pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0260975**
Facility Type	**Municipal**	APS ID	**622766**
Major / Minor	**Minor**	Authorization ID	**1267799**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Richmond Township Berks County**	Facility Name	**Richmond Township Virginville STP**
Applicant Address	11 Kehl Drive Fleetwood, PA 19522-9285	Facility Address	First Street Virginville, PA 19564
Applicant Contact	Brian Wanner, Chairman	Facility Contact	Brian Wanner, Chairman Kenneth Fulford, Operator
Applicant Phone	(610) 944-0348 / richtwp@ptd.net	Facility Phone	(610) 944-0348 / richtwp@ptd.net and dolesluj@hotmail.com (Fulford)
Client ID	92021	Site ID	693903
Ch 94 Load Status	Not Overloaded	Municipality	Richmond Township
Connection Status	No Limitations	County	Berks
Date Application Received	March 28, 2019	EPA Waived?	Yes (TMDL but no changes proposed)
Date Application Accepted	April 5, 2019	If No, Reason	

Purpose of Application: NPDES Renewal with Authorization to Discharge to Sacony Creek in Watershed 3-B.

Summary of Review

The existing NPDES permit was issued September 19, 2014 and administratively extended past its expiration date.

The Sewage Treatment Plant (STP) is located in Richmond Township and collects domestic wastewater entirely from Richmond Township. According to the renewal permit application, a) no industrial wastewater is contributed, and b) no hauled-in wastewater is accepted. The Township Manager was contacted during the preparation of this Fact Sheet and confirmed that there was no change in the design flow, no industrial contributors, and no hauled-in wastes accepted. The Township Manager confirmed that the draft and final permits could be sent via email to the above email addresses.

Design Flow:

The existing NPDES permit was based on a design flow of 0.023 MGD. The NPDES renewal application also indicates a design AAF of 0.023 MGD (and a Hydraulic Design Capacity of 0.032 MGD). The DMR flow data from February 1, 2018 through June 2021 were reviewed. The flows reported do not indicate a hydraulic overload. The same design flow from the existing permit has been carried forward for the draft renewal permit.

Sludge use and disposal description and location(s): landfills

Outstanding Violations

Approve	Deny	Signatures	Date
x		*Bonnie J. Boylan* Bonnie J. Boylan / Environmental Engineering Specialist	September 8, 2021
x		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	September 15, 2021
x		*Maria D. Bebenek* Maria D. Bebenek, P.E. / Environmental Program Manager	September 15, 2021

Summary of Review

There are no unresolved Clean Water Program violations for this facility at this time according to DEP's eFacts database.

Delaware River Basin Commission (DRBC)

This facility discharges to a stream within the Delaware River watershed and is thus subject to the DRBC's requirements. A copy of the Fact Sheet and the draft permit will be forwarded to the DRBC pursuant to State regulations and an interagency agreement. Any comments from the DRBC will be considered.

Public Participation

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

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.023
Latitude	40º 31' 27"	Longitude	-75º 52' 10"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Sacony Creek (TSF)	Stream Code	2008 (per last permit)
NHD Com ID	25978334	RMI	0.3 (per last permit)
Drainage Area	55.1	Yield (cfs/mi^2)	0.13
Q_{7-10} Flow (cfs)	7.2	Q_{7-10} Basis	PA StreamStats Online
Elevation (ft)	315	Slope (ft/ft)	
Watershed No.	3-B	Chapter 93 Class.	TSF, MF
Existing Use	- (online existing use tables were reviewed)	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired for recreational use downstream at Maiden Creek		
Cause(s) of Impairment	Pathogens		
Source(s) of Impairment	Source Unknown		
TMDL Status	Final, approved 89/2004	Name	Lake Ontelaunee*

Secondary Waters:

Sacony Creek empties into Maiden Creek at RMI 11.0. Maiden Creek (stream code 1985, designated use TSF) flows through Lake Ontelaunee (which begins at approx.. 8.6 RMI) and empties into the Schuylkill River.

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

Nearest Downstream Public Water Supply Intake		Reading Area Water Authority	
PWS Waters	Maiden Creek	Flow at Intake (cfs)	
PWS RMI	3.2	Distance from Outfall (mi)	Approx. 11 miles

*Lake Ontelaunee, downstream on Maiden Creek, is impaired, and has a TMDL with Wasteload Allocations for this facility for Total Suspended Solids (TSS) and Total Phosphorus (TP).

Comments:

USGS stream gage is located nearby, on Maiden Creek, #01470756, but its low-flow records ended in 1995, 26 years ago. Low Flow Yield indicated by gage data = 0.11 cfs/sq.mile.

Treatment Facility Summary

Treatment Facility Name: Richmond Township-Virginville WWTP

WQM Permit No.	Issuance Date
0608401	6/23/2008

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia And Phosphorus Reduction	Activated Sludge	Chlorine (Sodium hypochlorite solution) with Dechlorination (sodium bisulfate tablets)	0.023

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.032	55	Not Overloaded	Concentration	Landfill

1 pump station
1 grinder and backup bar grate in bypass channel
1 EQ Tank
2 submersible pumps to overflow box with flow divider
4 Aeration Tanks
2 Clarifier Tanks
1 Chlorine Contact Tank with post-aeration chamber
Effluent ultrasonic flow meter
1 Sludge Holding Tank, aerated

Emergency generator
Not accepting hauled-in wastes

PREVIOUS PERMIT LIMITS, Outfall 001 :

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	4.8	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Suspended Solids	5.7	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Total Suspended Solids (lbs)	XXX	1716.9 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Suspended Solids (lbs)	Report Total Monthly	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Ammonia	3.8	XXX	XXX	20	XXX	40	2/month	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	2.0	XXX	XXX	2/month	8-Hr Composite
Total Phosphorus (lbs)	Report Total Monthly	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs)	XXX	57.2 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Dissolved Solids	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite

Compliance History

DMR Data for Outfall 001 (from August 1, 2020 to July 31, 2021)

Parameter	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20
Flow (MGD) Average Monthly	0.0023	0.0026	0.0029	0.0033	0.0060	0.0031	0.0027	0.0045	0.0041	0.0026	0.0028	0.0065
Flow (MGD) Daily Maximum	0.0032	0.0047	0.0080	0.0069	0.0248	0.0145	0.0044	0.0204	0.0151	0.0063	0.0035	0.0411
pH (S.U.) Minimum	6.4	6.4	6.3	6.0	7.23	7.26	7.35	7.20	6.47	7.30	7.40	7.41
pH (S.U.) Maximum	8.3	8.8	9.1	7.7	7.61	7.65	7.65	7.66	7.66	7.71	7.73	7.81
DO (mg/L) Minimum	8.0	9.1	0.1	8.2	8.1	8.7	7.8	8.3	8.0	8.0	8.1	8.0
TRC (mg/L) Average Monthly	0.06	0.03	0.01	0.03	0.01	0.02	0.01	0.02	0.02	0.01	0.02	0.01
TRC (mg/L) Instantaneous Maximum	1.12	0.22	0.01	0.32	0.02	0.02	0.01	0.02	0.07	0.03	0.03	0.02
CBOD5 (lbs/day) Average Monthly	0.03	0.04	0.11	0.40	0.12	0.28	0.03	0.10	0.04	0.06	0.04	0.04
CBOD5 (mg/L) Average Monthly	2.1	2.1	5.4	17.6	6.1	12.2	2.7	3.9	2.2	2.3	3.0	2.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	2.8	4.1	7.0	8.2	4.8	13.1	3.1	5.0	3.7	4.0	3.0	3.2
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	4.7	5.2	9.2	12.41	5.2	22.3	3.6	6.6	3.8	5.6	4.4	3.2
BOD5 (mg/L) Raw Sewage Influent Average Monthly	148	222	327	252	233	504	249	208	213	136	186	178
TSS (lbs/day) Average Monthly	0.06	0.11	0.29	0.2	0.09	0.17	0.05	0.10	0.07	0.19	0.09	0.10
TSS (lbs/day) Raw Sewage Influent Average Monthly	4.1	10.6	4.9	8.6	5.9	2.5	3.2	7.1	4.5	4.6	4.4	5.4
TSS (lbs/day) Raw Sewage Influent Daily Maximum	7.6	13.7	6.3	12.1	6.6	4.8	4.6	9.5	5.0	5.7	6.3	5.7
TSS (mg/L) Average Monthly	4.0	6.4	17.0	5.8	4.6	6.8	4.0	4.0	4.0	8.3	5.8	5.4

TSS (mg/L) Raw Sewage Influent Average Monthly	200	565	229	276	287	114	231	294	262	203	283	304
Total Suspended Solids (lbs) Total Monthly	2.0	3.3	9.0	5.9	2.9	4.9	1.6	3.1	2.1	6.0	2.6	3.0
Total Suspended Solids (lbs) Other Annual Final Effluent, Total Annual								47.9				
Total Dissolved Solids (mg/L) Annual Average								776				
Fecal Coliform (CFU/100 ml) Geometric Mean	1	1	195	37	1	1	1	1	1	1	1	1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	1	1	9500	71	1	1	1	1	1	1	1	1
Total Nitrogen (mg/L) Annual Average								26.0				
Ammonia (lbs/day) Average Monthly	0.008	0.002	0.002	0.053	0.133	0.109	0.161	0.01	0.002	0.01	0.02	0.01
Ammonia (mg/L) Average Monthly	0.75	0.12	0.10	2.39	6.50	4.87	11.94	0.41	0.1	0.23	0.31	0.12
Total Phosphorus (lbs/day) Average Monthly	0.006	0.009	0.016	0.007	0.015	0.013	0.002	0.003	0.002	0.008	0.005	0.004
Total Phosphorus (mg/L) Average Monthly	0.33	0.60	0.87	0.23	0.76	0.51	0.12	0.11	0.13	0.26	0.31	0.23
Total Phosphorus (lbs) Total Monthly	0.18	0.28	0.48	0.22	0.48	0.36	0.05	0.09	0.07	0.2	0.1	0.1
Total Phosphorus (lbs) Other Annual Final Effluent, Total Annual								4.94				

Compliance History

Effluent Violations for Outfall 001, from September 1, 2020 to July 31, 2021:

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
pH	05/31/21	Max	9.1	S.U.	9.0	S.U.
DO	05/31/21	Min	0.1*	mg/L	5.0	mg/L
Fecal Coliform	05/31/21	IMAX	9500**	CFU/100 ml	1000	CFU/100 ml

*permittee's explanation: DO meter required a repair which was made.

**permittee's explanation: chlorine injection line clogged

DEP Inspections:

April 10, 2020 – Administrative File Review only. No violations.

January 11, 2018 – No Violations. Records appear complete. One treatment train is online with the second one mostly frozen. Measurements taken at 001 by inspector shown below.
pH of 7.26 s.u.
TRC of 0 mg/l
DO of 12.82 mg/l

October 6, 2016 – No violations.

Development of Effluent Limitations			
Outfall No.	001	**Design Flow (MGD)**	.023
Latitude	40º 31' 27"	**Longitude**	-75º 52' 10"
Wastewater Description:	Sewage Effluent		

Technology-Based Effluent Limitations (TBELs)

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)
Total Phosphorus	2.0 if receiving water is impaired	Average Monthly		96.5(c)
Ammonia	20	Average Monthly	-	18 CFR Part 410 *
Total Dissolved Solids	1000 unless not causing an in-stream exceedance of water quality criteria**	Average Monthly		18 CFR Part 410 *

*DRBC regulations
**lesser of 500 mg/l or 133% over background

Comments:

Given the size of the treatment plant's discharge, weekly averages for CBOD5 and TSS have not been imposed, consistent with the existing NPDES permit and with the Permit Writers Manual, 362-0400-001.

The **Total Phosphorus** limit of 2.0 mg/l was included in the existing permit because the downstream Lake Ontelaunee is impaired for nutrients and at the request of Reading Area Water Authority which relies on the lake water for a drinking source. The draft renewal permit carries it forward.

The DRBC **Total Dissolved Solids** (TDS) effluent limit of 1000 mg/l was not imposed in the existing permit or in this draft renewal permit. DMRs from January 1, 2018 through December 31, 2020 indicate an average concentration of 810 mg/l. Based on limited data, there is a reasonable potential to exceed DRBC's effluent limit of 1000 mg/l. The TDS monitoring requirement will be carried forward from the existing permit.

Changes to State Standards were published in July 2020 and now include an **E. coli** criterion that is applicable in summer [Pa Code 92a.61]. As a result, a monitoring requirement for E. Coli is being added to NPDES sewage permits consistent with DEP's SOP for Establishing Effluent Limits for Individual Sewage Permits.

Best Professional Judgment (BPJ) Limitations
None.

Water Quality-Based Effluent Limitations (WQBELs)

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

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	5.0	Minimum	WQM 7.0
Ammonia	20	Monthly Average	WQM 7.0
CBOD5	25	Monthly Average	WQM 7.0
TRC	0.5	Monthly Average	TRC Excel Spreadsheet [implements DEP guidance 391-2000-015]
TRC	1.64	IMAX	TRC Excel Spreadsheet [implements DEP guidance 391-2000-015]

*Because site-specific data was not available, defaults were used in the model (width/depth ratio, stream temperature and pH, background concentrations, fate coefficients, discharge temperature and pH).

CBOD5, Ammonia, and Dissolved Oxygen:

DEP's WQM 7.0 water quality model is designed to calculate permit limits for CBOD5, Ammonia, and Dissolved Oxygen. DEP's Guidance document 391-2000-007 provides the methods and calculations contained in the WQM 7.0 model for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. The model output indicated that the existing permit limits are protective of water quality. No changes are therefore recommended. (The CBOD5 and Ammonia permit limits are TBELs rather than WQBELs; the model defaulted to the TBELs meaning they are protective of the receiving water and WQBELs are not deemed necessary.)

Total Residual Chlorine (TRC):

DEP's model (Excel spreadsheet) was used for TRC evaluation, consistent with Implementation Guidance for TRC, #391-2000-015. A default value of 0.3 mg/l was used for stream demand and 0 was conservatively assumed for the discharge chlorine demand. Results are attached. The model output indicated that the existing permit limits are protective of water quality. No changes are therefore recommended. (The TRC permit limits are TBELs rather than WQBELs; the model defaulted to the TBELs meaning they are protective of the receiving water and WQBELs are not deemed necessary.)

Toxics:

There were no toxic parameters indicated in the application. DEP's Toxics Management Spreadsheet (formerly the PENTOX model), with Reasonable Potential analysis for toxics, was not used because the facility is a minor sewage treatment plant without toxic pollutants expected, consistent with DEP's Standard Operating Procedure (SOP) for Individual Sewage Permits.

Total Maximum Daily Load (TMDL):

There is a Total Maximum Daily Load (TMDL) established for Lake Ontelaunee downstream on the Maiden Creek. It established Waste Load Allocations (WLA) for this facility as follows:

0.0188 MGD x 1.0 mg/l TP x 8.34 conversion factor = 0.1568 lb/day x 365 days/yr = 57.2 lbs TP
0.0188 MGD x 30 mg/l TSS x 8.34 conversion factor = 4.704 lb/day x 365 days/yr = 1716.9 lbs TSS

Note that the 2004 TMDL used a projected design flow for this facility of 0.0188 MGD, shown in the above calculations, whereas the NPDES permit and WQM permit allowed an annual average design flow of 0.023 MGD. The TMDL has already been established and only approves the above loads, with no increase for increased design flow. Also there was an error in the TMDL: it incorrectly stated that 1716.9 lbs/year of TSS was the equivalent of 0.78 metric tonnes/year. EPA

Region III agreed with the permit writer that the correct WLA for TSS was 1716.9 lbs/year. There have been no revisions to the 2004 TMDL.

The existing permit imposed annual load limits of 1716.9 lbs/yr of TSS and 57.2 lbs/yr of TP. These annual load limits are carried forward to the draft renewal permit.

Note: While the TMDL and the annual load limit in the permit for TP are based on a monthly average concentration of 1.0 mg/l, the concentration limit imposed in this permit (as discussed in the above TBEL section) is purposely set at 2.0 mg/l, allowing some fluctuation in month-to-month concentrations. The annual load for TP can nevertheless not exceed 57.2 lbs per year.

Whereas the existing permit specified using water years, October through September, DEP has since changed its policy to allow reporting by calendar years (in most cases).

Anti-Backsliding:

No limits have been made less stringent than the existing permit.

Downstream Public Water Supply (PWS):

Because there is a public potable water source downstream, the impact of Nitrate and TDS from this discharge on the downstream PWS was considered. Using mass balance equations, there is no indication that the discharge will cause exceedances of Nitrate or TDS drinking water Maximum Contamination Levels (MCLs) at the intake: 10 mg/l and 500 mg/l, respectively.

$[(Cs * Qs) + (Cd * Qd)] / (Qs + Qd) < 10$ mg/l (drinking water MCL for Nitrates and DRBC requirement)
$[(Cs * Qs) + (Cd * Qd)] / (Qs + Qd) < 500$ mg/l (drinking water MCL for TDS and DRBC requirement)

Where,
Cs = background concentration of Nitrates/TDS in stream
Qs = Q7-10 of Maiden Creek = 16.7 cfs per gage on Maiden Creek
Cd = concentration of Nitrates/TDS in effluent
Qd = design flow of facility = 0.023 MGD = 0.036 cfs

ADDITIONAL CONSIDERATIONS

Total Nitrogen (TN):

Nutrient levels in rivers and streams are a concern. In order to gather information to assess the situation and to adequately protect the waterways, most NPDES permits are now including a monitoring requirement, at the least, for **Total Nitrogen and Total Phosphorus**. The statutory basis for this requirement is found at Chapter 92a.61. Because this requirement is to gather data and not to demonstrate compliance with a limit, a frequency less than the recommended monitoring frequencies per the Permit Writers Manual [362-0400-001] is allowed.

In accordance with the SOP for Establishing Effluent Limitations for Individual Sewage Permits, a monitoring requirement has been included for Total Nitrogen. The minimum monitoring frequency of once per year was carried forward from the existing permit.

TDS Baseline:

DEP often documents TDS loading in Fact Sheets in order to be able to apply the requirements of Pa Code Chapter 95.10 if an expansion of a facility that existed before August 21, 2010 occurs in the future. For this facility, the design flow in their 2008 NPDES permit was 0.023 MGD but the TDS discharge concentration as of August 2010 was not documented. The 2013 and 2019 renewal permit applications also did not include TDS sample results. Using the maximum TDS concentration reported on DMRs from January 1, 2018 through December 31, 2020 would yield a baseline as follows:

884 mg/l x 0.023 MGD x 8.34 = 170 lbs/day

Note: State regulations relevant to TDS are in addition to applicable DRBC regulations.

Flow Monitoring:

The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR §122.44(i)(1)(ii).

Mass Loading Limitations:

All effluent mass loading limits are based on the formula: concentration limit x design flow x conversion factor of 8.34. (See TMDL section of Fact Sheet for explanation about annual load caps.)

Anti-degradation:

The effluent limits for this discharge have been developed to ensure that the designated and existing uses of the receiving water are maintained and protected consistent with the State's Antidegradation regulations and policy. No Exceptional Value or High Quality waters are impacted by this discharge.

Class A Trout Waters:

No Class A Wild Trout Fisheries are impacted by this discharge.

Stormwater:

Treatment plants < 1.0 MGD are not included in the federal regulation's definition of "stormwater associated with industrial activity". No outfalls were identified in the application for stormwater. Therefore, the permit does not include Part C conditions for stormwater, such as an annual report. (While no specific stormwater requirements are shown in the permit, the PA Clean Streams Law would still prohibit contaminated stormwater runoff.)

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 as needed and BPJ. Instantaneous Maximum (IMAX) limits are generally 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)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	4.8	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Suspended Solids	5.7	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Total Suspended Solids (lbs)	XXX	1716.9 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Suspended Solids (lbs)	Report Total Monthly	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Dissolved Solids	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 mL)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

Permit No. PA0260975

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Nitrogen	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Ammonia	3.8	XXX	XXX	20	XXX	40	2/month	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	2.0	XXX	XXX	2/month	8-Hr Composite
Total Phosphorus (lbs)	Report Total Monthly	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs)	XXX	57.2 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: at discharge from the facility

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, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☒	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 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, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 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, 391-2000-022, 3/1999.
☒	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	Implementation Guidance for Application of Section 93.5e for Potable Water Supply Protection, 391-2000-019
☒	SOP: Establishing Effluent Limits for Individual Sewage Permits
☒	SOP: Individual Sewage Permits.

Permit No. PA0260975

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

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

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	64.570	1.3.2.iii	WLA cfc =	62.943
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	24.060	5.1d	LTA_cfc =	36.592

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)

(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Yc*Qs*0.011)/(1.547*Qd)....
....*EXP(-K*CFC_tc/1440)))+Xd+(CFC_Yc*Qs*Xs/1.547*Qd))*(1-FOS/100)

PERMIT	MONITORING_START_DATE	MONITORING_END_DATE	OUTFALL	PARAMETER	LOAD_UNITS	LOAD_1_VALUE	LOAD_1_LIMIT	LOAD_1_SBC
PA0260975	2/1/2018	2/28/2018	1	Flow	MGD	0.0075	Monitor and Report	Average Monthly
PA0260975	3/1/2018	3/31/2018	1	Flow	MGD	0.0057	Monitor and Report	Average Monthly
PA0260975	4/1/2018	4/30/2018	1	Flow	MGD	0.0039	Monitor and Report	Average Monthly
PA0260975	5/1/2018	5/31/2018	1	Flow	MGD	0.0046	Monitor and Report	Average Monthly
PA0260975	6/1/2018	6/30/2018	1	Flow	MGD	0.0036	Monitor and Report	Average Monthly
PA0260975	7/1/2018	7/31/2018	1	Flow	MGD	0.0044	Monitor and Report	Average Monthly
PA0260975	8/1/2018	8/31/2018	1	Flow	MGD	0.007	Monitor and Report	Average Monthly
PA0260975	9/1/2018	9/30/2018	1	Flow	MGD	0.0049	Monitor and Report	Average Monthly
PA0260975	10/1/2018	10/31/2018	1	Flow	MGD	0.0032	Monitor and Report	Average Monthly
PA0260975	11/1/2018	11/30/2018	1	Flow	MGD	0.0068	Monitor and Report	Average Monthly
PA0260975	12/1/2018	12/31/2018	1	Flow	MGD	0.0043	Monitor and Report	Average Monthly
PA0260975	1/1/2019	1/31/2019	1	Flow	MGD	0.0051	Monitor and Report	Average Monthly
PA0260975	2/1/2019	2/28/2019	1	Flow	MGD	0.004	Monitor and Report	Average Monthly
PA0260975	3/1/2019	3/31/2019	1	Flow	MGD	0.0041	Monitor and Report	Average Monthly
PA0260975	4/1/2019	4/30/2019	1	Flow	MGD	0.0037	Monitor and Report	Average Monthly
PA0260975	5/1/2019	5/31/2019	1	Flow	MGD	0.0051	Monitor and Report	Average Monthly
PA0260975	6/1/2019	6/30/2019	1	Flow	MGD	0.0046	Monitor and Report	Average Monthly

PA0260975	7/1/2019	7/31/2019	1	Flow	MGD	0.0039	Monitor and Report	Average Monthly
PA0260975	8/1/2019	8/31/2019	1	Flow	MGD	0.0042	Monitor and Report	Average Monthly
PA0260975	9/1/2019	9/30/2019	1	Flow	MGD	0.004	Monitor and Report	Average Monthly
PA0260975	10/1/2019	10/31/2019	1	Flow	MGD	0.0062	Monitor and Report	Average Monthly
PA0260975	11/1/2019	11/30/2019	1	Flow	MGD	0.0048	Monitor and Report	Average Monthly
PA0260975	12/1/2019	12/31/2019	1	Flow	MGD	0.0037	Monitor and Report	Average Monthly
PA0260975	1/1/2020	1/31/2020	1	Flow	MGD	0.0037	Monitor and Report	Average Monthly
PA0260975	2/1/2020	2/29/2020	1	Flow	MGD	0.0032	Monitor and Report	Average Monthly
PA0260975	3/1/2020	3/31/2020	1	Flow	MGD	0.0039	Monitor and Report	Average Monthly
PA0260975	4/1/2020	4/30/2020	1	Flow	MGD	0.0041	Monitor and Report	Average Monthly
PA0260975	5/1/2020	5/31/2020	1	Flow	MGD	0.0041	Monitor and Report	Average Monthly
PA0260975	6/1/2020	6/30/2020	1	Flow	MGD	0.0035	Monitor and Report	Average Monthly
PA0260975	7/1/2020	7/31/2020	1	Flow	MGD	0.0034	Monitor and Report	Average Monthly
PA0260975	8/1/2020	8/31/2020	1	Flow	MGD	0.0065	Monitor and Report	Average Monthly
PA0260975	9/1/2020	9/30/2020	1	Flow	MGD	0.0028	Monitor and Report	Average Monthly
PA0260975	10/1/2020	10/31/2020	1	Flow	MGD	0.0026	Monitor and Report	Average Monthly
PA0260975	11/1/2020	11/30/2020	1	Flow	MGD	0.0041	Monitor and Report	Average Monthly
PA0260975	12/1/2020	12/31/2020	1	Flow	MGD	0.0045	Monitor and Report	Average Monthly
PA0260975	1/1/2021	1/31/2021	1	Flow	MGD	0.0027	Monitor and Report	Average Monthly

Permit No. PA0260975

PA0260975	2/1/2021	2/28/2021	1	Flow	MGD	0.0031	Monitor and Report	Average Monthly
PA0260975	3/1/2021	3/31/2021	1	Flow	MGD	0.006	Monitor and Report	Average Monthly
PA0260975	4/1/2021	4/30/2021	1	Flow	MGD	0.0033	Monitor and Report	Average Monthly
PA0260975	5/1/2021	5/31/2021	1	Flow	MGD	0.0029	Monitor and Report	Average Monthly
PA0260975	6/1/2021	6/30/2021	1	Flow	MGD	0.0026	Monitor and Report	Average Monthly
						0.0043	Avg	
						0.0075	Max	

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
03B	2038	SADDNY CREEK	0.300	315.00	65.10	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)	Trib Temp (°C)	Trib pH	Stream Temp (°C)	Stream pH
Q7-10	0.110	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	20.00	7.00
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
Richmond	PA0260975	0.0230	0.0230	0.0230	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	5.00	8.24	0.00	0.00
NH3-N	20.00	0.00	0.00	0.70

Permit No. PA0260975

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
03R	2928	GACONY CREEK	0.010	310.00	55.30	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	0.110	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	20.00	7.00
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)	Rate Coef. (1/days)
CBOD5	25.00	2.00	0.50	1.50
Dissolved Oxygen	5.00	8.24	0.50	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Effluent Limits

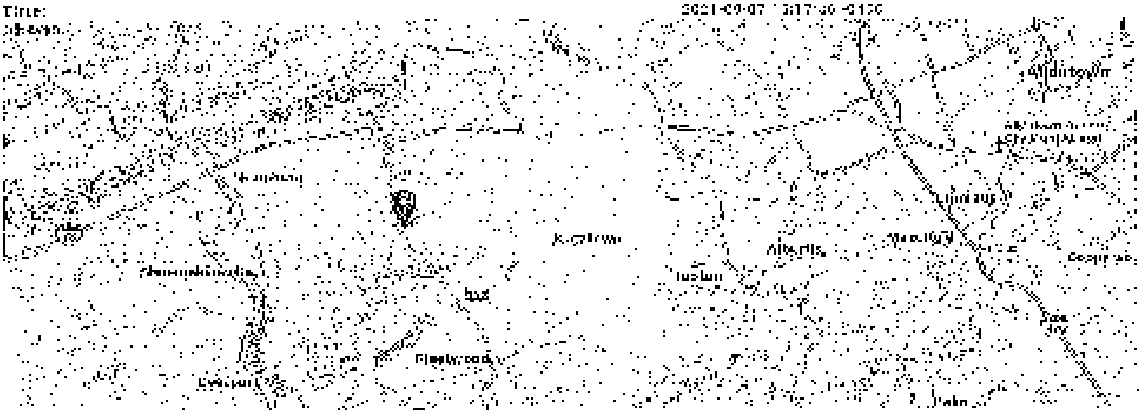
SWP Basin	Stream Code	Stream Name
03B	2003	SAUCONY CREEK

RMI	Name	Permit Number	Dis Flow (mgd)	Parameter	Eff. Limit 30-day Ave. (mg/L)	Eff. Limit Maximum (mg/L)	Eff. Limit Minimum (mg/L)
0.350	Richmond	PA0260975	0.020	CBOD5	25		
				NH3-N	20	40	
				Dissolved Oxygen			5

StreamStats Output Report					
State/Region I	PA				
Workspace ID	PA20210907190358724000				
Latitude	40.52517				
Longitude	-75.86952				
Time					
Basin Characteristics					
Parameter Coc	Parameter Descr	Value	Unit		
DRNAREA	Area that drains	55.1	square miles		
PRECIP	Mean Annual Pre	46	inches		
STRDEN	Stream Density -	1.57	miles per square mile		
ROCKDEP	Depth to rock	4.1	feet		
CARBON	Percentage of ar	31.1	percent		
Low-Flow Stati	99.8 Percent Low Flow Region 2				
Parameter Coc	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	55.1	square mi	4.93	1280
PRECIP	Mean Annual Pre	46	inches	35	50.4
STRDEN	Stream Density	1.57	miles per	0.51	3.1
ROCKDEP	Depth to Rock	4.1	feet	3.32	5.65
CARBON	Percent Carbona	31.1	percent	0	99
Low-Flow Stati	99.8 Percent Low Flow Region 2				
Statistic	Value	Unit	SE	ASEp	
7 Day 2 Year Lo	14.4	ft^3/s	38	38	
30 Day 2 Year L	18.1	ft^3/s	33	33	
7 Day 10 Year L	7.24	ft^3/s	51	51	
30 Day 10 Year	9.32	ft^3/s	46	46	
90 Day 10 Year	12.5	ft^3/s	36	36	
USGS Data Disc	all data				
USGS Software	the USGS reserves the right to update the software as nee				
USGS Product Names Disclaimer: Any use of trade					
Application Version: 4.6.2					
StreamStats Services Version: 1.2.22					
NSS Services Version: 2.1.2					

StreamStats Report - confl Maiden Creek and Sacony Creek

Region ID:	PA
Workspace ID:	PA20210907191713584000
Clicked Point (Latitude, Longitude):	40.02551, -75.87411
Time:	2021-09-07 15:17:36 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	66.8	square miles
PRECIP	Mean Annual Precipitation	46	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.67	miles per square mile
ROCKDEP	Depth to rock	4.1	feet
CARBON	Percentage of area of carbonate rock	81.01	percent

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	66.8	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	46	inches	35	50.4
STRDEN	Stream Density	1.67	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.1	feet	3.32	5.65
CARBON	Percent Carbonate	81.01	percent	0	99

Low-Flow Statistics Flow Report [Low Flow Region 2]

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	14.4	ft^3/s	38	38
30 Day 2 Year Low Flow	20.1	ft^3/s	35	33
7 Day 10 Year Low Flow	7.56	ft^3/s	51	51
30 Day 10 Year Low Flow	9.25	ft^3/s	46	46
90 Day 10 Year Low Flow	12.6	ft^3/s	36	36

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/)