pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0087050**
Facility Type	**Non-Municipal**	APS ID	**572396**
Major / Minor	**Minor**	Authorization ID	**1428204**

Applicant and Facility Information

Applicant Name	**Valley Creek Estates Homeowners Association**	Facility Name	**Valley Creek Estates STP**
Applicant Address	4900 Perry Highway Bldg 1 Suite 300	Facility Address	Pittman Road
	Pittsburgh, PA 15229		Mercersburg, PA 17236
Applicant Contact	Peter Rubash	Facility Contact	Bill Larrow
Applicant Phone	(412) 550-0003	Facility Phone	(301) 331-3205
Client ID	245598	Site ID	2116
Ch 94 Load Status	Not Overloaded	Municipality	Montgomery Township
Connection Status		County	Franklin
Date Application Received	February 22, 2023	EPA Waived?	Yes
Date Application Accepted	March 9, 2023	If No, Reason	

Purpose of Application: This is an application for NPDES renewal.

Approve	Deny	Signatures	Date
X		Nicholas Hong, P.E. / Environmental Engineer Nick Hong (via electronic signature)	January 18, 2024
x		Daniel W. Martin, P.E. / Environmental Engineer Manager Maria D. Bebenek for	February 1, 2024
x		Maria D. Bebenek, P.E. / Environmental Program Manager Maria D. Bebenek	February 1, 2024

Summary of Review

The application submitted by the applicant requests a NPDES renewal permit for the Valley Creek HOA located at Pittman Road, Mercersburg, PA 17236 in Franklin County, municipality of Montgomery Township. The existing permit became effective on September 1, 2018 and expired on February 22, 2023. The application for renewal was received by DEP Southcentral Regional Office (SCRO) on March 9, 2023.

The purpose of this Fact Sheet is to present the basis of information used for establishing the proposed NPDES permit effluent limitations. The Fact Sheet includes a description of the facility, a description of the facility's receiving waters, a description of the facility's receiving waters attainment/non-attainment assessment status, and a description of any changes to the proposed monitoring/sampling frequency. Section 6 provides the justification for the proposed NPDES effluent limits derived from technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), total maximum daily loading (TMDL), antidegradation, anti-backsliding, and/or whole effluent toxicity (WET). A brief summary of the outlined descriptions has been included in the Summary of Review section.

The subject facility is a 0.0125 MGD treatment facility. The applicant does not anticipate any proposed upgrades to the treatment facility in the next five years. The NPDES application has been processed as a Minor Sewage Facility (Level 1) due to the type of sewage and the design flow rate for the facility. The applicant disclosed the Act 14 requirement to Franklin County Commissioners Office and Montgomery Township Supervisors and the notice was received by the parties on February 8, 2023. A planning approval letter was not necessary as the facility is neither new or expanding.

Utilizing the DEP's web-based Emap-PA information system, the receiving waters has been determined to be Licking Creek. The sequence of receiving streams that the Licking Creek discharges into are West Branch Conococheague Creek, Conococheague Creek, Potomac River which eventually drains into the Chesapeake Bay. The subject site is subject to the Chesapeake Bay implementation requirements. The receiving water has protected water usage for trout stocking fish (TSF) and migratory fishes (MF). No Class A Wild Trout fisheries are impacted by this discharge. The absence of high quality and/or exceptional value surface waters removes the need for an additional evaluation of anti-degradation requirements.

The Licking Creek is a Category 2, 4a, and 5 stream listed in the 2022 Integrated List of All Waters (formerly 303d Listed Streams). This stream is an attaining stream that supports fish consumption. The receiving water is (a) impaired for aquatic life due to sediment/siltation from grazing in riparian or shoreline zones; (b) impaired for aquatic life due to nutrients from grazing in riparian or shoreline zones; and (c) impaired for recreational uses due to pathogens from an unknown source. The receiving waters is subject to the Licking Creek Sediment total maximum daily load (TMDL) plan to improve water quality in the subject facility's watershed.

The existing permit and proposed permit differ as follows:

- **Due to the EPA triennial review, monitoring shall be required for E. Coli.**

Sludge use and disposal description and location(s): Biosolids/sewage sludge disposed by Rosy's Wastewater Removal under PAG093524.

The proposed permit will expire five (5) years from the effective date.

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

Any additional information or public review of documents associated with the discharge or facility may be available at PA DEP Southcentral Regional Office (SCRO), 909 Elmerton Avenue, Harrisburg, PA 17110. To make an appointment for file review, contact the SCRO File Review Coordinator at 717.705.4700.

1.0 Applicant

1.1 General Information

This fact sheet summarizes PA Department of Environmental Protection's review for the NPDES renewal for the following subject facility.

Facility Name:	Valley Creek Homeowners Association
NPDES Permit #	PA0087050
Physical Address:	Pittman Road Mercersburg, PA 17236
Mailing Address:	4900 Perry Highway Building 1, Suite 300 Pittsburgh, PA 15229
Contact:	Peter Rubash (412) 550-0003 pete@rjcmgt.com
Consultant:	Wm. F. Hill & Assoc William Hill, PE (717) 334-9137 whill@keller-engineer.com

1.2 Permit History

Permit submittal included the following information.

- NPDES Application
- Effluent Sample Data

2.0 Treatment Facility Summary

2.1.1 Site location

The physical address for the facility is Pittman Road, Mercersburg, PA 17236. A topographical and an aerial photograph of the facility are depicted as Figure 1 and Figure 2.

Figure 1: Topographical map of the subject facility

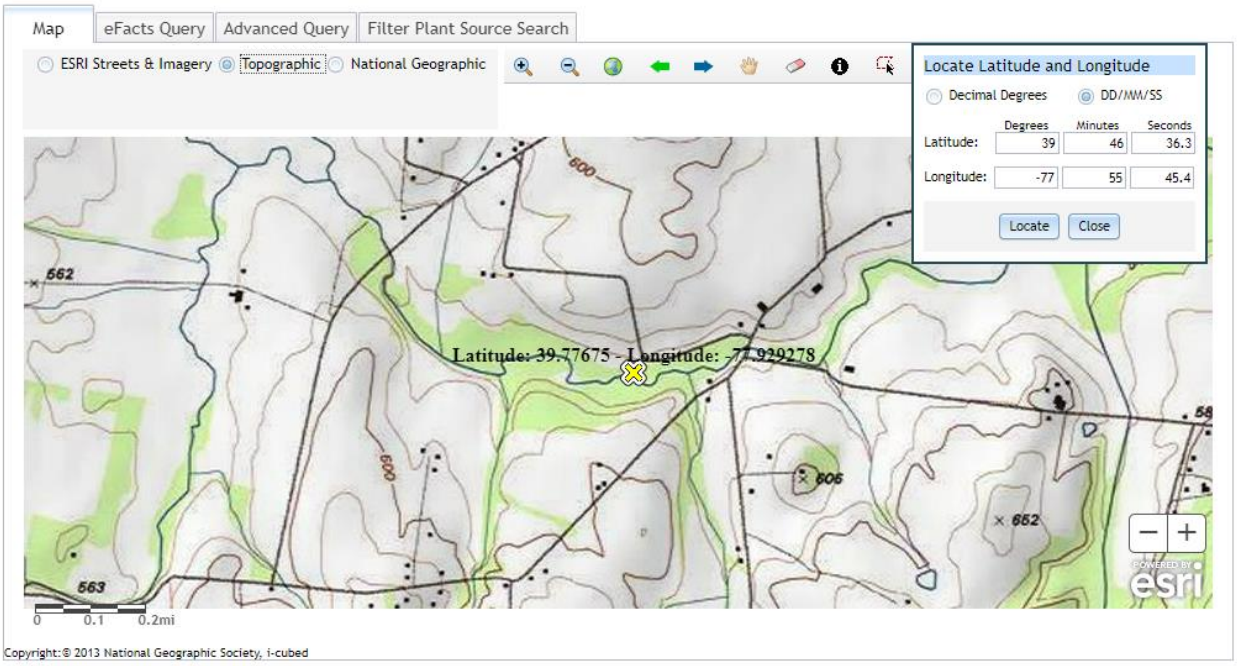
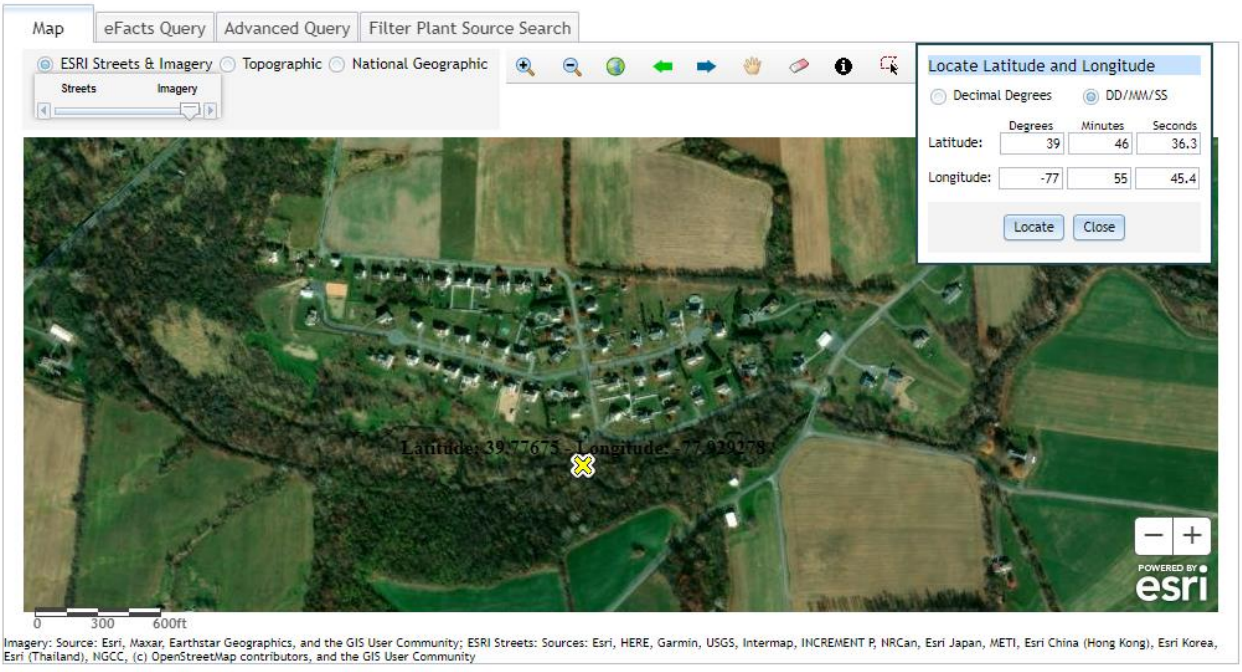


Figure 2: Aerial Photograph of the subject facility



2.2 Description of Wastewater Treatment Process

The subject facility is a 0.0125 MGD design flow facility. The subject facility treats wastewater using flow equalization, an aeration basin, a clarifier, a chlorine contact tank, a dechlorination tank, a polishing clarifier, and a post aeration prior to discharge through the outfall to Licking Creek. The facility is being evaluated for flow, pH, TRC, dissolved oxygen, CBOD5, TSS, fecal coliform, nitrogen species, and phosphorus. The existing permit limits for the facility is summarized in Section 2.4.

The facility does not receive wastewater contributions from industrial or commercial users. The facility also did not receive hauled in wastes in the past three years and does not anticipate hauled in wastes in the next five years.

The treatment process is summarized in the table.

Treatment Facility Summary

Treatment Facility Name: Valley Creek Estates

WQM Permit No.	Issuance Date
2896401	11/18/2003

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Chlorine With Dechlorination	

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0125		Not Overloaded	Aerobic Digestion	Other WWTP

2.3 Facility Outfall Information

The facility has the following outfall information for wastewater.

Outfall No. 001 **Design Flow (MGD)** .0125
Latitude 39º 46' 36.30" **Longitude** -77º 55' 45.38"
Wastewater Description: Sewage Effluent

2.3.1 Operational Considerations- Chemical Additives

Chemical additives are chemical products introduced into a waste stream that is used for cleaning, disinfecting, or maintenance and which may be detected in effluent discharged to waters of the Commonwealth. Chemicals excluded are those used for neutralization of waste streams, the production of goods, and treatment of wastewater.

The subject facility utilizes the following chemicals as part of their treatment process.

- Calcium hypochlorite for disinfection
- Sodium sulfite for dechlorination
- Lime slurry for pH adjustment

2.4 Existing NPDES Permits Limits

The existing NPDES permit limits are summarized in the table.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. A. For Outfall 001 , **Latitude** 39º 46' 36.30" , **Longitude** 77º 55' 45.38" , **River Mile Index** 7.63 , **Stream Code** 59425

Receiving Waters: Licking Creek

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **September 1, 2018** through **August 31, 2023**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	25	XXX	50	2/month	24-Hr Composite
Total Suspended Solids	XXX	XXX	XXX	30	XXX	60	2/month	24-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
Nitrate-Nitrite as N	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	24-Hr Composite
Total Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	Calculation
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	9.0	XXX	18	2/month	24-Hr Composite

Outfall 001, Continued (from September 1, 2018 through August 31, 2023)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	3.0	XXX	6	2/month	24-Hr Composite
Total Kjeldahl Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	24-Hr Composite
Total Phosphorus	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	24-Hr Composite

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Outfall 001

3.0 Facility NPDES Compliance History

3.1 Summary of Inspections

A summary of the most recent inspections during the existing permit review cycle is as follows.

The DEP inspector noted the following during the inspection.

03/05/2020:

- The dechlorination tank was currently being used to feed chlorine tablets. No dechlor tablets were being used but the facility is meeting its TRC limits.
- Triad Engineering submitted a flow monitoring assessment report dated February 11th, 2020 to address inflow and infiltration issues. The study concluded that the increased i&i is being caused by residential sump pumps.

05/26/2020:

- An inspection occured during Covid-19. The facility stated that there were no staffing issues related to Covid-19. The facility was operating under normal hours. No bypasses or storm mode entries occurred recently. All treatment units were operable. No operational changes. Spare parts were kept on site. High CBOD and Fecal was observed during second week of May. High readings were a result of blowers being off. The incident was reported to DEP. No SSOs or other emergencies.

12/30/2020:

- An administrative inspection was completed to follow up on a Sanitary Sewer Overflow (SSO) on 12/25/2020 due to a high rainfall event. The overflow occurred at the facility's manhole on Pittman Rd on Friday, December 25, 2020 at approximately 0715 hours and continued until approximately 0800 hours on 12/26/2020. The operator stated that approximately 15,000 gallons were discharged. No solids cleanup was necessary. Lime was applied on the affected area. No streams were impacted as a result of the discharge. A copy of the eDMR noncompliance report was submitted to the DEP via email on 12/29/2020. A five-day report that summarizes the event was requested by the DEP.

01/21/2021:

- An administrative inspection was completed to follow up on an effluent non-compliance during the COVID-19 restrictions. The facility reported a Total Residual Chlorine value of 1.65 mg/L during the December 2020 monitoring period. This was an exceedance of their Instant. The NPDES Permit No. PA0087050 has a maximum permit limit of 1.6 mg/L. The operator stated the facility over chlorinated its final effluent due to change in wastewater stream. The facility experienced an overflow due to high rainfall on 12/25/2020. As a result, the system lost beneficial biomass and nitrifiers. The change in the waste stream resulted in elevated TRC levels. The operator began utilizing dechlorination tablets to ensure TRC levels were within permit limits. The operator purchased nitrifiers on 1/20/2021 and would be performing an alkalinity test to justify an addition.

03/01/2021:

- An administrative inspection was completed to follow up on a Sanitary Sewer Overflow (SSO) on 03/01/2021 due to a rain event and snow melt. The overflow occurred at one of the facility's manholes at approximately 0913 hours. No flow estimate was given at the time of the interview. No solids cleanup necessary. Lime was applied to the affected area. No streams were impacted as a result of the discharge. A five-day report that summarizes the event was requested by the DEP.

04/12/2021:

- An administrative inspection was completed to follow up on a Sanitary Sewer Overflow (SSO) occurring on 4/11/2021 & 4/12/2021 due to a rain event. The overflow occurred at the facility's manhole near the end of Pittman Road. The operator discovered the surcharging manhole at approximately 1514 hours on 4/11/2021. The manhole discharged to a grassy area and was soaking into the ground. No streams or waterways were impacted by the SSO. Clear water containing no solids was discharged from the manhole. Cleanup was conducted. Lime will be applied to the affected area. A five-day report that summarizes the event was requested by the DEP.

11/04/2021:

- On October 30, 2021, operators discovered that both influent pumps at the treatment plant had tripped off. This caused sewage to back up in the collection system and resulted in a discharge of raw sewage from a manhole at 12359 Pittman Road. The operator explained that the #1 pump in the lift station had been shutting off intermittently and was scheduled to be serviced by a contractor the week before the overflow. But no work was performed. The operator believes that the #1 pump failed and the #2 pump tripped due to a clog. The #2 pump was found to be clogged by a sock. The SSO was reported immediately by the operator. Sanitary sewer overflows from this manhole were reported to the DEP four times in 2021, twice in 2020, and seven times in 2018. All the SSOs were attributed to hydraulic overloading of the collection system

3.2 Summary of DMR Data

A review of approximately 1-year of DMR data shows that the monthly average flow data for the facility below the design capacity of the treatment system. The maximum average flow data for the DMR reviewed was 0.0088 MGD in December 2022. The design capacity of the treatment system is 0.0125 MGD.

The off-site laboratory used for the analysis of the parameters was Franklin Analytical, Inc. located at 419 Limekiln Drive, Chambersburg, PA 17201 and Fairway Laboratories located at 2019 9th Avenue, Altoona, PA 16602.

DMR Data for Outfall 001 (from December 1, 2022 to November 30, 2023)

Parameter	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22
Flow (MGD) Average Monthly	0.0045	0.004	0.0044	0.0041	0.0046	0.0041	0.0045	0.0043	0.0065	0.0043	0.0046	0.0088
Flow (MGD) Daily Maximum	0.034	0.0064	0.0063	0.0064	0.0119	0.0059	0.007	0.0061	0.0425	0.0062	0.0061	0.0389
pH (S.U.) Daily Minimum	7.54	7.48	7.6	7.53	6.75	7.38	7.45	7.56	7.25	7.22	7.31	7.09
pH (S.U.) Daily Maximum	8.02	7.93	8.28	7.92	7.98	7.82	8.13	7.9	7.95	7.86	7.83	8.0
DO (mg/L) Daily Minimum	8.03	8.49	8.2	7.53	7.3	7.37	7.87	7.83	8.87	9.6	8.51	8.36
TRC (mg/L) Average Monthly	0.3	0.1	0.2	0.2	0.2	0.1	0.2	0.4	0.3	0.3	0.3	0.3
TRC (mg/L) Instantaneous Maximum	0.52	0.4	1.6	1.11	0.52	0.40	1.91	0.84	0.73	0.57	0.55	1.27
CBOD5 (mg/L) Average Monthly	4	6	4	6	8	5	6	11	5	22	11	6
TSS (mg/L) Average Monthly	10	7	11	14	15	8	9	10	13	58	9	7
Fecal Coliform (No./100 ml) Geometric Mean	30	601	132	5	622	40	58	< 5	3	171	< 17	6
Fecal Coliform (No./100 ml) Instantaneous Maximum	40	820	240	15	1110	320	91	26	4	5840	282	38
Nitrate-Nitrite (lbs/day) Daily Maximum	< 0.7	< 1	< 0.9	< 1	2	0.9	0.4	1	1	1	< 0.7	< 0.6
Nitrate-Nitrite (mg/L) Daily Maximum	< 39.5	< 35.7	< 33.3	< 38.3	38.342	36.5	12.42	35.03	27.45	38.4	< 20.6	< 19.3
Total Nitrogen (lbs/day) Daily Maximum	< 0.7	< 1	< 1	< 1	< 2	< 0.9	0.8	2	1	< 1	< 0.8	< 0.6
Total Nitrogen (mg/L) Daily Maximum	< 40	< 36.2	< 33.8	< 39.3	< 39.342	< 37.5	28.02	36.61	28.77	< 39.4	< 22.92	< 20.3
Ammonia (mg/L) Average Monthly	< 0.5	< 0.5	< 0.5	< 0.8	< 0.5	< 1.0	7.9	< 0.6	< 0.5	< 0.5	1.0	< 2.7

TKN (lbs/day) Daily Maximum	< 0.009	< 0.01	< 0.5	< 0.03	< 0.05	< 0.02	0.5	0.07	0.05	< 0.03	0.08	< 0.03
TKN (mg/L) Daily Maximum	< 0.5	< 0.5	< 0.5	< 1	< 1	< 1	15.6	1.58	1.32	< 1	2.32	< 1
Total Phosphorus (lbs/day) Daily Maximum	0.09	0.2	0.2	0.2	0.2	0.06	0.1	0.2	0.2	0.1	0.1	0.04
Total Phosphorus (mg/L) Daily Maximum	4.82	5.75	5.55	6.15	4.85	2.45	4.16	4.95	4.62	4.17	3.84	1.36

3.3 Non-Compliance

3.3.1 Non-Compliance- NPDES Effluent

A summary of the non-compliance to the permit limits for the existing permit cycle is as follows.

From the DMR data beginning in September 1, 2018 to January 13, 2024, the following were observed effluent non-compliances.

Summary of Non-Compliance with NPDES Effluent Limits
Beginning September 1, 2018 and Ending January 13, 2024

REPORT_FREQUENCY_DESC	NON_COMPLIANCE_DATE	NON_COMPL_TYPE_DESC	NON_COMPL_CATEGORY_DESC	PARAMETER	SAMPLE_VALUE	VIOLATION_CONDITION	PERMIT_VALUE	UNIT_OF_MEASURE	STAT_BASE_CODE	DISCHARGE_COMMENTS	FACILITY_COMMENTS
``	01/31/20		Unauthorized Discharges							On 1/31/20 I was notified by the homeowner at 12359 Pittman Road that the manhole in her yard had surcharged on the 26th. She indicated that they were experiencing a sewer backup in their downstairs toilet and that when her husband checked there was some seepage from the manhole in their yard. On that day the plant registered a flow of 62,200 gallons after heavy rains. After being notified I checked the area around the manhole and no remedial action was required. I was unable to even tell there had been any issues. Garry Cordell the individual who was running the plant on the 26th had checked the manhole on the day in question since we sometimes experience a surcharge at this location. He did not notice anything leaking at the time he checked and thought the water on the manhole lid may have come from the rain.	
Monthly	06/25/20	Violation of permit condition	Effluent	Ammonia-Nitrogen	< 5.3	>	3.0	mg/L	Average Monthly		Contractors working on the blowers failed to turn one back on before leaving for the day. This affected our sampling event on the 13th and put us in violation on our monthly average for Ammonia Nitrogen.
Monthly	01/19/21	Violation of permit condition	Effluent	Total Residual Chlorine (TRC)	1.65	>	1.6	mg/L	Instantaneous Maximum		We are now adding dechlorination tablets to lessen the chlorine residual.
Non-Compliance Incident	12/29/20		Unauthorized Discharges							A manhole surcharged after very heavy rains combined with snow melt and the flow to the wet well exceeded what the pumps could handle. This caused the flow in the sewer main to back up and surcharge out the manhole.	
Monthly	02/17/21	Violation of permit condition	Effluent	Ammonia-Nitrogen	23.3	>	9.0	mg/L	Average Monthly		Heavy flows in December washed out most of the nitrifiers. The colder winter temperatures slowed the recovery period. We bought and added nitrifiers and the problem was corrected. We sampled a third time near the end of the month and that sample was in compliance. The first two samples were high enough that the one good sample was not able to bring the
Non-Compliance Incident	03/03/21		Unauthorized Discharges							Significant rainfall combined with some snow melt to create a heavier flow to the wetwell than the pumps could handle. This caused a backup in the sewer main and an overflow into the yard.	
Non-Compliance Incident	04/13/21		Unauthorized Discharges							After a significant rain event the flow to the wet well exceeded the capacity of the pumps. This caused the flow to back up in the main and overflow the manhole in the grass near the end of Pittman Road.	
Non-Compliance Incident	09/03/21		Unauthorized Discharges							Hydraulically overloaded pumping station.	

Non-Compliance Incident	09/25/21		Unauthorized Discharges							Overnight rains caused the flow to the plant to exceed the capacity of the pumps resulting in a manhole surcharging.	
Non-Compliance Incident	10/30/21		Unauthorized Discharges							The wet well pump tripped out which allowed the flow to back up and surcharge out the manhole.	
Non-Compliance Incident	02/07/22		Unauthorized Discharges							Rain combined with snow melt apparently entered the sewer system through inflow and or infiltration. The flow to the wet well exceeded the pumps capacity. This caused a manhole to surcharge. After the event was over the area was checked and no cleanup was needed but the area was limed near the manhole.	
Monthly	06/11/22	Violation of permit condition	Effluent	Total Residual Chlorine (TRC)	2.11	>	1.6	mg/L	Instantaneous Maximum		Unusually high flows over a couple of days had deteriorated the dechlor tablets. Yet a pillar of tablets remained which did not allow the tablets above to drop down into the flow. Additional tablets were put in the second dechlor tablet feeder. However under normal
Non-Compliance Incident	05/11/22		Unauthorized Discharges							Around three inches of rain fell over a few day period. Apparently Infiltration and or sump pump water is getting in the line and exceeding the pumping capacity at the plant. The pumps are large enough so that is not the problem. This resulted in the water backing up in the mainline and surcharging out the lowest manhole. It surcharged into a grassy area and then a grassy swale. I don't know how much soaked in the ground or how much may have reached the stream. When the event was over lime was applied near the manhole. My understanding is that plans have been put in place to have the mains cameraed in search of the problem.	
Monthly	07/23/22	Violation of permit condition	Effluent	Fecal Coliform	278	>	200	No./100 ml	Geometric Mean		Effluent running with some fines and pieces. Trying to feed sufficient dechlor without removing all the chlorine. This is a little tricky with tablet feeders.
Monthly	08/24/22	Violation of permit condition	Effluent	Ammonia-Nitrogen	14.6	>	3.0	mg/L	Average Monthly		We had two equipment related failures during the month which caused a few non-compliance issues. The rubber boot which connects the discharge blower piping ruptured and one of the galvanized air header pipes to the aeration tank rusted through. Both of these issues were corrected and the August sampling results show a
Monthly	08/24/22	Violation of permit condition	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	31	>	25	mg/L	Average Monthly		We had two equipment related failures during the month which caused a few non-compliance issues. The rubber boot which connects the discharge blower piping ruptured and one of the galvanized air header pipes to the aeration tank rusted through. Both of these issues were corrected and the August sampling results show a well operating plant.
Monthly	08/24/22	Violation of permit condition	Effluent	Total Suspended Solids	47	>	30	mg/L	Average Monthly		We had two equipment related failures during the month which caused a few non-compliance issues. The rubber boot which connects the discharge blower piping ruptured and one of the galvanized air header pipes to the aeration tank rusted through. Both of these issues were corrected and the August sampling results show a well operating plant.

Non-Compliance Incident	12/17/22		Unauthorized Discharges							Hydraulic Overload at the pumping station. Significant rain increased the flow to the pumping station which exceeded the capacity of the pump.	
Non-Compliance Incident	12/26/22		Unauthorized Discharges							Hydraulic overload at the pumping station. Significant rain and snow melt, increased the flow to the pumping station, which exceeded the capacity of the pump. This caused an overflow into a grassy swale. Area downflow of the manhole was limed after surcharging stopped.	
Monthly	03/24/23	Violation of permit condition	Effluent	Total Suspended Solids	58	>	30	mg/L	Average Monthly		I believe there were several factors that contributed. The pH was allowed to get too low in the aeration basin, I wasted too much initially thinking that would correct the problem, and cold temperatures slowed the recovery.
Non-Compliance Incident	03/08/23		Unauthorized Discharges							Significant rainfall resulted in excess flow getting into the line somehow. This excess flow exceeded the pumping capacity of the wet well pump. The pump is more than sufficiently sized to handle normal flows, but there is to much flow getting in the line somewhere.	
Monthly	06/24/23	Violation of permit condition	Effluent	Ammonia-Nitrogen	7.9	>	3.0	mg/L	Average Monthly		It appears there was insufficient air in the aeration tank to provide for complete nitrification. I adjusted the air valves and installed new belts on the blower, which seems to have corrected the problem.
Monthly	06/24/23	Violation of permit condition	Effluent	Total Residual Chlorine (TRC)	1.91	>	1.6	mg/L	Instantaneous Maximum		It seems that there was insufficient air in the aeration tank to provide for complete nitrification. this reduced the chlorine demand and gave us the excessive reading. I added dechlorination tablets which corrected the problem.
Monthly	08/25/23	Violation of permit condition	Effluent	Fecal Coliform	1110	>	1000	No./100 ml	Instantaneous Maximum		
Monthly	08/25/23	Violation of permit condition	Effluent	Fecal Coliform	622	>	200	No./100 ml	Geometric Mean		

3.3.2 Non-Compliance- Enforcement Actions

A summary of the non-compliance enforcement actions for the current permit cycle is as follows:

Beginning in September 1, 2018 to January 13, 2024, the following were observed enforcement actions.

Summary of Enforcement Actions
Beginning September 1, 2018 and Ending January 13, 2024

ENF ID	ENF TYPE DESC	DATE	VIOLATIONS	ENF FINALSTATUS	DATE
399154	Notice of Violation	11/17/2021	92A.41(A)1		
399301	Notice of Violation	11/23/2021	92A.62	Comply/Closed	12/28/2021
401331	Notice of Violation	02/10/2022	302.202	Comply/Closed	01/04/2022
399692	Administrative Order	12/06/2021	92A.62	Comply/Closed	12/28/2021

3.4 Summary of Biosolids Disposal

A summary of the biosolids disposed of from the facility is as follows.

2023			
Sewage Sludge / Biosolids Production Information			
Hauled Off-Site			
Month 2023	Gallons	% Solids	Dry Tons
January			
February	2,900	0.71	0.086
March			
April			
May			
June			
July			
August	3,150	1.23	0.164
September			
October	3,200	1.47	0.196
November			
Notes:			
Biosolids/sewage sludge disposed by Rosy's Wastewater Removal under PAG093524.			

3.5 Open Violations

A summary of the open violations are as follows:

The final executed permit may be withheld until open violations are addressed.

Summary of Open Violations

INSP ID	VIOLATION ID	DATE	VIOLATION CODE	VIOLATION
3277471	935561	11/04/2021	92A.41(A)1	NPDES - Non-compliance with an issued

4.0 Receiving Waters and Water Supply Information Detail Summary

4.1 Receiving Waters

The receiving waters has been determined to be Licking Creek. The sequence of receiving streams that the Licking Creek discharges into are West Branch Conococheague Creek, Conococheague Creek, and the Potomac River which eventually drains into the Chesapeake Bay.

4.2 Public Water Supply (PWS) Intake

Prior Fact Sheets listed the nearest downstream water supply intake as the Hagerstown intake located on the Potomac River. However, since DEP PA eMAP computer system does not extend into Maryland, DEP considers the Pennsylvania-Maryland border as the location of the closest PWS. This is approximately 18 miles downstream of the subject facility on the Conococheague Creek. Based upon the distance and the flow rate of the facility, the PWS should not be impacted.

4.3 Class A Wild Trout Streams

Class A Wild Trout Streams are waters that support a population of naturally produced trout of sufficient size and abundance to support long-term and rewarding sport fishery. DEP classifies these waters as high-quality coldwater fisheries.

The information obtained from EMAP suggests that no Class A Wild Trout Fishery will be impacted by this discharge.

4.4 2022 Integrated List of All Waters (303d Listed Streams):

Section 303(d) of the Clean Water Act requires States to list all impaired surface waters not supporting uses even after appropriate and required water pollution control technologies have been applied. The 303(d) list includes the reason for impairment which may be one or more point sources (i.e. industrial or sewage discharges) or non-point sources (i.e. abandoned mine lands or agricultural runoff and the pollutant causing the impairment such as metals, pH, mercury or siltation).

States or the U.S. Environmental Protection Agency (EPA) must determine the conditions that would return the water to a condition that meets water quality standards. As a follow-up to listing, the state or EPA must develop a Total Maximum Daily Load (TMDL) for each waterbody on the list. A TMDL identifies allowable pollutant loads to a waterbody from both point and non-point sources that will prevent a violation of water quality standards. A TMDL also includes a margin of safety to ensure protection of the water.

The water quality status of Pennsylvania's waters uses a five-part categorization (lists) of waters per their attainment use status. The categories represent varying levels of attainment, ranging from Category 1, where all designated water uses are met to Category 5 where impairment by pollutants requires a TMDL for water quality protection.

The receiving waters is listed in the 2022 Pennsylvania Integrated Water Quality Monitoring and Assessment Report as a Category 2, 4a, and 5 waterbody. This stream is an attaining stream that supports fish consumption. The receiving water is (a) impaired for aquatic life due to sediment/siltation from grazing in riparian or shoreline zones; (b) impaired for aquatic life due to nutrients from grazing in riparian or shoreline zones; and (c) impaired for recreational uses due to pathogens from an unknown source. The designated use has been classified as protected waters for trout stocking fishes (TSF) and migratory fishes (MF).

4.5 Low Flow Stream Conditions

Water quality modeling estimates are based upon conservative data inputs. The data are typically estimated using either a stream gauge or through USGS web based StreamStats program. The NPDES effluent limits are based upon the combined flows from both the stream and the facility discharge.

A conservative approach to estimate the impact of the facility discharge using values which minimize the total combined volume of the stream and the facility discharge. The volumetric flow rate for the stream is based upon the seven-day, 10-year low flow (Q710) which is the lowest estimated flow rate of the stream during a 7 consecutive day period that occurs once in 10 -year time period. The facility discharge is based upon a known design capacity of the subject facility.

For WQM modeling, default values for pH and stream water temperature were used. Default value for pH is 7.0 and the default value for stream water temperature is 20 C.

The low flow yield and the Q710 for the subject facility was estimated as shown below.

The low flow yield is 0.0326 $ft^3/sec/mi^2$ and the Q710 is 0.574 ft^3/s.

4.6 Summary of Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.0125
Latitude	39º 46' 36.04"	Longitude	-77º 55' 45.47"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		

Receiving Waters	Licking Creek (TSF, MF)	Stream Code	59425
NHD Com ID	49472408	RMI	7.63
Drainage Area	17.6	Yield (cfs/mi^2)	0.0326
Q_{7-10} Flow (cfs)	0.574	Q_{7-10} Basis	Streamstats
Elevation (ft)	536	Slope (ft/ft)	
Watershed No.	13-C	Chapter 93 Class.	TSF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired for aquatic life and recreational uses		
Cause(s) of Impairment	NUTRIENTS, SILTATION		
Source(s) of Impairment	GRAZING IN RIPARIAN OR SHORELINE ZONES		
TMDL Status	Final on 05/25/2021	Name	Licking Creek Sediment TMDL

Background/Ambient Data		Data Source
pH (SU)	7.0	Default value
Temperature (°C)	20	Default value
Hardness (mg/L)	Not appl.	
Other:		

Nearest Downstream Public Water Supply Intake	PWS assumed to be at Pennsylvania-Maryland border		
PWS Waters	Conococheague Creek	Flow at Intake (cfs)	
PWS RMI	Unknown	Distance from Outfall (mi)	18

5.0: Overview of Presiding Water Quality Standards

5.1 General

There are at least six (6) different policies which determines the effluent performance limits for the NPDES permit. The policies are technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), antidegradation, total maximum daily loading (TMDL), anti-backsliding, and whole effluent toxicity (WET) The effluent performance limitations enforced are the selected permit limits that is most protective to the designated use of the receiving waters. An overview of each of the policies that are applicable to the subject facility has been presented in Section 6.

5.2.1 Technology-Based Limitations

TBEL treatment requirements under section 301(b) of the Act represent the minimum level of control that must be imposed in a permit issued under section 402 of the Act (40 CFR 125.3). Available TBEL requirements for the state of Pennsylvania are itemized in PA Code 25, Chapter 92a.47.

The presiding sources for the basis for the effluent limitations are governed by either federal or state regulation. The reference sources for each of the parameters is itemized in the tables. The following technology-based limitations apply, subject to water quality analysis and best professional judgement (BPJ) where applicable:

Parameter	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)

5.3 Water Quality-Based Limitations

WQBEL are based on the need to attain or maintain the water quality criteria and to assure protection of designated and existing uses (PA Code 25, Chapter 92a.2). The subject facility that is typically enforced is the more stringent limit of either the TBEL or the WQBEL.

Determination of WQBEL is calculated by spreadsheet analysis or by a computer modeling program developed by DEP. DEP permit engineers utilize the following computing programs for WQBEL permit limitations: (1) MS Excel worksheet for Total Residual Chorine (TRC); (2) WQM 7.0 for Windows Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen Version 1.1 (WQM Model) and (3) Toxics using DEP Toxics Management Spreadsheet for Toxics pollutants.

The modeling point nodes utilized for this facility are summarized below.

General Data 1	***(Modeling Point #1)***	***(Modeling Point #2)***	***Units***
Stream Code	59425	59425	
River Mile Index	7.63	5.03	miles
Elevation	536	512	feet
Latitude	39.77675	39.769428	
Longitude	-77.929278	-77.898486	
Drainage Area	17.6	25.9	sq miles
Low Flow Yield	0.0326	0.0326	cfs/sq mile

5.3.1 Water Quality Modeling 7.0

The WQM Model is a computer model that is used to determine NPDES discharge effluent limitations for Carbonaceous BOD (CBOD5), Ammonia Nitrogen (NH3-N), and Dissolved Oxygen (DO) for single and multiple point source discharges scenarios. WQM Model is a complete-mix model which means that the discharge flow and the stream flow are assumed to instantly and completely mixed at the discharge node.

WQM recommends effluent limits for DO, CBOD5, and NH_3-N in mg/l for the discharge(s) in the simulation.

Four types of limits may be recommended. The limits are

(a) a *minimum concentration for DO in the discharge as 30-day average;*
(b) a 30-day average concentration for CBOD5 in the discharge;
(c) a 30-day average concentration for the NH_3-N in the discharge;
(d) *24-hour average concentration for NH_3-N in the discharge*.

The WQM Model requires several input values for calculating output values. The source of data originates from either EMAP, the National Map, or Stream Stats. Data for stream gauge information, if any, was abstracted from USGS Low-Flow, Base-Flow, and Mean-Flow Regression Equations for Pennsylvania Streams authored by Marla H. Stuckey (Scientific Investigations Report 2006-5130).

The applicable WQM Effluent Limit Type are discussed in Section 6 under the corresponding parameter which is either DO, CBOD, or ammonia-nitrogen.

5.3.2 Toxics Modeling

The facility is not subject to toxics modeling.

5.3.3 Whole Effluent Toxicity (WET)

The facility is not subject to WET.

5.4 Total Maximum Daily Loading (TMDL)

5.4.1 TMDL

The goal of the Clean Water Act (CWA), which governs water pollution, is to ensure that all of the Nation's waters are clean and healthy enough to support aquatic life and recreation. To achieve this goal, the CWA created programs designed to regulate and reduce the amount of pollution entering United States waters. Section 303(d) of the CWA requires states to assess their waterbodies to identify those not meeting water quality standards. If a waterbody is not meeting standards, it is listed as impaired and reported to the U.S. Environmental Protection Agency. The state then develops a plan to clean up the impaired waterbody. This plan includes the development of a Total Maximum Daily Load (TMDL) for the pollutant(s) that were found to be the cause of the water quality violations. A Total Maximum Daily Load (TMDL) calculates the maximum amount of a specific pollutant that a waterbody can receive and still meet water quality standards.

A TMDL for a given pollutant and waterbody is composed of the sum of individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include an implicit or explicit margin of safety (MOS) to account for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody. The TMDL components are illustrated using the following equation:

$$TMDL = \Sigma WLAs + \Sigma LAs + MOS$$

Pennsylvania has committed to restoring all impaired waters by developing TMDLs and TMDL alternatives for all impaired waterbodies. The TMDL serves as the starting point or planning tool for restoring water quality.

5.4.1.1 Local TMDL

The subject facility discharges into a local TMDL- Licking Creek Sediment TMDL.

Licking Creek is a tributary of the West Branch of the Conococheague Creek, with the confluence approximately 3.5 miles southeast of Mercersburg Borough. The Total Maximum Daily Load (TMDL) document had been prepared to address the siltation impairments.

Agriculture and grazing related agriculture were identified as the source of the impairments. The removal of natural vegetation and disturbance of soils associated with agriculture increases soil erosion leading to sediment deposition in streams. Excessive fine sediment deposition may destroy the coarse-substrate habitats required by many stream organisms. While agriculture has been identified as the source of the impairments, this TMDL document is applicable to all significant sources of sediment and solids that may settle to form deposits.

The TMDL proposes a 36% reduction in annual average sediment loading for the Licking Creek Subwatershed. To achieve this goal while maintaining a margin of safety and minor allowance for point sources, it is proposed to reduce sediment loading from croplands by 45% and loading from hay/pasture lands and streambanks by 42%. In addition, 99th percentile daily sediment loading should be reduced by 37%. Reductions in stream sediment loading due to agricultural activities can be made through the implementation of required Erosion and Sediment Control Plans (Pennsylvania Clean Streams Law, Title 25 Environmental Protection, Chapter 102.4) and through the use of BMPs such as conservation tillage, cover crops, vegetated filter strips, rotational grazing, livestock exclusion fencing, riparian buffers, legacy sediment removal etc. Use of forested riparian buffers is widely recognized as one of the best ways to promote stream health. Riparian buffers protect streams from sedimentation impairments by filtering these pollutants from runoff and floodwaters and by protecting streambanks from erosion.

Since the facility is a sewage discharge for a mobile home park and the facility is not related to agriculture, the facility will not be subject to the TMDL.

5.4.1.2 Chesapeake Bay TMDL Requirement

The Chesapeake Bay Watershed is a large ecosystem that encompasses approximately 64,000 square miles in Maryland, Delaware, Virginia, West Virginia, Pennsylvania, New York and the District of Columbia. An ecosystem is composed of interrelated parts that interact with each other to form a whole. All of the plants and animals in an ecosystem depend on each other in some way. Every living thing needs a healthy ecosystem to survive. Human activities affect the Chesapeake Bay ecosystem by adding pollution, using resources and changing the character of the land.

Most of the Chesapeake Bay and many of its tidal tributaries have been listed as impaired under Section 303(d) of the federal Water Pollution Control Act ("Clean Water Act"), 33 U.S.C. § 1313(d). While the Chesapeake Bay is outside the boundaries of Pennsylvania, more than half of the State lies within the watershed. Two major rivers in Pennsylvania are part of the Chesapeake Bay Watershed. They are (a) the Susquehanna River and (b) the Potomac River. These two rivers total 40 percent of the entire Chesapeake Bay watershed.

The overall management approach needed for reducing nitrogen, phosphorus and sediment are provided in the Bay TMDL document and the Phase I, II, and III WIPs which is described in the Bay TMDL document and Executive Order 13508.

The Bay TMDL is a comprehensive pollution reduction effort in the Chesapeake Bay watershed identifying the necessary pollution reductions of nitrogen, phosphorus and sediment across the seven Bay watershed jurisdictions of Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia to meet applicable water quality standards in the Bay and its tidal waters.

The Watershed Implementation Plans (WIPs) provides objectives for how the jurisdictions in partnership with federal and local governments will achieve the Bay TMDL's nutrient and sediment allocations.

Phase 3 WIP provides an update on Chesapeake Bay TMDL implementation activities for point sources and DEP's current implementation strategy for wastewater. The latest revision of the supplement was September 13, 2021.

The Chesapeake Bay TMDL (Appendix Q) categorizes point sources into four sectors:

- Sector A- significant sewage dischargers;
- Sector B- significant industrial waste (IW) dischargers;
- Sector C- non-significant dischargers (both sewage and IW facilities); and
- Sector D- combined sewer overflows (CSOs).

All sectors contain a listing of individual facilities with NPDES permits that were believed to be discharging at the time the TMDL was published (2010). All sectors with the exception of the non-significant dischargers have individual wasteload allocations (WLAs) for TN and TP assigned to specific facilities. Non-significant dischargers have a bulk or aggregate allocation for TN and TP based on the facilities in that sector that were believed to be discharging at that time and their estimated nutrient loads.

Cap Loads will be established in permits as Net Annual TN and TP loads (lbs/yr) that apply during the period of October 1 – September 30. For facilities that have received Cap Loads in any other form, the Cap Loads will be modified accordingly when the permits are renewed.

Offsets have been incorporated into Cap Loads in several permits issued to date. From this point forward, permits will be issued with the WLAs as Cap Loads and will identify Offsets separately to facilitate nutrient trading activities and compliance with the TMDL.

Based upon the supplement the subject facility has been categorized as a Sector C discharger. The supplement defines Sector C as a non-significant dischargers include sewage facilities (Phase 4 facilities: ≥ 0.2 MGD and < 0.4 MGD and Phase 5 facilities: > 0.002 MGD and < 0.2 MGD), small flow/single residence sewage treatment facilities (≤ 0.002 MGD), and non-significant IW facilities, all of which may be covered by statewide General Permits or may have individual NPDES permits.

At this time, there are approximately 850 Phase 4 and 5 sewage facilities, approximately 715 small flow sewage treatment facilities covered by a statewide General Permit, and approximately 300 non-significant IW facilities.

For Phase 5 sewage facilities with individual permits (average annual design flow on August 29, 2005 > 0.002 MGD and < 0.2 MGD), DEP will issue individual permits with monitoring and reporting for TN and TP throughout the permit term at a frequency no less than annually, unless 1) the facility has already conducted at least two years of nutrient monitoring and 2) a summary of the monitoring results are included in the next permit's fact sheet. If, however, Phase 5 facilities choose to expand, the renewed or amended permits will contain Cap Loads based on the lesser of a) existing TN/TP concentrations at current design average annual flow or b) 7,306 lbs/yr TN and 974 lbs/yr TP.

If no data are available to determine existing concentrations for expanding Phase 4 or 5 facilities, default concentrations of 25 mg/l TN and 4 mg/l TP may be used (these are the average estimated concentrations of all non-significant sewage facilities).

DEP will not issue permits to existing Phase 4 and 5 facilities containing Cap Loads unless it is done on a broad scale or unless the facilities are expanding.

For new Phase 4 and 5 sewage discharges, in general DEP will issue new permits containing Cap Loads of "0" and new facilities will be expected to purchase credits and/or apply offsets to achieve compliance, with the exception of small flow and single residence facilities.

Due to the Chesapeake Bay WIP, this facility is subject to Sector C monitoring requirements. Monitoring for nitrogen species and phosphorus shall be 1x/month.

5.5 Anti-Degradation Requirement

Chapter 93.4a of the PA regulations requires that surface water of the Commonwealth of Pennsylvania may not be degraded below levels that protect the existing uses. The regulations specifically state that *Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected*. Antidegradation requirements are implemented through DEP's guidance manual entitled Water Quality Antidegradation Implementation Guidance (Document #391-0300-02).

The policy requires DEP to protect the existing uses of all surface waters and the existing quality of High Quality (HQ) and Exceptional Value (EV) Waters. Existing uses are protected when DEP makes a final decision on any permit or approval for an activity that may affect a protected use. Existing uses are protected based upon DEP's evaluation of the best available information (which satisfies DEP protocols and Quality Assurance/Quality Control (QA/QC) procedures) that indicates the protected use of the waterbody.

For a new, additional, or increased point source discharge to an HQ or EV water, the person proposing the discharge is required to utilize a nondischarge alternative that is cost-effective and environmentally sound when compared with the cost of the proposed discharge. If a nondischarge alternative is not cost-effective and environmentally sound, the person must use the best available combination of treatment, pollution prevention, and wastewater reuse technologies and assure that any discharge is nondegrading. In the case of HQ waters, DEP may find that after satisfaction of intergovernmental coordination and public participation requirements lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In addition, DEP will assure that cost-effective and reasonable best management practices for nonpoint source control in HQ and EV waters are achieved.

The subject facility's discharge will be to a non-special protection waters and the permit conditions are imposed to protect existing instream water quality and uses. Neither HQ waters or EV waters is impacted by this discharge.

5.6 Anti-Backsliding

Anti-backsliding is a federal regulation which prohibits a permit from being renewed, reissued, or modified containing effluent limitations which are less stringent than the comparable effluent limitations in the previous permit (40 CFR 122.l.1 and 40 CFR 122.l.2). A review of the existing permit limitations with the proposed permit limitations confirm that the facility is consistent with anti-backsliding requirements. The facility has proposed effluent limitations that are as stringent as the existing permit.

6.0 NPDES Parameter Details

The basis for the proposed sampling and their monitoring frequency that will appear in the permit for each individual parameter are itemized in this Section. The final limits are the more stringent of technology based effluent treatment (TBEL) requirements, water quality based (WQBEL) limits, TMDL, antidegradation, anti-degradation, or WET.

The reader will find in this section:

a) a justification of recommended permit monitoring requirements and limitations for each parameter in the proposed NPDES permit;
b) a summary of changes from the existing NPDES permit to the proposed permit; and
c) a summary of the proposed NPDES effluent limits.

6.1 Recommended Monitoring Requirements and Effluent Limitations

A summary of the recommended monitoring requirements and effluent limitations are itemized in the tables. The tables are categorized by (a) Conventional Pollutants and Disinfection and (b) Nitrogen Species and Phosphorus.

6.1.1 Conventional Pollutants and Disinfection

Summary of Proposed NPDES Parameter Details for Conventional Pollutants and Disinfection
Valley Creek Estates HOA; PA0087050

Parameter	Permit Limitation Required by[1]:	Recommendation	
pH (S.U.)	TBEL	Monitoring:	The monitoring frequency shall be daily as a grab sample (Table 6-3).
		Effluent Limit:	Effluent limits may range from pH = 6.0 to 9.0
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 95.2(1).
Dissolved Oxygen	BPJ	Monitoring:	The monitoring frequency shall be daily as a grab sample (Table 6-3).
		Effluent Limit:	Effluent limits shall be greater than 5.0 mg/l.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by best professional judgement.
CBOD	TBEL	Monitoring:	The monitoring frequency shall be 2x/month as a 24-hr composite sample (Table 6-3).
		Effluent Limit:	Effluent limits shall not exceed 25 mg/l as an average monthly.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(1). WQM modeling indicates that the TBEL is more stringent than the WQBEL. Thus, the permit limit is confined to TBEL.
TSS	TBEL	Monitoring:	The monitoring frequency shall be 2x/month as a 24-hr composite sample (Table 6-3).
		Effluent Limit:	Effluent limits shall not exceed 30 mg/l as an average monthly.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(1). While there is no WQM modeling for this parameter, the permit limit for TSS is generally assigned similar effluent limits as CBOD or BOD.
TRC	TBEL	Monitoring:	The monitoring frequency shall be on a daily basis as a grab sample (Table 6-3).
		Effluent Limit:	The average monthly limit should not exceed 0.5 mg/l and/or 1.6 mg/l as an instantaneous maximum.
		Rationale: Chlorine in both combined (chloramine) and free form is extremely toxic to freshwater fish and other forms of aquatic life (Implementation Guidance Total Residual Chlorine 1). The TRC effluent limitations to be imposed on a discharger shall be the more stringent of either the WQBEL or TBEL requirements and shall be expressed in the NPDES permit as an average monthly and instantaneous maximum effluent concentration (Implementation Guidance Total Residual Chlorine 4). Based on the stream flow rate (lowest 7-day flow rate in 10 years) and the design flow rate of the subject facility calculated by the TRC Evaluation worksheet, the TBEL is more stringent than the WQBEL. The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.48(b)(2)	
Fecal Coliform	TBEL	Monitoring:	The monitoring frequency shall be 2x/month as a grab sample (Table 6-3).
		Effluent Limit:	Summer effluent limits shall not exceed 200 No./100 mL as a geometric mean. Winter effluent limits shall not exceed 2000 No./100 mL as a geometric mean.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(4) and 92a.47(a)(5).
E. Coli	SOP; Chapter 92a.61	Monitoring:	The monitoring frequency shall be 1x/year as a grab sample (SOP).
		Effluent Limit:	No effluent requirements.
		Rationale:	Consistent with the SOP- Establishing Effluent Limitations for Individual Sewage Permits (Revised March 22, 2019) and under the authority of Chapter 92a.61, the facility will be required to monitor for E.Coli.
Notes:			

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other

2 Monitoring frequency based on flow rate of 0.0125 MGD.

3 Table 6-3 (Self Monitoring Requirements for Sewage Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Chesapeake Bay Phase 3 Watershed Implementation Plan Wastewater Supplement, Revised September 13, 2021

6.1.2 Nitrogen Species and Phosphorus

Summary of Proposed NPDES Parameter Details for Nitrogen Species and Phosphorus

Valley Creek Estates HOA; PA0087050

Parameter	Permit Limitation Required by[1]:	Recommendation	
Ammonia-Nitrogen	Anti-backsliding	Monitoring:	The monitoring frequency shall be 2x/mo as a 24-hr composite sample
		Effluent Limit:	During the months of May 1 to October 31, effluent limits shall not exceed 3 mg/l as an average monthly. During the months of November 1 to April 30, effluent limits shall not exceed 9 mg/l as an average monthly.
		Rationale:	The effluent limit was established in previous Fact Sheets. Due to anti-backsliding regulations, the current permit limit shall continue.
Nitrate-Nitrite as N	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/mo as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/mo.
Total Nitrogen	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/mo as a calculation
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/mo.
TKN	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/mo as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/mo.
Total Phosphorus	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/mo as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/mo.
Notes:			

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other

2 Monitoring frequency based on flow rate of 0.0125 MGD.

3 Table 6-3 (Self Monitoring Requirements for Sewage Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Chesapeake Bay Phase 3 Watershed Implementation Plan Wastewater Supplement, Revised September 13, 2021

6.1.3.1 Implementation of Regulation- Chapter 92a.61

Chapter 92a.61 provides provisions to DEP to monitor for pollutants that may have an impact on the quality of waters of the Commonwealth. Based upon DEP policy directives issued on March 22, 2021 and in conjunction with EPA's 2017 Triennial Review, monitoring for E. Coli shall be required.

6.2 Summary of Changes From Existing Permit to Proposed Permit

A summary of how the proposed NPDES permit differs from the existing NPDES permit is summarized as follows.

- Due to the EPA triennial review, monitoring shall be required for E. Coli.

6.3.1 Summary of Proposed NPDES Effluent Limits

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.

The proposed NPDES effluent limitations are summarized in the table below.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. A. For Outfall 001 , **Latitude** 39º 46' 36.30" , **Longitude** 77º 55' 45.38" , **River Mile Index** 7.63 , **Stream Code** 59425

Receiving Waters: Licking Creek (TSF, MF)

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **Permit Effective Date** through **Permit Expiration Date**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

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	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	25	XXX	50	2/month	24-Hr Composite
Total Suspended Solids	XXX	XXX	XXX	30	XXX	60	2/month	24-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	Report	XXX	1/year	Grab
Nitrate-Nitrite as N	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Nitrate-Nitrite as N (Total Load, lbs) (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Total Nitrogen (Total Load, lbs) (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia-Nitrogen Nov 1 - Apr 30	Report	XXX	XXX	9.0	XXX	18	2/month	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	Report	XXX	XXX	3.0	XXX	6	2/month	24-Hr Composite
Ammonia-Nitrogen (Total Load, lbs) (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Kjeldahl Nitrogen (Total Load, lbs) (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Phosphorus (Total Load, lbs) (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Outfall 001

6.3.2 Summary of Proposed Permit Part C Conditions

The subject facility has the following Part C conditions.

- Chlorine Minimization
- Chesapeake Bay Nutrient Definitions
- Solids Management for Non-Lagoon Treatment Systems

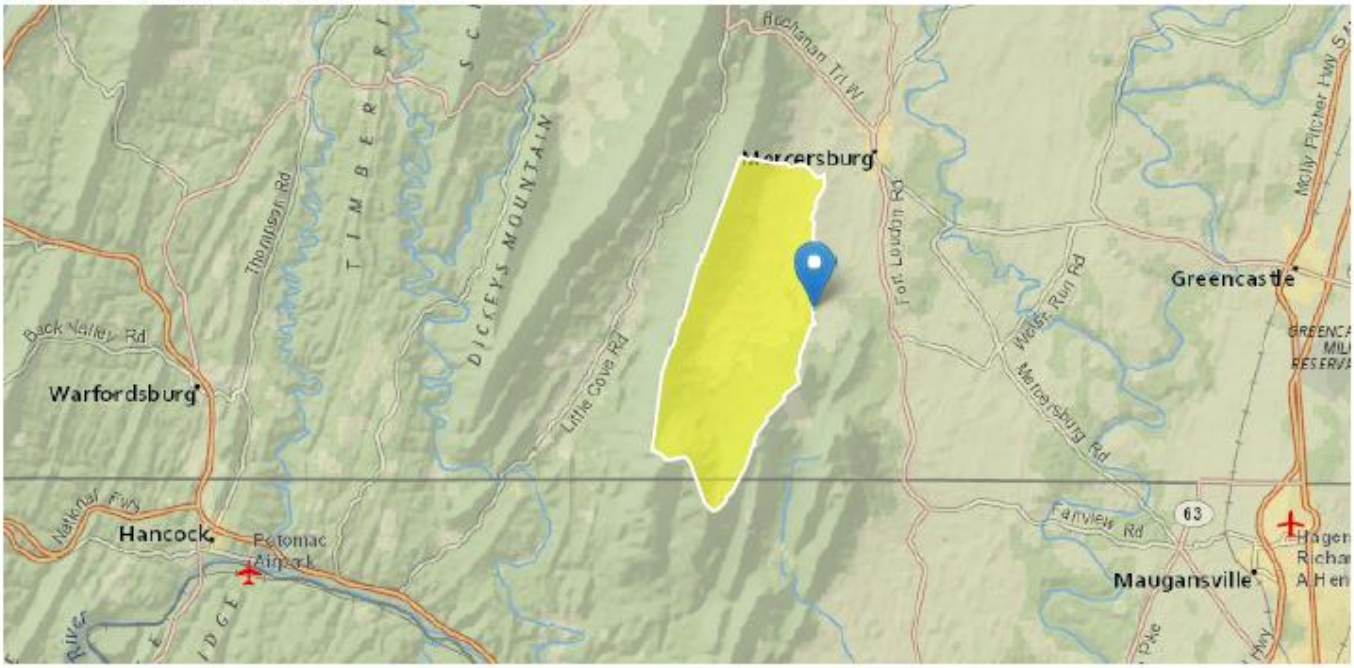
Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical 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: New and Reissuance Sewage Individual NPDES Permit Applications, Revised, February 3, 2022
☐	Other:

Attachment A

Stream Stats

StreamStats Report

Region ID: PA
Workspace ID: PA20240113122445827000
Clicked Point (Latitude, Longitude): 39.77668, -77.92942
Time: 2024-01-13 07:25:11 -0500



Valley Creek HOA PA0087050 Modeling Point #1 January 2024

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	12.75	percent
DRNAREA	Area that drains to a point on a stream	17.6	square miles
PRECIP	Mean Annual Precipitation	41	inches
ROCKDEP	Depth to rock	4.4	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	3.18	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	17.6	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	41	inches	35	50.4
STRDEN	Stream Density	3.18	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.4	feet	3.32	5.65
CARBON	Percent Carbonate	12.75	percent	0	99

Low-Flow Statistics Disclaimers [Low Flow Region 2]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	1.27	ft^3/s
30 Day 2 Year Low Flow	1.75	ft^3/s
7 Day 10 Year Low Flow	0.574	ft^3/s
30 Day 10 Year Low Flow	0.787	ft^3/s
90 Day 10 Year Low Flow	1.19	ft^3/s

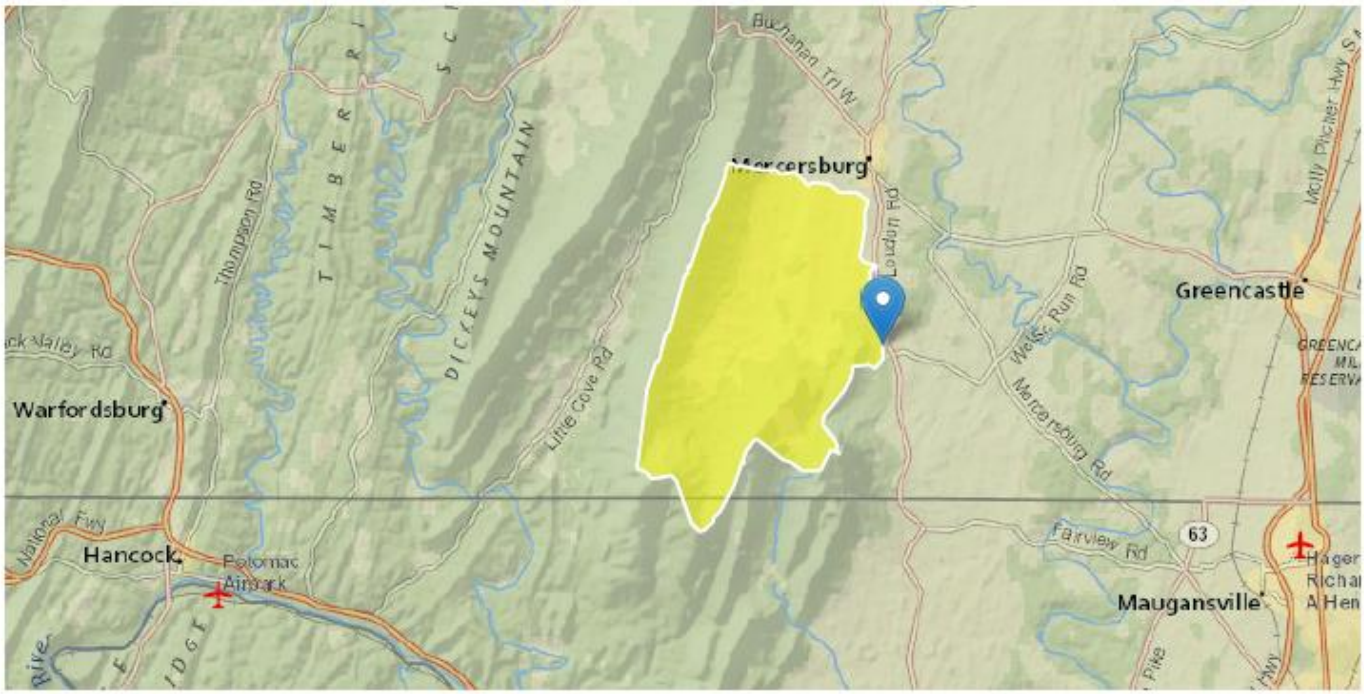
Low-Flow Statistics Citations

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: 4.19.3
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report

Region ID: PA
Workspace ID: PA20240113122853490000
Clicked Point (Latitude, Longitude): 39.76936, -77.89824
Time: 2024-01-13 07:29:17 -0500



Valley Creek HOA PA0087050 Modeling Point #2 January 2024

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	17.75	percent
DRNAREA	Area that drains to a point on a stream	25.9	square miles
PRECIP	Mean Annual Precipitation	41	inches
ROCKDEP	Depth to rock	4.2	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	2.85	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	25.9	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	41	inches	35	50.4
STRDEN	Stream Density	2.85	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.2	feet	3.32	5.65
CARBON	Percent Carbonate	17.75	percent	0	99

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

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	2.1	ft^3/s	38	38
30 Day 2 Year Low Flow	2.87	ft^3/s	33	33
7 Day 10 Year Low Flow	0.937	ft^3/s	51	51
30 Day 10 Year Low Flow	1.3	ft^3/s	46	46
90 Day 10 Year Low Flow	1.97	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/)

Application Version: 4.19.3
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment B

WQM 7.0 Modeling Output Values

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
13C	59425	LICKING 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)
7.630	Valley Creek	PA0087050	0.013	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
13C	59425	LICKING 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
7.630	Valley Creek	16.17	50	16.17	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
7.630	Valley Creek	1.87	25	1.87	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)		
7.63	Valley Creek	25	25	25	25	5	5	0	0

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
13C	59425	LICKING CREEK	7.630	536.00	17.60	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	0.033	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Valley Creek	PA0087050	0.0125	0.0125	0.0125	0.000	25.00	7.65

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	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
13C	59425	LICKING CREEK	5.030	512.00	25.90	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	0.033	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
13C	59425	LICKING CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
7.630	0.012	20.163	7.011
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
15.363	0.505	30.429	0.076
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.75	0.152	0.82	0.709
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.137	13.778	Owens	5
Reach Travel Time (days)			
2.078			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.208	2.66	0.70	8.22
0.416	2.58	0.61	8.22
0.623	2.50	0.52	8.22
0.831	2.42	0.45	8.22
1.039	2.35	0.39	8.22
1.247	2.27	0.34	8.22
1.455	2.20	0.29	8.22
1.662	2.13	0.25	8.22
1.870	2.06	0.22	8.22
2.078	2.00	0.19	8.22

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
13C	59425	LICKING 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												
7.630	0.57	0.00	0.57	.0193	0.00175	.505	15.36	30.43	0.08	2.078	20.16	7.01
Q1-10 Flow												
7.630	0.37	0.00	0.37	.0193	0.00175	NA	NA	NA	0.06	2.641	20.25	7.02
Q30-10 Flow												
7.630	0.92	0.00	0.92	.0193	0.00175	NA	NA	NA	0.10	1.608	20.10	7.01

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	1.6	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

Attachment C

TRC Evaluation

Valley Creek Estates HOA
PA0087050

January 2024

1A	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	0.574	= Q stream (cfs)		0.5	= CV Daily	
5	0.0125	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 9.488		1.3.2.iii	WLA cfc = 9.242
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 3.535		5.1d	LTA_cfc = 5.373
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
18			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)**