Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0024511**
Facility Type	**Municipal**	APS ID	**1142677**
Major / Minor	**Minor**	Authorization ID	**1536178**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Redbank Valley Municipal Authority**	Facility Name	**Redbank Valley STP**
Applicant Address	243 Broad Street	Facility Address	741 Kohlersburg Road
	New Bethlehem, PA 16242-1001		New Bethlehem, PA 16242
Applicant Contact	Deborah Vangorder	Facility Contact	Rory Moore
Applicant Phone	(814) 275-2585	Facility Phone	(814) 275-3345
Applicant Email	office@rvmaonline.com		
Client ID	71981	Site ID	249508
Ch 94 Load Status	Existing Hydraulic Overload	Municipality	Mahoning Township
Connection Status	Dept. Imposed Connection Prohibitions	County	Armstrong
Date Application Received	August 4, 2025	EPA Waived?	Yes
Date Application Accepted	August 12, 2025	If No, Reason	

Purpose of Application: NPDES Permit Renewal for a Municipal Sewage Treatment Plant

Summary of Review

This is a NPDES Permit Renewal for a Municipal Sewage Treatment Plant for an Existing Design Flow of 0.59 MGD. The STP is serving portions of New Bethlehem Township and Porter Township in Clarion County and South Bethlehem Township in Armstrong County.

Monitoring requirements for E. Coli were added to this permit renewal.

No changes to discharge quantity or quality are being proposed as part of this renewal.

Act 14 – Proof of Notification was submitted and received.

This facility is currently using eDMR system.

SPECTIAL CONDITIONS: NONE

There are **16** open violations in WMS for the subject Client ID (71981) as of August 27, 2025.

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		Aeshah Shameseldin Aeshah Shameseldin / Project Manager	August 27, 2025
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	August 28, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.59
Latitude	40º 59' 56.00"	Longitude	-79º 21' 4.00"
Quad Name	Distant	Quad Code	40079H3
Wastewater Description:	Sewage Effluent		

Receiving Waters	Redbank Creek (TSF)	Stream Code	48064
NHD Com ID	123856806	RMI	22.9
Drainage Area	505 square miles	Yield (cfs/mi^2)	0.062
Q_{7-10} Flow (cfs)	31.31	Q_{7-10} Basis	Calculated
Elevation (ft)	1043	Slope (ft/ft)	---
Watershed No.	17-C	Chapter 93 Class.	TSF
Existing Use	---	Existing Use Qualifier	---
Exceptions to Use	---	Exceptions to Criteria	---
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	Aluminum, Iron, Manganese and pH		
Source(s) of Impairment	---		
TMDL Status	Final	Name	Redbank Creek TMDL

Background/Ambient Data		Data Source
pH (SU)	6.84	WQN #820 (’94 - 02’)
Temperature (°F)	77	Default
Hardness (mg/L)	100	Default
NH3-N (mg/L)	0.062	WQN #820 (’94 - 02’)
TDS (mg/L)	162	USGS 3036500 (’85-’10) logarithmic regression
Chloride (mg/L)	16.9	WQN 884 (2009-2016) (June-Sept) (median)
Sulfate (mg/L)	23.8	WQN 884 (2007-2016) (June-Sept) (median)

Nearest Downstream Public Water Supply Intake		PA American Water Company - Kittanning District	
PWS Waters	Allegheny River	Flow at Intake (cfs)	---
PWS RMI	45.6	Distance from Outfall (mi)	41.6

Changes Since Last Permit Issuance: None.

Other Comments: None.

Treatment Facility Summary

Treatment Facility Name: Redbank Valley STP

WQM Permit No.	Issuance Date
1672403	---
1672403 A-1	February 15, 2011
1607402	December 19, 2010
1607402 A-1	June 27, 2019

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Trickling Filter with Settling	Gas Chlorine	0.3

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.59	520	Existing Hydraulic Overload	Combination	Landfill

Changes Since Last Permit Issuance: None.

Other Comments: Existing Treatment Process/Facilities and WQM Permit No. 1672403-A1: Convert the two existing imhoff tanks to primary clarifiers, addition of a 39-ft. diameter trickling filter (w/ synthetic media), addition of another final clarifier, two new aerobic digesters and a new dewatering centrifuge. Miscellaneous upgrades to the existing treatment units and equipment. [Brings the design capacity of the treatment plant to 0.59 MGD & 520 lb/day BOD).

WQM Permit No. 1672403: Imhoff Tank, Head Tank, (1) Trickling Filter, (2) Final Settling Tanks and Chlorination. Sludge handling: (2) Aerobic Digesters and Sludge Drying Beds.

WQM Permit No. 1607402: Grant Street Pump Station (to replace the Broad Street and Short Street Pump Stations) which includes parallel force mains to transmit wastewater to the STP. The 12-inch force main will carry normal, dry weather flows to the primary clarifiers and an 18-inch force main will carry wet weather flows to a new 1.842 MG equalization tank located at the STP.

WQM Permit No. 1607402: Removal of the comminutor at the Grant Street Pump Station and replace with a mechanically cleaned bar screen with a washer compactor.

Compliance History

DMR Data for Outfall 001 (from July 1, 2024, to June 30, 2025)

Parameter	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24
Flow (MGD) Average Monthly	0.370	0.425	0.367	0.285	0.453	0.197	0.285	0.200	0.152	0.177	0.213	0.161
Flow (MGD) Weekly Average	0.689	0.548	0.467	0.367	0.631	0.349	0.359	0.276	0.178	0.256	0.321	0.206
pH (S.U.) Minimum	6.1	6.4	6.2	6.6	6.6	6.0	6.0	6.0	6.0	6.0	6.0	6.0
pH (S.U.) Maximum	7.3	7.1	7.1	7.1	7.2	7.0	6.6	6.9	6.8	6.6	7.0	6.8
DO (mg/L) Daily Minimum	5.6	6.8	5.5	6.5	8.4	8.1	6.6	7.2	5.7	5.3	5.9	5.1
TRC (mg/L) Average Monthly	0.05	0.05	< 0.05	0.04	< 0.04	0.05	0.03	< 0.04	< 0.04	< 0.04	< 0.04	< 0.03
TRC (mg/L) Instantaneous Maximum	0.1	0.09	0.1	0.10	0.10	0.09	0.08	0.09	0.09	0.08	< 0.1	0.09
CBOD5 (lbs/day) Average Monthly	15.0	13.0	11.0	14.0	25.0	8.0	22.0	6.0	< 8.0	< 3.0	5.0	6.0
CBOD5 (lbs/day) Weekly Average	22.0	26.0	18.0	17.0	39.0	13.0	50.0	12.0	12.0	4.0	10.0	11.0
CBOD5 (mg/L) Average Monthly	6.0	4.0	5.0	7.0	8.0	6.0	6.0	4.0	< 5.0	< 3.0	3.0	7.0
CBOD5 (mg/L) Weekly Average	10.0	5.0	6.0	7.0	9.0	8.0	12.0	4.0	9.0	4.0	4.0	11.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	216.0	202.0	257.0	87.0	484.0	< 138.0	< 276.0	167.0	164.0	228.0	190.0	247.0
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	606.0	428.0	580.0	118.0	929.0	200.0	674.0	235.0	279.0	239.0	274.0	611.0
BOD5 (mg/L) Raw Sewage Influent Average Monthly	69.1	64.0	100.8	40.7	168.1	< 100.1	< 92.1	127.8	119.6	206.0	120.0	248.6
TSS (lbs/day) Average Monthly	43.0	175.0	< 11.0	< 11.0	< 22.0	< 7.0	< 26.0	< 10.0	< 8.0	< 12.0	< 8.0	< 7.0

TSS (lbs/day) Raw Sewage Influent Average Monthly	69.0	77.0	58.0	44.0	97.0	89.0	112.0	106.0	149.0	164.0	177.0	309.0
TSS (lbs/day) Raw Sewage Influent Daily Maximum	89.0	120.0	136.0	58.0	148.0	119.0	171.0	147.0	209.0	206.0	229.0	1025
TSS (lbs/day) Weekly Average	49.0	542.0	< 16.0	13.0	46.0	< 8.0	63.0	22.0	< 12.0	27.0	12.0	11.0
TSS (mg/L) Average Monthly	19.0	90.0	< 5.0	< 5.0	< 7.0	< 5.0	< 8.0	< 6.0	< 5.0	< 11.0	< 5.0	< 8.0
TSS (mg/L) Raw Sewage Influent Average Monthly	31.0	42.0	29.0	21.0	29.0	67.0	50.0	80.0	106.0	148.0	112.0	290
TSS (mg/L) Weekly Average	26.0	314.0	< 5.0	6.0	11.0	5.0	15.0	7.0	< 5.0	23.0	5.0	11.0
Fecal Coliform (CFU/100 ml) Geometric Mean	49.0	44.0	< 7.0	34.0	< 39.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	1046	980.0	55.0	1046	2420	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Total Nitrogen (lbs/day) Average Monthly	30.0	19.0	22.0	25.0	8.0	7.0	2.0	3.0	7.0	5.00	5.0	3.0
Total Nitrogen (mg/L) Average Monthly	15.8	2.86	12.0	11.0	2.79	4.44	1.1	2.66	2.92	4.22	2.19	2.92
Ammonia (lbs/day) Average Monthly	0.30	13.11	2.99	8.45	6.03	1.88	0.47	0.23	0.38	0.22	1.03	0.15
Ammonia (mg/L) Average Monthly	< 0.15	7.38	1.56	3.56	1.93	1.54	< 0.15	< 0.20	< 0.20	< 0.20	0.47	< 0.20
Total Phosphorus (lbs/day) Average Monthly	< 0.3	5.0	5.0	2.0	7.0	3.0	5.0	2.0	8.0	2.0	3.0	1.0
Total Phosphorus (mg/L) Average Monthly	< 0.15	0.822	2.6	1.06	2.39	1.63	3.36	1.89	3.49	1.39	1.35	1.42
Total Aluminum (lbs/day) Average Quarterly	0.76728			0.298572			0.10842			0.238524		

Total Aluminum (mg/L) Average Quarterly	0.115			< 0.10			< 0.10			< 0.10		
Total Manganese (lbs/day) Average Quarterly	0.360288			0.149286			0.05421			0.1908192		
Total Manganese (mg/L) Average Quarterly	0.054			< 0.05			< 0.05			0.08		

Compliance History

Effluent Violations for Outfall 001, from: August 1, 2024, To: June 30, 2025

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TSS	05/31/25	Avg Mo	175.0	lbs/day	148	lbs/day
TSS	05/31/25	Avg Mo	175.0	lbs/day	148	lbs/day
TSS	05/31/25	Wkly Avg	542.0	lbs/day	221	lbs/day
TSS	05/31/25	Wkly Avg	542.0	lbs/day	221	lbs/day
TSS	05/31/25	Avg Mo	90.0	mg/L	30	mg/L
TSS	05/31/25	Avg Mo	90.0	mg/L	30	mg/L
TSS	05/31/25	Wkly Avg	314.0	mg/L	45	mg/L
TSS	05/31/25	Wkly Avg	314.0	mg/L	45	mg/L
Fecal Coliform	06/30/25	IMAX	1046	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	06/30/25	IMAX	1046	CFU/100 ml	1000	CFU/100 ml

Summary of Inspections: An inspection of the facility was conducted on February 19, 2025. The inspection report did not cite any violations.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .59
Latitude 40º 59' 56.00" **Longitude** -79º 21' 4.00"
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)
E. Coli	Report (No./100 ml)	IMAX	-	§ 92a.61

Comments: Monitoring for E. Coli is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits (SOP No. BCW-PMT-033)".

Water Quality-Based Limitations

CBOD5, Ammonia, and DO are evaluated using WQM 7.0 (Attachment 1). TRC is evaluated using the Department's TRC evaluation spreadsheet (Attachment 2). Total Dissolved Solids, Chloride, Bromide, Sulfate, Total Copper, Total Lead, Total Zinc, Total Aluminum and Total Manganese were evaluated using the Department's TMS (Attachment 3).

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

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	4.0	Daily Min.	WQM 7.0
CBOD5	25	Average Monthly	WQM 7.0
	50	IMAX	
Ammonia Nitrogen (May 1 – Oct 31)	25	Average Monthly	WQM 7.0
	50	IMAX	
TRC	0.5	Average Monthly	TRC evaluation spreadsheet

Comment 1: WQM modeling did not calculate a more stringent average monthly Ammonia Nitrogen limit under perennial flow conditions. A review of the eDMR data for Ammonia Nitrogen over the past five years indicates consistent compliance with the limits of 25 mg/L (monthly average) and 50 mg/L (daily maximum) at a 100% rate. Therefore, the current monitoring requirements for Ammonia Nitrogen will be retained.

Comment 2: The TRC evaluation spreadsheet didn't calculate more stringent average monthly TRC limit at perennial conditions using the plant design flow. The technology-based limitations established in previous permits are attainable and will be retained.

Best Professional Judgment (BPJ) Limitations

Comment 1: The parameters associated with the Redbank Creek TMDL (Aluminum, Manganese) were evaluated using the Department's TMS and were found to be below the criteria established in Chapter 93. However, quarterly monitoring for Total Aluminum and Total Manganese will continue to be required in this permit renewal, in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits (SOP No. BCW-PMT-033)" due to the existence of the TMDL for segment RC03 of the stream where this discharge is located as needing load reductions.

The table below shows the existing load at the time the TMDL was determined, the TMDL allowable load, and the reduction percentage required to achieve the allowable load for Aluminum and Manganese.

The Redbank Creek TMDL further states that the stream segment where this discharge is located does not address TMDLs for Total Iron, Acidity, or pH. Therefore, no monitoring requirements or WQBELs are necessary for these parameters in relation to the TMDL.

Station	Parameter	Existing Load (lbs/day)	TMDL Allowable Load (lbs/day)	WLA (lbs/day)	LA (lbs/day)	Load Reduction (lbs/day)	Percent Reduction %
RC03	RC03 Redbank Creek, 48064						
	Al	1783.8	1141.7	2.8	1138.9	642.2*	36*
	Fe	1442.2	1442.2	11.25	1130.95	0.0*	0*
	Mn	2410.7	1060.7	7.5	1053.2	1222.3*	54*
	Acidity	0.0	0.0	0.0	0.0	0.0*	0*

Comment 2: TMS did not recommend monitoring requirements or WQBELs for Total Dissolved Solids, Chloride, Bromide, Sulfate, Total Copper, Total Lead and Total Zinc because their concentrations were found to be below water quality criteria.

Comment 3: Monitoring for Total Nitrogen and Total Phosphorus are placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits (SOP No. BCW-PMT-033)". Per the SOP, the monitoring frequency can be reduced for discharges to waters not impaired for nutrients. Therefore, the current 1/month monitoring frequency for N and P will be retained.

Anti-Backsliding

Pursuant to EPA's anti-backsliding regulation 40 CFR 122.44(l), the effluent limitations established in the previous permit remain applicable. Accordingly, the permit retains all prior limitations, monitoring requirements and conditions, with the addition of monitoring requirements for E. Coli.

Effluent Limitations and Monitoring Requirements Established in the Current Permit

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	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	123	197	XXX	25	40	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	148	221	XXX	30	45	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Ammonia	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Aluminum	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Manganese	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite

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.

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		
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite

Compliance Sampling Location: At the STP Influent Location, Prior to Any Treatment.

Other Comments: Monitoring for influent BOD5 and Total Suspended Solids is based on Chapter 92a.61.

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.

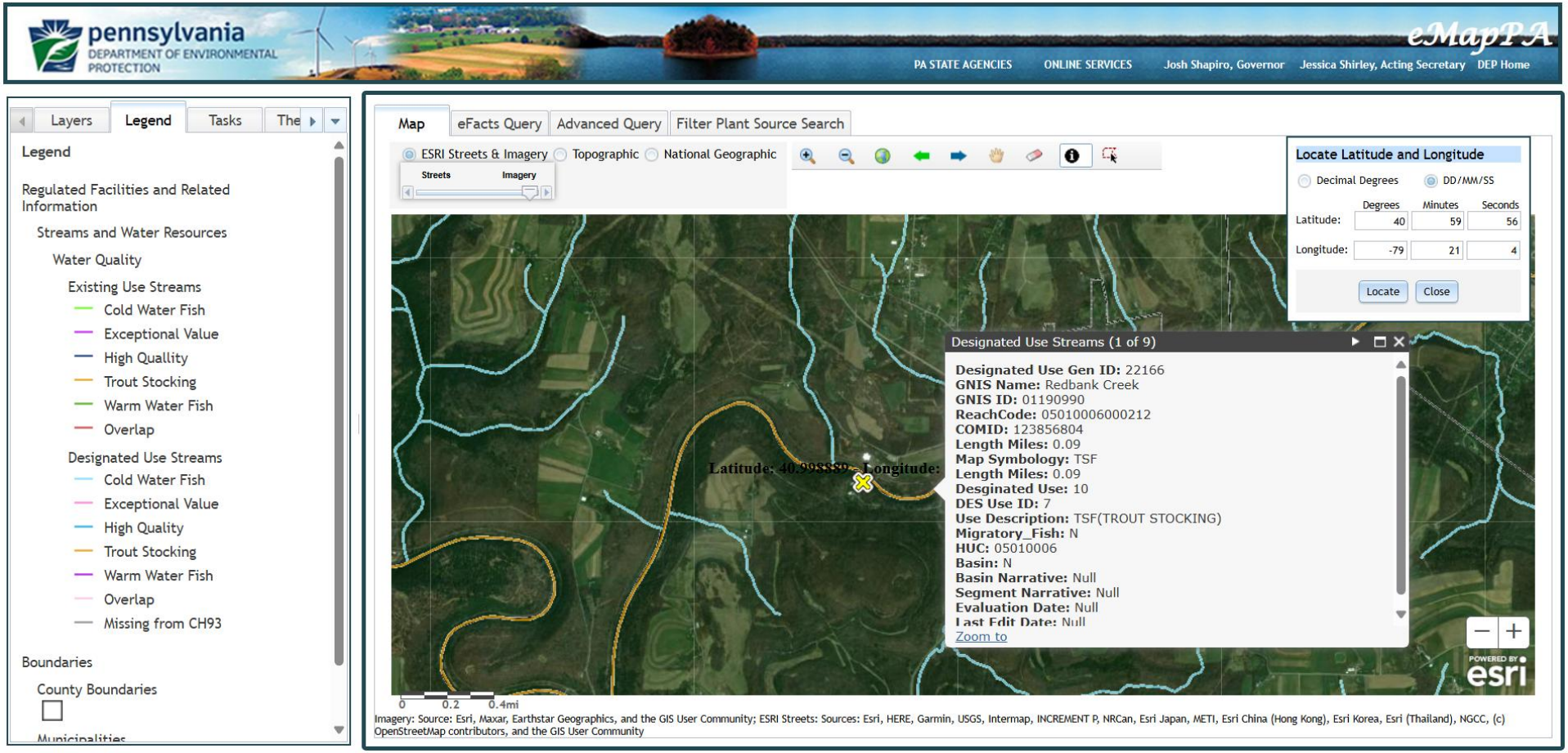
Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

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	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	123	197	XXX	25	40	50	1/week	24-Hr Composite
TSS	148	221	XXX	30	45	60	1/week	24-Hr Composite
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (CFU/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
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Ammonia	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Aluminum	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Manganese	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite

Compliance Sampling Location: Outfall 001, After Disinfection.

Other Comments: Monitoring for Ammonia-Nitrogen, Total Nitrogen, Total Phosphorus, Total Aluminum, Total Iron, and Total Manganese is based on Chapter 92a.61.

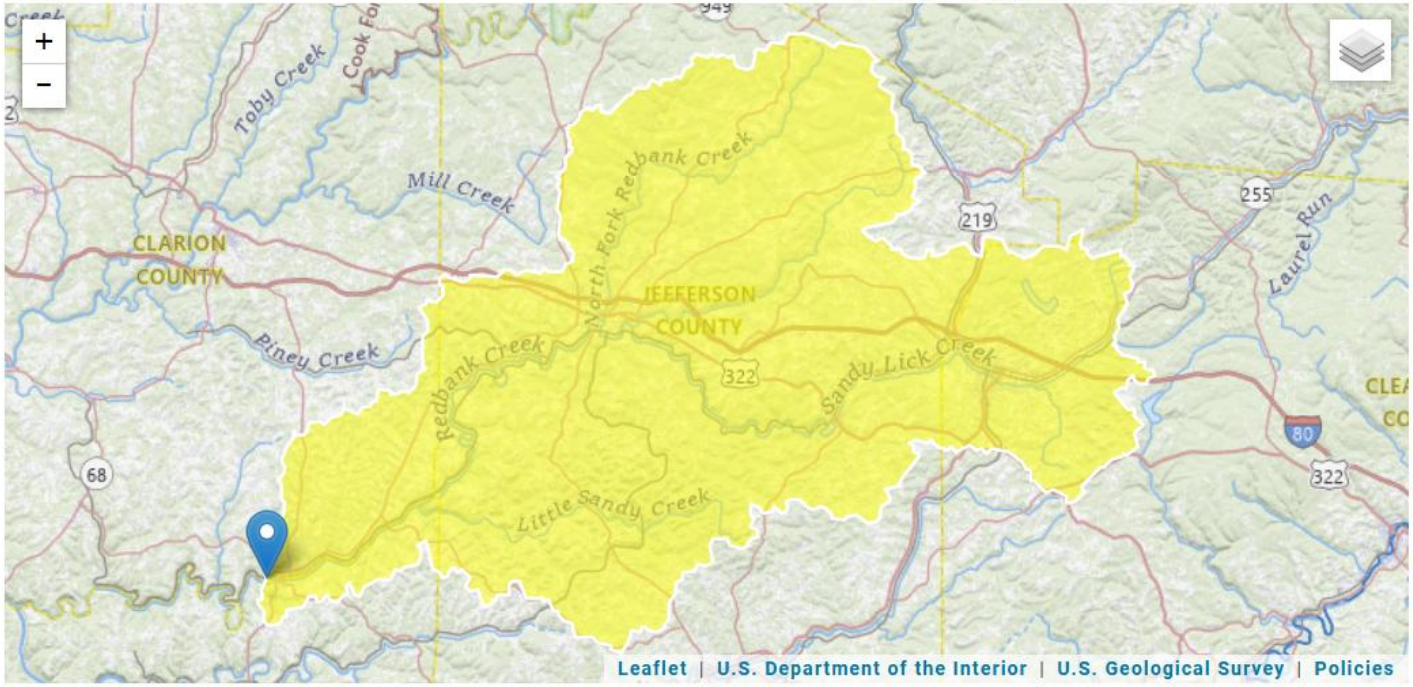
Outfall Location - eMap with Aerial Imagery



Drainage Area Location – StreamStats with Aerial Imagery

StreamStats Report

Region ID:	PA
Workspace ID:	PA20250818193746520000
Clicked Point (Latitude, Longitude):	40.99923, -79.35069
Time:	2025-08-18 15:38:10 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	505	square miles

Attachment 1

Approximately 3 miles upstream, the Hawthorn Redbank Municipal Authority WWTP (PA0263893) discharges 0.2 MGD (design flow). To verify that an interaction will not happen when both discharges model together, the 0.59 MGD discharge from the Redbank Valley STP and the 0.2 MGD discharge from the Hawthorn Redbank Municipal Authority WWTP have been modeled together as part of this renewal. The results show that no water quality interactions were determined.

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
17C	48064	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)
26.200	Hawthorn Redban	PA0263893	0.200	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

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)
22.900	Redbank Val STP	PA0024511	0.590	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
17C	48064	REDBANK CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
26.200	0.200	25.000	6.841
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
96.936	0.973	99.608	0.319
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.24	0.105	0.32	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.504	1.729	Tsivoglou	5
Reach Travel Time (days)			
0.633			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.063	2.22	0.30	7.48
0.127	2.20	0.28	7.47
0.190	2.18	0.26	7.46
0.253	2.16	0.24	7.46
0.316	2.15	0.23	7.46
0.380	2.13	0.21	7.47
0.443	2.11	0.20	7.48
0.506	2.09	0.19	7.49
0.569	2.07	0.18	7.51
0.633	2.06	0.17	7.52

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
22.900	0.790	25.000	6.820
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
103.035	1.018	101.215	0.310
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.70	0.290	0.86	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.427	2.422	Tsivoglou	5
Reach Travel Time (days)			
0.577			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.058	2.64	0.81	7.26
0.115	2.59	0.76	7.13
0.173	2.53	0.72	7.03
0.231	2.48	0.68	6.96
0.289	2.43	0.64	6.90
0.346	2.38	0.60	6.87
0.404	2.33	0.57	6.85
0.462	2.28	0.53	6.84
0.520	2.23	0.50	6.84
0.577	2.19	0.47	6.85

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	5		

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	48064	REDBANK CREEK	**26.200**	1061.00	480.00	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	0.062	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	6.84	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
Hawthorn Redban	PA0263893	0.2000	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	7.54	0.00	0.00
NH3-N	25.00	0.06	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	48064	REDBANK CREEK	**22.900**	1043.00	505.00	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	0.062	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	6.84	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
Redbank Val STP	PA0024511	0.5900	0.0000	0.0000	0.000	25.00	6.40

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	7.54	0.00	0.00
NH3-N	25.00	0.06	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	48064	REDBANK CREEK	**19.970**	1020.00	510.00	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	0.062	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	6.84	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	48064	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												
26.200	29.76	0.00	29.76	.3094	0.00103	.973	96.94	99.61	0.32	0.633	25.00	6.84
22.900	31.31	0.00	31.31	1.2221	0.00149	1.018	103.04	101.21	0.31	0.577	25.00	6.82
Q1-10 Flow												
26.200	19.05	0.00	19.05	.3094	0.00103	NA	NA	NA	0.25	0.810	25.00	6.84
22.900	20.04	0.00	20.04	1.2221	0.00149	NA	NA	NA	0.24	0.733	25.00	6.81
Q30-10 Flow												
26.200	40.47	0.00	40.47	.3094	0.00103	NA	NA	NA	0.38	0.533	25.00	6.84
22.900	42.58	0.00	42.58	1.2221	0.00149	NA	NA	NA	0.37	0.489	25.00	6.83

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
17C	48064	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
26.200	Hawthorn Redba	12.53	50	12.53	50	0	0
22.900	Redbank Val STP	12.82	50	12.8	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
26.200	Hawthorn Redba	1.44	25	1.44	25	0	0
22.900	Redbank Val STP	1.45	25	1.45	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
26.20	Hawthorn Redban	25	25	25	25	4	4	0	0
22.90	Redbank Val STP	25	25	25	25	4	4	0	0

Attachment 2

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

31.31	= Q stream (cfs)	0.5	= CV Daily
0.59	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.198	= 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 =	2.186	1.3.2.iii	WLA cfc =	10.679
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.814	5.1d	LTA_cfc =	6.209

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.635	

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

Attachment 3

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2025

Discharge Information

Instructions | Discharge | Stream

Facility: Redbank Valley STP NPDES Permit No.: PA0024511 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: 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
0.59	100	6.4						

					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		473		162							
	Chloride (PWS)	mg/L		84.3		16.9							
	Bromide	mg/L		0.0013									
	Sulfate (PWS)	mg/L		98.8		23.8							
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	mg/L		0.31									
	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		0.005									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	mg/L		0.00038									
	Total Manganese	mg/L		0.53									
	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		0.026									
	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											

For modeling purposes, the Point of Discharge (POD) was assigned an RMI value of 41.6, representing the distance in miles between the POD and the End of Reach 1 (Public Water Supply) location. This value differs from the actual RMI on Redbank Creek, which is 22.9. Similarly, the End of Reach 1 was assigned an RMI value of 0 for modeling consistency, although its actual RMI on the Allegheny River is 45.6 miles.

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Toxics Management Spreadsheet
Version 1.4, May 2025

Stream / Surface Water Information

Redbank Valley STP, NPDES Permit No. PA0024511, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: **Redbank 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	048064	41.6	1043	505			Yes
End of Reach 1	042122	0	772	8980			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	41.6	0.062										100	6.84		
End of Reach 1	0	0.086										100	7		

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	41.6														
End of Reach 1	0														

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Toxics Management Spreadsheet
Version 1.4, May 2025

Model Results

Redbank Valley STP, NPDES Permit No. PA0024511, 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)
41.6	31.31		31.31	0.913	0.001	1.019	103.511	101.534	0.305	8.325	383.494
0	760.16		760.16								

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)
41.6	150.74		150.74	0.913	0.001	2.015	103.511	51.361	0.727	3.497	144.38
0	2448.498		2448.50								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.198 Analysis Hardness (mg/l): 100 Analysis pH: 6.75

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)	162000	0		0	N/A	N/A	N/A	
Chloride (PWS)	16900	0		0	N/A	N/A	N/A	
Sulfate (PWS)	23800	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	5,838	
Total Copper	0	0		0	13.439	14.0	109	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	636	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	117.180	120	933	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 6.82

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)	162000	0		0	N/A	N/A	N/A	
Chloride (PWS)	16900	0		0	N/A	N/A	N/A	
Sulfate (PWS)	23800	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	8.956	9.33	329	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	112	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	118.139	120	4,230	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): ###### 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)	162000	0		0	500,000	500,000	N/A	
Chloride (PWS)	16900	0		0	250,000	250,000	N/A	
Sulfate (PWS)	23800	0		0	250,000	250,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Copper	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	35,304	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): ###### 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)	162000	0		0	N/A	N/A	N/A	
Chloride (PWS)	16900	0		0	N/A	N/A	N/A	
Sulfate (PWS)	23800	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Copper	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 Zinc	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

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

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	3.74	mg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	0.07	mg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	0.11	mg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	35.3	mg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	0.6	mg/L	Discharge Conc ≤ 10% WQBEL