaneous maximum)

Basis: Application of Chapter 92a47 technology-based limits

d. E. Coli

Monitoring was added for E. Coli at a frequency of 1/quarter.

Basis: Application of Chapter 92a.61 as recommended by the SOP for flows greater than 0.05 MGD and less than 1 MGD.

e. Phosphorus

Chapter 96.5 does not apply. Therefore, the previous monitoring for Total Phosphorus will be retained in accordance with the SOP, based on Chapter 92a.61.

f. Total Nitrogen

The previous monitoring for Total Nitrogen will be retained in accordance with the SOP, based on Chapter 92a.61.

g. Ammonia-Nitrogen (NH_3-N)

Median discharge pH to be used: 6.9 Standard Units (S.U.)

Basis: eDMR data from previous 12 months

Discharge temperature: 25°C (default value used in the absence of data)

Median stream pH to be used: 7.0 Standard Units (S.U.)

Basis: Default value used in the absence of data

Stream Temperature: 20˚C (default value used for CWF modeling)

Background NH_3-N concentration: 0.0 mg/l

Basis: Default value

Calculated NH_3-N Summer limits: 1.5 mg/l (monthly average)
3.0 mg/l (instantaneous maximum)

Calculated NH_3-N Winter limits: 4.5 mg/l (monthly average)
9.0 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the summer NH3-N limits above (see Attachment 1). The winter limits are calculated as three times the summer limits. The calculated summer limits are more restrictive than in the previous permit. Based on eDMR data, the more restrictive summer limits are attainable so they will be added with this renewal. The previous winter limits are more restrictive and will be retained.

h. $CBOD_5$

Median discharge pH to be used: 6.9 Standard Units (S.U.)

Basis: eDMR data from previous 12 months

Discharge temperature: 25°C (default value used in the absence of data)

Median stream pH to be used: 7.0 Standard Units (S.U.)

Basis: Default value used in the absence of data

Stream Temperature: 20˚C (default value used for CWF modeling)

Background $CBOD_5$ concentration: 2.0 mg/l

Basis: Default value

Calculated $CBOD_5$ limits: 25.0 mg/l (monthly average)
50.0 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the calculated CBOD5 limits above (see Attachment 1). These limits are the same as the previous permit and will be retained.

i. Influent Total Suspended Solids and BOD_5

Monitoring for these two parameters will be retained as recommended in the SOP for POTWs, as authorized under Chapter 92a.61.

j. Dissolved Oxygen (DO)

The technology-based minimum of 6.0 mg/l is recommended by the WQ Model (see Attachment 1) and the SOP based on Chapter 93.7, under the authority of Chapter 92a.61. This limit is the same as the previous permit and will be retained.

The measurement frequency will be set as 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

k. Disinfection

☐ Ultraviolet (UV) light monitoring

☒ Total Residual Chlorine (TRC) limits: 0.01 mg/l (monthly average)
0.04 mg/l (instantaneous maximum)

Basis: The TRC limits above were calculated using the Department's TRC Calculation Spreadsheet (see Attachment 2). The limits are more restrictive than the previous NPDES Permit. Based on eDMR data, the more restrictive limits are not attainable so a three year compliance schedule will be added with this renewal.

The measurement frequency will be set as 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

4. Reasonable Potential Analysis for Receiving Stream:

A Reasonable Potential Analysis was not performed in accordance with State practices for Outfall 001 using the Department's Toxics Management Spreadsheet since no sampling other than sewage-related parameters was performed for this facility with the renewal application.

5. Reasonable Potential for Downstream Public Water Supply (PWS):

The Department's Toxics Management Spreadsheet does not calculate limits for parameters that are based on PWS criteria (TDS, Chloride, Bromide, and Sulfate).

Nearest Downstream potable water supply (PWS): Templeton Water Company, Inc.

Distance downstream from the point of discharge: 31.0 miles (approximate)

Result: No limits or monitoring are necessary as significant dilution is available.

6. Flow Information:

This facility receives 100% of flow from areas within and around Distant, PA.

All the sewers are separate sewers.

7. Anti-Backsliding:

Since all the permit limits in this renewal are the same or more restrictive than the previous NPDES Permit, anti-backsliding is not applicable.

8. Attachment List:

Attachment 1 - WQ Modeling Printouts

Attachment 2 - TRC_Calc Spreadsheet

(The Attachments above can be found at the end of this document)

Compliance History

DMR Data for Outfall 001 (from September 1, 2022 to August 31, 2023)

Parameter	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22
Flow (MGD) Average Monthly	0.03	0.03	0.0258	0.03	0.04	0.05	0.04	0.06	0.04	0.04	0.03	0.03
Flow (MGD) Daily Maximum	0.06	0.05	0.0325	0.04	0.06	0.06	0.07	0.11	0.09	0.07	0.04	0.03
pH (S.U.) Instantaneous Minimum	6.60	6.73	6.92	6.79	6.92	7.04	6.79	6.34	6.57	6.85	6.09	6.71
pH (S.U.) Instantaneous Maximum	8.82	7.10	7.03	7.08	8.08	7.45	7.16	7.09	7.20	7.08	7.11	7.70
DO (mg/L) Instantaneous Minimum	6.10	6.0	6.10	6.06	9.07	8.63	6.56	8.64	6.94	6.56	7.28	6.23
TRC (mg/L) Average Monthly	0.05	0.05	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.05	0.05	0.05
TRC (mg/L) Instantaneous Maximum	0.06	0.06	0.06	0.06	0.07	0.06	0.07	0.07	0.06	0.07	0.05	0.05
CBOD5 (lbs/day) Average Monthly	1.53	1.16	2.34	1.10	2.88	1.76	1.33	4.50	1.24	0.68	0.96	0.72
CBOD5 (mg/L) Average Monthly	17.0	3.0	9.0	5.0	10.0	5.0	6.0	9.0	4.0	3.0	3.0	3.0
CBOD5 (mg/L) Instantaneous Maximum	30.0	3.0	10.0	6.0	14.0	7.0	7.0	13.0	4.0	3.0	4.0	3.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	29.47	59.08	72.78	44.77	58.70	59.01	41.20	85.95	67.31	67.54	81.44	47.07
BOD5 (mg/L) Raw Sewage Influent Average Monthly	290.50	154.50	293.50	185.50	193	168.0	182.00	181.50	208.0	306.50	284.0	201.0
TSS (lbs/day) Average Monthly	0.36	1.36	1.79	1.95	4.49	2.60	1.71	6.97	1.53	1.10	1.59	1.13
TSS (lbs/day) Raw Sewage Influent Average Monthly	45.23	79.45	82.71	48.78	67.35	42.72	32.81	71.27	80.69	113.47	111.12	511.84
TSS (mg/L) Average Monthly	3.0	4.0	8.0	8.0	12.0	8.0	8.0	12.0	5.0	5.0	6.0	5.0
TSS (mg/L) Raw Sewage Influent Average Monthly	444.00	208.00	333.0	206.0	241	132.0	142.0	140.0	249.0	516	382.0	337.00
TSS (mg/L) Instantaneous Maximum	3.0	4.0	12.0	10.0	17.0	9.0	8.0	16.0	6.0	7.0	6.0	7.0

Fecal Coliform (No./100 ml) Geometric Mean	1.0	1.0	1.0	1	1.0	1.0	1.0	1.0	1.0	1	11	1.0
Fecal Coliform (No./100 ml) Instantaneous Maximum	1.0	1.0	1.0	1	1.0	1.0	1.0	1.0	1.0	1	104	1.0
Total Nitrogen (mg/L) Daily Maximum									5.81			
Ammonia (lbs/day) Average Monthly	0.08	0.12	0.14	0.05	1.08	0.04	0.03	0.07	0.06	0.08	0.06	0.05
Ammonia (mg/L) Average Monthly	0.73	0.30	0.57	0.18	2.41	0.10	0.15	0.14	0.19	0.37	0.21	0.21
Ammonia (mg/L) Instantaneous Maximum	0.79	0.34	0.60	0.26	8.48	0.10	0.15	0.15	0.23	0.55	0.25	0.26
Total Phosphorus (mg/L) Daily Maximum									3.98			

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 January 30, 2027.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	2/month	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.08	XXX	0.2	1/day	Grab
CBOD5	18.8	XXX	XXX	25.0	XXX	50.0	2/month	Grab
TSS	22.5	XXX	XXX	30.0	XXX	60.0	2/month	Grab
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ammonia Nov 1 - Apr 30	2.3	XXX	XXX	3.0	XXX	6.0	2/month	Grab
Ammonia May 1 - Oct 31	1.1	XXX	XXX	1.5	XXX	3.0	2/month	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Outfall 001, Continued (from Permit Effective Date through January 30, 2027)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Compliance Sampling Location: at Outfall 001, after disinfection.

Flow is monitor only based on Chapter 92a.61. The limits for pH and Dissolved Oxygen are technology-based on Chapter 93.7. The Total Residual Chlorine (TRC) limits are water quality-based on Chapter 93.7. The limits for $CBOD_5$, Total Suspended Solids, and Fecal Coliforms are technology-based on Chapter 92a.47. Monitoring for influent BOD_5 and influent TSS is based on Chapter 92a.61. Monitoring for E. Coli, Total Nitrogen, and Total Phosphorus is based on Chapter 92a.61. The limits for Ammonia-Nitrogen are water quality-based on Chapter 93.7.

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: January 31, 2027 through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	2/month	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.01	XXX	0.04	1/day	Grab
CBOD5	18.8	XXX	XXX	25.0	XXX	50.0	2/month	Grab
TSS	22.5	XXX	XXX	30.0	XXX	60.0	2/month	Grab
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ammonia Nov 1 - Apr 30	2.3	XXX	XXX	3.0	XXX	6.0	2/month	Grab
Ammonia May 1 - Oct 31	1.1	XXX	XXX	1.5	XXX	3.0	2/month	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Outfall 001, Continued (from January 31, 2027 through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Compliance Sampling Location: at Outfall 001, after disinfection.

Flow is monitor only based on Chapter 92a.61. The limits for pH and Dissolved Oxygen are technology-based on Chapter 93.7. The Total Residual Chlorine (TRC) limits are water quality-based on Chapter 93.7. The limits for $CBOD_5$, Total Suspended Solids, and Fecal Coliforms are technology-based on Chapter 92a.47. Monitoring for influent BOD_5 and influent TSS is based on Chapter 92a.61. Monitoring for E. Coli, Total Nitrogen, and Total Phosphorus is based on Chapter 92a.61. The limits for Ammonia-Nitrogen are water quality-based on Chapter 93.7.

Attachment 1

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
17C	48195	Trib 48195 to Redbank 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)
0.500	Distant STP	PA0252581	0.090	CBOD5	25		
				NH3-N	1.5	3	
				Dissolved Oxygen			6

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
17C	48195	Trib 48195 to Redbank Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.500	0.090	24.827	6.903
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1.759	0.469	3.755	0.175
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
24.20	1.495	1.45	1.015
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.078	30.769	Owens	6
Reach Travel Time (days)			
0.175			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.017	23.43	1.43	6.05
0.035	22.68	1.40	6.07
0.052	21.95	1.38	6.11
0.070	21.25	1.35	6.16
0.087	20.56	1.33	6.22
0.105	19.90	1.31	6.28
0.122	19.27	1.28	6.34
0.140	18.65	1.26	6.40
0.157	18.05	1.24	6.46
0.175	17.47	1.22	6.52

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		

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
17C	48195	Trib 48195 to Redbank Creek	**0.500**	1264.00	0.05	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	0.100	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Distant STP	PA0252581	0.0900	0.0000	0.0000	0.000	25.00	6.90

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
17C	48195	Trib 48195 to Redbank Creek	**0.000**	1019.00	0.22	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	0.100	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
17C	48195	Trib 48195 to Redbank 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												
0.500	0.01	0.00	0.01	.1392	0.09280	.469	1.76	3.75	0.17	0.175	24.83	6.90
Q1-10 Flow												
0.500	0.00	0.00	0.00	.1392	0.09280	NA	NA	NA	0.17	0.176	24.89	6.90
Q30-10 Flow												
0.500	0.01	0.00	0.01	.1392	0.09280	NA	NA	NA	0.18	0.173	24.77	6.90

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
17C	48195	Trib 48195 to Redbank 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
0.500	Distant STP	12.11	12.39	12.11	12.39	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
0.500	Distant STP	1.43	1.5	1.43	1.5	1	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)		
0.50	Distant STP	25	25	1.5	1.5	6	6	0	0

Attachment 2

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.005	= Q stream (cfs)	0.5	= CV Daily
0.09	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	0.030	1.3.2.iii	WLA cfc =	0.022
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.011	5.1d	LTA_cfc =	0.013

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.014	AFC
		INST MAX LIMIT (mg/l) =	0.046	

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)**