Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0239976**
Facility Type	**Industrial**	APS ID	**1095497**
Major / Minor	**Minor**	Authorization ID	**1451987**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**Redbank Valley Municipal Authority**	Facility Name	**Redbank Valley WTP**
Applicant Address	243 Broad Street	Facility Address	221 Liberty Street
	New Bethlehem, PA 16242-1001		New Bethlehem, PA 16242
Applicant Contact	Lisa Kerle	Facility Contact	Mike Kundick
Applicant Phone	(814) 275-2585	Facility Phone	(814) 275-2585
Client ID	71981	Site ID	264223
SIC Code	4941	Municipality	New Bethlehem Borough
SIC Description	Trans. & Utilities - Water Supply	County	Clarion
Date Application Received	August 4, 2023	EPA Waived?	Yes
Date Application Accepted	April 11, 2025	If No, Reason	
Purpose of Application	NPDES Renewal.		

Summary of Review

Redbank Valley Municipal Authority (RVMA) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit. The permit was last reissued on January 30, 2019 and became effective on February 1 2019. The permit expired on January 31, 2024.

Based on the review, it is recommended that the permit be drafted.

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		*Jinsu Kim* Jinsu Kim / Environmental Engineering Specialist	April 21, 2025
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	April 23, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.065 (Avg Flow)
Latitude	41º 0' 8"	Longitude	79º 20' 10"
Quad Name	New Bethlehem	Quad Code	1011
Wastewater Description:	Treated water treatment plant filter backwash		
Receiving Waters	Redbank Creek	Stream Code	48064
NHD Com ID	123862926	RMI	23.77
Drainage Area	501 sq.mi.	Yield (cfs/mi^2)	0.065
Q_{7-10} Flow (cfs)	31.3	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1048	Slope (ft/ft)	0.0009
Watershed No.	17-C	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Metals, Nutrients, Siltation		
Source(s) of Impairment	Abandoned Mine Drainage, Abandoned Mine Drainage, Other		
TMDL Status	Final	Name	Redbank Creek TMDL
Nearest Downstream Public Water Supply Intake	Kittanning Suburban Joint Water Authority		
PWS Waters	Allegheny River	Flow at Intake (cfs)	
PWS RMI	45.6	Distance from Outfall (mi)	40

Drainage Area
The discharge is to Redbank Creek at RM 23.77. A drainage area upstream of the discharge point is estimated to be 501 sq.mi. according to USGS StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
USGS Streamflow produced a Q7-10 flow of 31.3 cfs at the point of discharge. This value is very similar to the Q7-10 estimated during the last permit renewal (i.e., 32.63 cfs).

Public Water Supply Intake
The fact sheet developed for the last permit renewal indicates that the nearest downstream public water supply intake is Kittanning Suburban Joint Water Authority located on Allegheny River approximately 46 miles from the discharge point. Given the distance, the discharge is not expected to adversely affect the public water supply intake.

Treatment Facility Summary				
Treatment Facility Name: Redbank Valley WTP				
WQM Permit No.	**Issuance Date**			
1607201	5/21/2007			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Potable Water Treatment	Chemical (Industrial Waste)	Coagulation	No Disinfection	0.04
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.04				Landfill

RVMA owns and operates an onsite wastewater treatment facility (WWTP) for the water treatment facility (WTP). Filter backwash from the water treatment facility as well as rinse water is pumped to the flow equalization tank, then directed to the clarifier before discharging into Redbank Creek. Sludge from the clarifier is either sent back to the flow equalization tank or pumped to a holding tank and centrifuge for thickening. The supernatant from the holding tank is also sent to the flow equalization tank. Any solids generated from the wastewater treatment facility is sent to a landfill.

No chemical additive is used at the site. Pollu-treat CL-246 is used as a polymer to thicken sludge. Treated effluent, according to the application, is discharged 6 times a day; each discharge last 2 hours at the rate of 0.011 MGD.

Compliance History

Summary of DMRs:	A summary of 12 month DMR data is presented on the next page.
Summary of Inspections:	12/06/2023: DEP conducted a routine inspection and no violation was identified at the time of inspection.
Other Comments:	Since the last reissuance, the facility had a number of permit violations. These violations are as follows:

Date	Description	Parameter	Results	Limits	Units	SBC
9/25/2020	Violation of permit condition	Aluminum, Total	1.58	0.8	mg/L	Average Monthly
9/25/2020	Violation of permit condition	Aluminum, Total	3.01	1.5	mg/L	Daily Maximum
12/18/2020	Violation of permit condition	Aluminum, Total	1.09	0.8	mg/L	Average Monthly
7/20/2021	Violation of permit condition	Aluminum, Total	0.83	0.8	mg/L	Average Monthly
9/21/2021	Violation of permit condition	Aluminum, Total	1.13	0.8	mg/L	Average Monthly
9/21/2021	Violation of permit condition	Aluminum, Total	2.04	1.5	mg/L	Daily Maximum
4/25/2022	Violation of permit condition	Manganese, Total	1.21	1	mg/L	Average Monthly
4/25/2022	Violation of permit condition	Manganese, Total	2.11	2	mg/L	Daily Maximum
4/24/2023	Violation of permit condition	Aluminum, Total	1.13	0.8	mg/L	Average Monthly
4/24/2023	Violation of permit condition	Aluminum, Total	1.87	1.5	mg/L	Daily Maximum
6/1/2023	Late DMR Submission					
10/31/2023	Late DMR Submission					
12/16/2023	Violation of permit condition	Manganese, Total	1.3	1	mg/L	Average Monthly
2/19/2024	Violation of permit condition	Aluminum, Total	1.52	0.8	mg/L	Average Monthly
2/19/2024	Violation of permit condition	Aluminum, Total	2.49	1.5	mg/L	Daily Maximum
2/19/2024	Violation of permit condition	pH	5.7	6	S.U.	Daily Minimum
10/29/2024	Late DMR Submission					

DEP's database shows there are a number of open violations associated with this facility or permittee particularly from NWRO Safe Drinking Water Program. A draft permit cover letter will indicate that the permit may not be finalized until all open violations are resolved.

Effluent Data

DMR Data for Outfall 001 (from March 1, 2024 to February 28, 2025)

Parameter	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24
Flow (MGD) Average Monthly	0.050	0.067	0.055	0.051	0.058	0.099	0.078	0.078	0.022	0.029	0.072	0.060
Flow (MGD) Daily Maximum	0.083	0.125	0.102	0.108	0.117	0.149	0.116	0.138	0.033	0.066	0.123	0.109
pH (S.U.) Daily Minimum	6.4	6.3	6.5	6.5	6.5	6.6	6.6	6.7	7.0	7.0	6.9	6.2
pH (S.U.) Daily Maximum	6.7	6.5	6.6	6.7	6.6	6.7	6.7	7.1	7.2	7.1	7.1	6.5
TRC (mg/L) Average Monthly	0.0025	0.002	0.005	0.0025	0.004	0.0025	0.0025	0.004	0.0025	0.004	0.0025	0.005
TRC (mg/L) Daily Maximum	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
TRC (mg/L) Instantaneous Maximum	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
TSS (mg/L) Average Monthly	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
TSS (mg/L) Daily Maximum	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Aluminum (mg/L) Average Monthly	0.03	0.10	0.22	0.13	0.135	0.13	0.28	0.185	0.10	0.10	0.10	0.16
Total Aluminum (mg/L) Daily Maximum	0.03	0.10	0.34	0.16	0.17	0.16	0.46	0.27	0.10	0.10	0.10	0.23
Total Iron (mg/L) Average Monthly	0.075	0.06	0.14	0.12	0.105	0.125	0.175	0.115	0.07	0.055	0.05	0.11
Total Iron (mg/L) Daily Maximum	0.09	0.06	0.08	0.15	0.12	0.16	0.24	0.16	0.08	0.07	0.08	0.12
Total Manganese (mg/L) Average Monthly	0.04	0.12	0.875	0.035	0.02	0.025	0.05	0.63	0.075	0.075	0.95	0.42
Total Manganese (mg/L) Daily Maximum	0.06	0.21	1.73	0.05	0.02	0.03	0.05	1.21	0.12	0.11	1.58	0.47

Existing Effluent Limits and Monitoring Requirements

The table below summarizes effluent limits and monitoring requirements specified in the existing permit.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Estimate
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0	XXX	1/week	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	1.0	1.2	1/week	Grab
Total Suspended Solids	XXX	XXX	XXX	30.0	60.0	75	2/month	Grab
Aluminum, Total	XXX	XXX	XXX	0.8	1.5	1.9	2/month	Grab
Iron, Total	XXX	XXX	XXX	2.0	4.0	5	2/month	Grab
Manganese, Total	XXX	XXX	XXX	1.0	2.0	2.5	2/month	Grab

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .04
Latitude 41º 0' 6.04" **Longitude** -79º 20' 8.65"
Wastewater Description: IW Process Effluent without ELG

Technology-Based Limitations

DEP's technical guidance no. 362-2183-003 addresses technology-based control requirements along with the following recommended Best Practicable Control Technology Currently Available (BPT) effluent requirements for WTP sludge and filter backwash:

Parameter	Limit (mg/l)	SBC
Suspended Solids	30	Average Monthly
	60	Daily Maximum
Iron, Total	2.0	Average Monthly
	4.0	Daily Maximum
Aluminum, Total	4.0	Average Monthly
	8.0	Daily Maximum
Manganese, Total	1.0	Average Monthly
	2.0	Daily Maximum
Flow	Monitor	Average Monthly
pH	6.0	Minimum
	9.0	Maximum
Total Residual Chlorine	0.5	Average Monthly
	1.0	Daily Maximum

These requirements apply, subject to water quality analysis and/or BPJ.

Water Quality-Based Limitations

DEP's SOP no. BPNPSM-PMT-032 recommends the average monthly flow as a design flow in water quality modeling unless a different flow is determined to be more representative of conditions. According to the application, the average flow discharged from this facility during operation is 0.040 MGD with maximum of 0.097 MGD. Past DMRs show 0.070 as the typical average monthly flow rate. The last permit reissuance used 0.065 MGD as the design flow for a reasonable potential analysis. Based on the review, DEP determined that 0.065 MGD is still adequate to be used as the design flow.

WQM 7.0
CBOD5 and NH3-N are not pollutants of concern for the water treatment waste as the discharge of these pollutants is not resulting from the water treatment process. Therefore, WQM 7.0 modeling is not necessary and permit requirements for these pollutants are not recommended.

Total Residual Chlorine
The facility adds chlorine once water is withdrawn from the source; as such, filter backwash is chlorinated. DEP's TRC_CALC worksheet showed existing TBELs are still adequate for protection of water quality standards. No change is therefore recommended.

Toxics
Maximum concentrations of toxic pollutants reported on the application were entered into DEP's Toxics Management Spreadsheet (TMS). TMS output shows that there are no pollutants of concern and no water quality based effluent limits are required.

Best Professional Judgment (BPJ) Limitations

Total Aluminum
Based on the review of past DEP records, the existing Total Aluminum effluent limits were set to match the water quality criteria at that time. This decision was made as it was previously determined that Redbank Creek was impaired with aluminum exceeding the criteria. Redbank Creek at the point of discharge is currently attained (i.e., supporting aquatic life) according to DEP's 2024 integrated report. DEP has determined that existing effluent limits to remain unchanged to ensure the level of existing water quality of the receiving stream is maintained and protected.

Additional Considerations

Flow Monitoring
Flow monitoring will remain in the permit and is required by 40 CFR § 122.44(i)(1)(ii).

Redbank Creek TMDL
DEP developed a TMDL in 2009 to address impairments identified within the Redbank Creek Watershed TMDL. These impairments are caused by metals (iron, manganese, aluminum) and acidity (pH) as a result of abandoned coalmines. The TMDL does not include the wasteload allocation for this discharge; however, the permit has been consistently including effluent limits for above-referenced metals and pH to ensure the discharge does not cause or contribute to these impairments. No further requirements are recommended at this time.

Anti-Degradation Requirements
The effluent limits for this discharge have been developed to ensure the existing in-stream uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

Anti-Backsliding Requirements
Unless stated otherwise in this fact sheet, permit requirements proposed in this fact sheet are at least as stringent as existing permit requirements.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

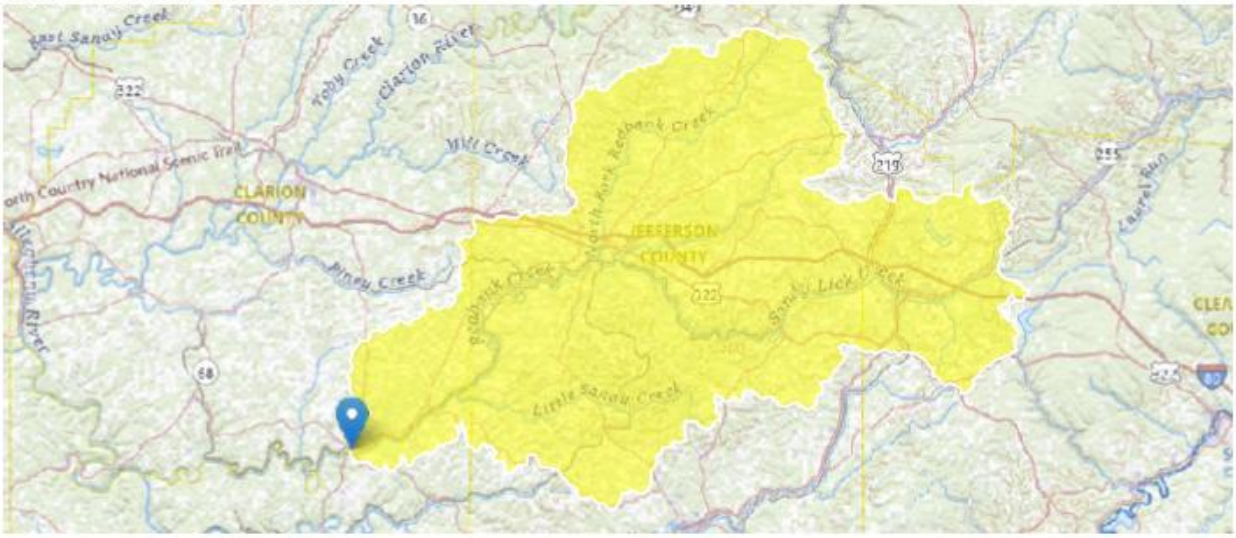
Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Estimate
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0	XXX	1/week	Grab
TRC	XXX	XXX	0.5 Avg Mo	1.0 Daily Max	XXX	1.2	1/week	Grab
TSS	XXX	XXX	XXX	30.0	60.0	75	2/month	Grab
Total Aluminum	XXX	XXX	XXX	0.8	1.5	1.9	2/month	Grab
Total Iron	XXX	XXX	XXX	2.0	4.0	5	2/month	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	2.5	2/month	Grab

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

StreamStats Report

Region ID: PA
Workspace ID: PA20250411212348161000
Clicked Point (Latitude, Longitude): 41.00207, -79.33631
Time: 2025-04-11 17:24:20 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	501	square miles
ELEV	Mean Basin Elevation	1569	feet
PRECIP	Mean Annual Precipitation	43	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	501	square miles	2.33	1720
ELEV	Mean Basin Elevation	1569	feet	898	2700
PRECIP	Mean Annual Precipitation	43	inches	38.7	47.9

Low-Flow Statistics Flow Report [Low Flow Region 3]

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	57.5	ft^3/s	43	43

Statistic	Value	Unit	SE	ASEp
30 Day 2 Year Low Flow	76.6	ft^3/s	38	38
7 Day 10 Year Low Flow	31.3	ft^3/s	54	54
30 Day 10 Year Low Flow	40.2	ft^3/s	49	49
90 Day 10 Year Low Flow	56.6	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: 4.28.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Redbank Valley WTP** NPDES Permit No.: **PA0239978** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Filter Backwash**

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
0.065	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		217.33									
	Chloride (PWS)	mg/L		21.77									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		91.03									
	Fluoride (PWS)	mg/L		0.11									
Group 2	Total Aluminum	µg/L		416.67									
	Total Antimony	µg/L		2									
	Total Arsenic	µg/L		2									
	Total Barium	µg/L		77.4									
	Total Beryllium	µg/L		1									
	Total Boron	µg/L		0.1									
	Total Cadmium	µg/L		0.2									
	Total Chromium (III)	µg/L		2									
	Hexavalent Chromium	µg/L		5									
	Total Cobalt	µg/L		1									
	Total Copper	µg/L		0.002									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		0.002									
	Dissolved Iron	µg/L		0.02									
	Total Iron	µg/L		0.11									
	Total Lead	µg/L		1									
	Total Manganese	µg/L		400.33									
	Total Mercury	µg/L		0.2									
	Total Nickel	µg/L		2.61									
	Total Phenols (Phenolics) (PWS)	µg/L		5.33									
	Total Selenium	µg/L		0.01									
	Total Silver	µg/L		0.4									
	Total Thallium	µg/L		0.002									
	Total Zinc	µg/L		5									
	Total Molybdenum	µg/L		2									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										
	Carbon Tetrachloride	µg/L	<										

Group 3	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

Redbank Valley WTP, NPDES Permit No. PA0239978, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Redbank Valley**

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	048064	23.77	1048	501			Yes
End of Reach 1	048064	22.73	1043	505			Yes

Q_{7-10}

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	23.77	0.065										100	7		
End of Reach 1	22.73	0.065													

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	23.77														
End of Reach 1	22.73														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Redbank Valley WTP, NPDES Permit No. PA0239978, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | (•) All ( ) Inputs ( ) Results ( ) Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.176 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 Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	43,606	
Total Antimony	0	0		0	1,100	1,100	63,955	
Total Arsenic	0	0		0	340	340	19,768	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	1,220,964	
Total Boron	0	0		0	8,100	8,100	470,943	
Total Cadmium	0	0		0	2.014	2.13	124	Chem Translator of 0.944 applied
Total Chromium (III)	0	0		0	569.763	1,803	104,831	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	947	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	5,523	
Total Copper	0	0		0	13.439	14.0	814	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	64.581	81.6	4,747	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	95.8	Chem Translator of 0.85 applied
Total Nickel	0	0		0	468.236	469	27,278	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	3.217	3.78	220	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	3,779	
Total Zinc	0	0		0	117.180	120	6,966	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): ###### 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 Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	71,468	
Total Arsenic	0	0		0	150	150	48,728	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	1,331,896	
Total Boron	0	0		0	1,600	1,600	519,764	
Total Cadmium	0	0		0	0.246	0.27	87.9	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.115	86.2	27,996	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	3,377	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	6,172	
Total Copper	0	0		0	8.956	9.33	3,031	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	487,279	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.517	3.18	1,034	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	294	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.007	52.2	16,945	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	1,621	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	4,223	
Total Zinc	0	0		0	118.139	120	38,923	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)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	1,819	
Total Arsenic	0	0		0	10	10.0	3,249	
Total Barium	0	0		0	2,400	2,400	779,646	
Total Boron	0	0		0	3,100	3,100	1,007,043	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	97,456	

Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	324,853	
Total Mercury	0	0		0	0.050	0.05	16.2	
Total Nickel	0	0		0	610	610	198,160	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	78.0	
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)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

		Mass Limits		*Concentration Limits*						
Model Results	Pollutants	AML	MDL	AML	MDL	Units	Governing	WQBEL	Comments	

Pollutants	(lbs/day)	(lbs/day)	AML	MDL	MAX	Units	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
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	27,950	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	1,819	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	3,249	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	779,646	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	301,856	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	79.5	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	27,996	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	607	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	3,540	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	522	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	97,456	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	487,279	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	1,034	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	324,853	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	16.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	16,945	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	1,621	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	141	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	78.0	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	4,465	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

Changes in TMDLs That May Not Require EPA Approval

- Total loading shift less than or equal to 1% of the total load.
- Increase of WLA results in greater LA reductions provided reasonable assurance of implementation is demonstrated (a compliance/implementation plan and schedule).
- Changes among WLAs with no other changes; TMDL public notice concurrent with permit public notice.
- Removal of a pollutant source that will not be reallocated.
- Reallocation between LAs.
- Changes in land use.

TMDL Endpoints

One of the major components of a TMDL is the establishment of an instream numeric endpoint, which is used to evaluate the attainment of acceptable water quality. An instream numeric endpoint, therefore, represents the water quality goal that is to be achieved by implementing the load reductions specified in the TMDL. The endpoint allows for comparison between observed instream conditions and conditions that are expected to restore designated uses. The endpoint is based on either the narrative or numeric criteria available in water quality standards.
Because of the nature of the pollution sources in the watershed, the TMDLs component makeup will be load allocations that are specified above a point in the stream segment. All allocations will be specified as long-term average daily concentrations. These long-term average daily concentrations are expected to meet water quality criteria 99 percent of the time. Pennsylvania Title 25 Chapter 96.3(c) specifies that a minimum 99 percent level of protection is required. All metals criteria evaluated in this TMDL are specified as total recoverable. Table 2 shows the water quality criteria for the selected parameters.

Table 2. Applicable Water Quality Criteria

Parameter	*Criterion Value (mg/l)*	*Total Recoverable/Dissolved*
Aluminum (Al)	0.75	Total Recoverable
Iron (Fe)	1.50	Total Recoverable
Manganese (Mn)	1.00	Total Recoverable
pH *	6.0-9.0	NA

*The pH values shown will be used when applicable. In the case of freestone streams with little or no buffering capacity, the TMDL endpoint for pH will be the natural background water quality. These values are typically as low as 5.4 (Pennsylvania Fish and Boat Commission).
NA = Not Applicable

TMDL Elements (WLA, LA, MOS)

A TMDL equation consists of a wasteload allocation, load allocation and a margin of safety. The wasteload allocation is the portion of the load assigned to point sources. The load allocation is the portion of the load assigned to nonpoint sources. The margin of safety is applied to account for uncertainties in the computational process. The margin of safety may be expressed implicitly (documenting conservative processes in the computations) or explicitly (setting aside a portion of the allowable load).

Allocation Summary

This TMDL will focus remediation efforts on the identified numerical reduction targets for each watershed. The reduction schemes in Table 3 for each segment are based on the assumption that all upstream allocations are achieved and take in to account all upstream reductions. Attachment C contains the TMDLs by segment analysis for each allocation point in a detailed discussion. As changes occur in the watershed, the TMDLs may be re-evaluated to reflect current conditions. An implicit MOS based on conservative assumptions in the analysis is included in the TMDL calculations.

The allowable LTA concentration in each segment is calculated using Monte Carlo Simulation as described previously. The allowable load is then determined by multiplying the allowable concentration by the flow and a conversion factor at each sample point. The allowable load is the TMDL.

In some instances, instream processes, such as settling, are taking place within a stream segment. These processes are evidenced by a decrease in measured loading between consecutive sample points. It is appropriate to account for these losses when tracking upstream loading through a segment. The calculated upstream load lost within a segment is proportional to the difference in the measured loading between the sampling points.

Table 3. Summary Table – Redbank Creek Watershed

Station	Parameter	Existing Load (lbs/day)	TMDL Allowable Load (lbs/day)	WLA (lbs/day)	LA (lbs/day)	Load Reduction (lbs/day)	Percent Reduction %
RC09	RC09 Most Upstream Sample Point on Redbank Creek, 48064						
	Al	758.3	758.3	0.102	755.4	0.0	0
	Fe	2854.3	1284.4	0.179	1273.0	1569.9	55
	Mn	659.7	620.2	0.123	612.6	39.6	6
	Acidity	0.0	0.0	0.0	0.0	0.0	0
RC08	RC08 Redbank Creek, 48064, Upstream of Confluence with Simpson Run						
	Al	801.5	801.5	*2.8*	798.7	0.0*	0*
	Fe	1967.6	1967.6	*11.25*	1956.35	0.0*	0*
	Mn	483.3	435.0	*7.5*	427.5	19.3*	4*
	Acidity	0.0	0.0	0.0	0.0	0.0*	0*
SR01	SR01 Mouth of Simpson Run, 48493						
	Al	12.6	2.4	*0.56*	1.84	10.2	81
	Fe	10.7	2.4	*2.25*	0.15	8.3	78
	Mn	69.1	2.8	*1.5*	1.3	66.3	96
	Acidity	226.4	2.3	0.0	2.3	224.1	99
WR1	WR1 Mouth of Welch Run, 48486						
	Al	45.4	8.2	*2.8*	5.4	2.9	26
	Fe	185.1	13.0	*11.25*	1.75	4.7	27
	Mn	222.2	15.6	*7.5*	8.1	38.3	71
	Acidity	1203.4	48.1	0.0	48.1	57.3	54
RC07	RC07 Redbank Creek, 48064, upstream of Confluence with UNT39						
	Al	824.4	824.4	*2.8*	NA	0.0*	0*
	Fe	3095.7	2817.1	*11.25*	2805.9	98.2*	3*
	Mn	2359.5	2288.7	*7.5*	2281.2	0.0*	0*
	Acidity	6265.5	6265.5	0.0	0.0	0.0*	0*
UNT39	Mouth of UNT39, 48482, Upstream of Confluence with Redbank Creek						
	Al	121.9	1.2	0.0	1.2	120.7	99
	Fe	221.6	2.2	0.0	2.2	219.4	99
	Mn	15.1	1.7	0.0	1.7	13.5	89
	Acidity	1536.4	0.0	0.0	0.0	1536.4	100
RR01	RR01 Mouth of Runaway Run, 48477, Upstream of Confluence with Redbank Creek						
	Al	50.9	7.6	*2.8*	4.8	43.2	85
	Fe	47.7	12.4	*11.25*	1.15	35.3	74
	Mn	147.7	8.9	*7.5*	1.4	138.8	94
	Acidity	808.0	16.2	0.0	16.2	791.8	98
BR01	BR01 Mouth of Beaver Run, 48447, Upstream of Confluence with Redbank Creek						
	Al	0.0	0.0	0.0	0.0	0.0	0
	Fe	31.9	20.4	0.0	20.4	11.5	36
	Mn	22.9	15.1	0.0	15.1	7.8	34
	Acidity	4.1	4.1	0.0	0.0	0.0	0
RC06	RC06 Redbank Creek, 48064, Downstream of the Confluence with Beaver Run						
	Al	864.7	864.7	*2.8*	861.9	0.0*	0*
	Fe	1957.6	1957.6	*11.25*	1946.35	0.0*	0*
	Mn	1645.4	1645.4	*7.5*	1637.9	0.0*	0*
	Acidity	0.0	0.0	0.0	0.0	0.0*	0*
UNT29	Mouth of UNT29, 48255, Upstream of Confluence with Redbank Creek						
	Al	14.9	1.5	*0.56*	0.94	13.4	90

Station	Parameter	Existing Load (lbs/day)	TMDL Allowable Load (lbs/day)	WLA (lbs/day)	LA (lbs/day)	Load Reduction (lbs/day)	Percent Reduction %
	Fe	10.9	4.3	*2.25*	2.05	6.7	61
	Mn	27.7	2.5	*1.5*	1.0	25.2	91
	Acidity	31.4	7.8	0.0	7.8	23.5	75
RC05	RC05 Redbank Creek, 48064, Downstream of Confluence with UNT25						
	Al	1101.7	1101.7	*2.498+2.8*	1096.4	NA*	0*
	Fe	1243.8	1243.8	*7.521+11.25*	1225.0	NA*	0*
	Mn	932.1	932.1	*5.822+7.5*	918.8	0.0*	0*
	Acidity	0.0	0.0	0.0	0.0	0.0*	0*
UNT25	UNT25 Mouth of UNT25, 48249, Upstream of Confluence with Redbank Creek						
	Al	0.4	0.4	0.0	0.0	0.0	0
	Fe	0.3	0.3	0.0	0.0	0.0	0
	Mn	0.43	0.27	0.0	0.1	0.0	38
	Acidity	0.0	0.0	0.0	0.0	0.0	0
TR01	TR01 Mouth of Town Run, 48227, Upstream of Confluence with Redbank Creek						
	Al	30.4	16.4	*2.8*	13.6	14.0	46
	Fe	31.1	31.1	*11.25*	19.85	0.0	0.0
	Mn	113.3	40.8	*7.5*	33.3	72.5	64
	Acidity	0.0	0.0	0.0	0.0	0.0	0.0
MR01	MR01 Mouth of Middle Run, 48223, Upstream of Confluence with Redbank Creek						
	Al	3.6	1.9	*0.56*	1.34	1.7	47
	Fe	3.1	3.1	*2.25*	0.85	0.0	0
	Mn	10.0	1.8	*1.5*	0.3	8.2	82
	Acidity	0.0	0.0	0.0	0.0	0.0	0
RC04	RC04 Redbank Creek, 48064						
	Al	1154.3	1154.3	*2.8*	1151.5	0.0*	0*
	Fe	1430.1	1430.1	*11.25*	1418.85	0.0*	0*
	Mn	1418.6	1290.9	*7.5*	1283.4	46.8*	3*
	Acidity	0.0	0.0	0.0	0.0	0.0*	0*
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*
UNT16	UNT16 Mouth of UNT16, 48123, Upstream of Confluence with Redbank Creek						
	Al	5.6	0.2	0.0	0.2	5.4	97
	Fe	4.1	0.3	0.0	0.3	3.8	94
	Mn	2.8	0.3	0.0	0.3	2.5	90
	Acidity	8.9	2.4	0.0	2.4	6.5	73
RC02	RC02 Redbank Creek, 48064						
	Al	1259.3	1259.3	*2.8*	1256.5	0.0*	0*
	Fe	1012.5	1012.5	*11.25*	1001.25	0.0*	0*
	Mn	1036.4	995.0	*7.5*	987.5	0.0*	0*
	Acidity	0.0	0.0	0.0	0.0	0.0*	0*
WRC01	WRC01 Mouth of Wildcat Run, 48086, Upstream of Confluence with Redbank Creek						
	Al	43.3	14.7	*2.8*	11.9	28.6	66
	Fe	28.7	19.0	*11.25*	8.75	9.8	34
	Mn	37.7	19.0	*7.5*	11.5	18.9	50
	Acidity	269.0	182.9	0.0	182.9	86.1	32
UNT05	Mouth of UNT05, 48081, Upstream of Confluence with Redbank Creek						

Station	Parameter	Existing Load (lbs/day)	TMDL Allowable Load (lbs/day)	WLA (lbs/day)	LA (lbs/day)	Load Reduction (lbs/day)	Percent Reduction %
	Al	6.1	2.8	*1.12*	1.68	3.3	54
	Fe	10.2	5.2	*4.5*	0.7	5.0	49
	Mn	7.8	7.8	*3.0*	4.8	0.0	0
	Acidity	31.7	31.7	0.0	0.0	0.0	0
UNT06	Mouth of UNT06, 48077, Upstream of Confluence with Redbank Creek						
	Al	59.2	1.2	0.0	1.2	58.0	98
	Fe	45.2	2.3	0.0	2.3	43.0	95
	Mn	20.7	0.4	0.0	0.4	20.3	98
	Acidity	721.9	0.0	0.0	0.0	721.9	100
UNT03	Mouth of UNT03, 48076, Upstream of Confluence with Redbank Creek						
	Al	6.1	0.8	0.0	0.8	5.3	87
	Fe	0.5	0.4	0.0	0.4	0.1	18
	Mn	3.9	0.9	0.0	0.9	3.1	78
	Acidity	49.3	6.9	0.0	6.9	42.4	86
UNT01	Mouth of UNT01, 48065, Upstream of Confluence with Redbank Creek						
	Al	21.3	9.8	*2.8*	7.0	11.5	54
	Fe	34.0	23.8	*11.25*	12.55	10.2	30
	Mn	14.8	14.4	*7.5*	6.9	0.4	3
	Acidity	0.0	0.0	0.0	0.0	0.0	0.0
RC01	Mouth of RC01, 48064, Upstream of Confluence with Allegheny River						
	Al	1321.3	1321.3	*2.8*	1318.5	0.0*	0*
	Fe	1405.8	1405.8	*11.25*	1394.55	0.0*	0*
	Mn	1112.5	1112.5	*7.5*	1105.0	0.0*	0*
	Acidity	792.8	792.8	0.0	0.0	0.0*	0*

*Takes into account load reductions from upstream sources.
Items *in italics are future WLAs* and current WLAs are not italicized, for that stream segment.
ND = Non-detectable
NA = Not Applicable

All waste load allocations were calculated using the methodology explained previously in the Method to Quantify Treatment Pond Pollutant Load section of the report.

Wasteload allocations for the existing mining operations were incorporated into the calculations at RC09 (MSM Coal Co. Inc., Gault Mine, T1, T2 and T3 and P and N Coal Co., Inc., Kudla 1 mine, E, F and G), RC05 (Ben Hal Mining Company, Ramsey mine, TA; Original Fuels, Inc,. Carrier Mine, TP1, TP2 and TP3; Pand N Coal Co., Inc., Leathem Mine, TB1; Timothy A. Keck, Keck 1 Mine, T1, T2, T3, T4, T5, T6 and T7; Compass Coal Co., Inc., a post mining discharge, Enterline 1 mine, SP4 and SP6; Harmon Coal Co., a post mining discharge, Harmon 6 mine, BOG; REM Coal Co., Inc., a post mining discharge, Oliveburg mine, Bog; Terry Coal Sales, Inc,. a post mining discharge, TA and TB; Hawthorn Area Water Authority, filter backwash, an industrial permit). These are the first downstream monitoring points that receive all the potential flow of treated water from any of the treatment sites. No required reductions of these permits are necessary at this time because there are upstream non-point sources that when reduced will met the TMDL or there is available assimilation capacity. All necessary reductions are assigned to non-point sources.

The MSM Coal Company, Inc., (permit SMP#33060104, NPDES PA0258229) is actively mining coal. There are three permitted treatment ponds on the permit. Only one treatment pond will be discharging at any time. The standard pit size for the one pit is 200 ft. X 100 ft. This pit size was used in the Method to Quantify Treatment Pond Pollutant Load calculation and is shown in Table 4.

The P and N Coal Co., Inc., Kudla 1 Mine (permit SMP#33020105, NPDES PA0242195) is actively mining coal. There are three permitted treatment ponds on the permit. Only one treatment pond will be discharging at any time. The standard pit size for the pit is 360 ft. X 150 ft. This pit size is used in the Method to Quantify Treatment Pond Pollutant Load calculation shown in Table 4.

The Ben Hal Mining Company, Ramsey Mine (permit SMP#33070108, NPDES PA0258474) is actively mining coal. Only one treatment pond will be discharging at any time. The standard pit size for the pit is 100 ft. X 80 ft. This pit size is used in the Method to Quantify Treatment Pond Pollutant Load calculation shown in Table 4.

The Original Fuels, Inc., Carrier Mine (permit SMP#339030102, NPDES PA0211508) is actively mining coal. There are three permitted treatment ponds on the permit, although only one discharges at a time. The standard pit size for the pit is 300 ft. X 300 ft. This pit size is used in the Method to Quantify Treatment Pond Pollutant Load calculation shown in Table 4.

The P and N Coal Company, Inc., Leathem Mine (permit SMP#33070102, NPDES PA0258300) is actively mining coal. There is one treatment pond on the permit. The standard pit size for the pit is 340 ft. X 140 ft. This pit size is used in the Method to Quantify Treatment Pond Pollutant Load calculation shown in Table 4.

The Timothy A. Keck, Keck 1 Mine (permit SMP#16050106, NPDES PA024675) is actively mining coal. There are seven treatment ponds on the permit. Only one treatment pond will be discharging at any time. The standard pit size for the pit is 100 ft. X 100 ft. This pit size is used in the Method to Quantify Treatment Pond Pollutant Load calculation shown in Table 4.

The Hawthorn Area Water Authority (permit NPDES PA0098329) is a water treatment plant. The permit is for the discharge of filter backwash and other miscellaneous WTP wastes. An effluent discharge of 0.0105 mgd is noted in the permit and was used in the calculations of the WLAs shown in Table 4.

The Compass Coal Co., Inc., Enterline 1 Mine post mining discharge (permit SMP#3877SM29).

The Harmon Coal Co., Harmon 6 Mine post mining discharge (permit SMP#3872SM7).

The REM Coal Co., Inc., Oliveburg Mine post mining discharge (permit SMP#33810109).

The Terry Coal Sales, Inc., Sanford Mine post mining discharge (permit SMP#33860107).

Table 4. Waste Load Allocation of Permitted Discharges

Parameter	Allowable Average Monthly Conc. (mg/l)	Calculated Average Flow (MGD)	Wla (lbs/day)	Parameter	Allowable Average Monthly Conc. (mg/l)	Calculated Average Flow (MGD)	WLA (lbs/day)
MSM Coal Company, Inc. Gault Mine (SMP # 33060104)				P and N Coal Co., Inc., Kudla 1 Mine (SMP # 33020105)			
Al	0.75	0.002	0.012	Al	2.0	0.005	0.09
Fe	3.0	0.002	0.049	Fe	3.0	0.005	0.13
Mn	2.0	0.002	0.033	Mn	2.0	0.005	0.09
Ben Hal Mining Company, Ramsey Mine (SMP # 33070108)				Original Fuels Inc., Carrier #1 Mine (SMP # 33930102)			
Al	0.9	0.002	0.006	Al	0.75	0.0007	0.005
Fe	2.8	0.002	0.018	Fe	3.0	0.0007	0.018
Mn	1.0	0.002	0.007	Mn	2.0	0.0007	0.012
P and N Coal Company Inc., Leathem Mine (SMP# 33070102)				Timothy A. Keck, Keck 1 Mine(SMP#16050106)			
Al	0.75	0.005	0.03	Al	0.75	0.001	0.006
Fe	3.0	0.005	0.12	Fe	3.0	0.001	0.03
Mn	2.0	0.005	0.08	Mn	2.0	0.001	0.02
Compas Coal Co., Inc., post mining discharge (SMP # 3877SM29) SP4				Harmon Coal Co., post mining discharge (SMP # 3872SM7)			
Al	0.75	0.0002	0.001	Al	0.75	0.08	0.5
Fe	3.0	0.0002	0.005	Fe	3.0	0.08	2.0
Mn	2.0	0.0002	0.003	Mn	2.0	0.08	1.3
Compas Coal Co., Inc., post mining discharge (SMP # 3877SM29) SP6				Terry Coal Sales, Inc., post mining discharge, (SMP # 33860107)			
Al	0.75	0.006	0.4	Al	0.75	0.1	0.6
Fe	3.0	0.006	0.15	Fe	3.0	0.1	2.5
Mn	2.0	0.006	0.1	Mn	2.0	0.1	1.7
REM Coal Co., Inc., post mining discharge SMP # 33810109)				Hawthorn Area Water Authority (NPDES PA0098329)			
Al	0.75	0.1	0.6	Al	4.0	0.0105	0.35
Fe	3.0	0.1	2.5	Fe	2.0	0.0105	0.18
Mn	2.0	0.1	1.7	Mn	1.0	0.0105	0.09

Recommendations

Various methods to eliminate or treat pollutant sources and to provide a reasonable assurance that the proposed TMDLs can be met exist in Pennsylvania. These methods include PADEP's primary efforts to improve water quality through reclamation of abandoned mine lands (for abandoned mining) and through the National Pollution Discharge Elimination System (NPDES) permit program (for active mining). Funding sources available that are currently being used for projects designed to achieve TMDL reductions include the Environmental Protection Agency (EPA) 319 grant program and Pennsylvania's Growing Greener Program. Federal funding is through the Department the Interior, Office of Surface Mining (OSM), for reclamation and mine drainage treatment through the Appalachian Clean Streams Initiative and through Watershed Cooperative Agreements.