pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0096334**
Facility Type	**Non-Municipal**	APS ID	**1063826**
Major / Minor	**Minor**	Authorization ID	**1396950**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Clelian Heights School for Exceptional Children**	Facility Name	**Clelian Heights School for Exceptional Children STP**
Applicant Address	135 Clelian Heights Lane	Facility Address	135 Clelian Heights Lane
	Greensburg, PA 15601-6665		Greensburg, PA 15601-6665
Applicant Contact	Sister Deborah Lopez	Facility Contact	Mr. Jason Garner
Applicant Phone	724.837.8120	Facility Phone	724.396.8786
Client ID	45162	Site ID	243260
Ch 94 Load Status	Not Overloaded	Municipality	Hempfield Township
Connection Status		County	Westmoreland
Date Application Received	May 19, 2022	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: Application for the renewal of an NPDES permit for the discharge of treated Sewage.

Summary of Review

The applicant has applied for a renewal of an existing NPDES Permit, PA0096334, which was previously issued by the Department on October 21, 2017. That permit expires on October 31, 2022.

WQM Permit No. 467S053 authorized construction of an extended aeration STP with an annual average design flow of 0.009 MGD. The facility serves an existing school and consists of flow EQ, an extended aeration basin, a final clarifier, and chlorine disinfection.

The receiving stream, dry channel to UNT of Beaver Run, is currently classified as a HQ-CWF, located in State Watershed No. 18-B.

The applicant has complied with Act 14 Notifications and no comments were received.

Sludge use and disposal description and location(s): The sludge is hauled off-site for further disposal at a Regional WWTP.

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

Approve	Deny	Signatures	Date
X		William C. Mitchell, E.I.T. / Project Manager	October 13, 2022
X		Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineering Manager	October 14, 2022

Summary of Review
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)	0.009
Latitude	40º 22' 24.00"	Longitude	-79º 33' 54.00"
Quad Name	Greensburg	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Beaver Run (HQ-CWF)	Stream Code	43038
NHD Com ID	99407646	RMI	0.91
Drainage Area	0.18	Yield (cfs/mi^2)	0.02566
Q_{7-10} Flow (cfs)	0.00462	Q_{7-10} Basis	USGS StreamStats Report
Elevation (ft)	1434	Slope (ft/ft)	0.05072
Watershed No.	18-B	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use	NONE	Exceptions to Criteria	NONE
Assessment Status	Impaired		
Cause(s) of Impairment	SILTATION, PATHOGENS		
Source(s) of Impairment	GRAZING RELATED AGRIC, SOURCE UNKNOWN		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL

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

Nearest Downstream Public Water Supply Intake		MAWC Sweeney Plant – Beaver Run Reservoir	
PWS Waters	Beaver Run	Flow at Intake (cfs)	
PWS RMI	7.09	Distance from Outfall (mi)	

Changes Since Last Permit Issuance: NONE

Other Comments: The discharge is to the Kiskiminetas-Conemaugh River Watersheds, which has a Final TMDL, and is impaired by sediment, metals, and pH. No WLAs have been developed, as verified in Appendix C & G of the TMDL, and this sewage discharge is not expected to contribute to the stream impairment for which abandoned mine drainage is source of such impairment. A 1/year monitoring requirement is imposed for the parameters of Total Iron, Total Manganese and Total Aluminum per Chapter 92.a.61. This data will be reevaluated during the next permit renewal cycle to see if limitation or continued monitoring will be required.

Treatment Facility Summary

Treatment Facility Name: Clelian Hts School For Exceptional Children STP

WQM Permit No.	Issuance Date
467S053	06/06/2001

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with Ammonia and Phosphorus Reduction	Extended Aeration	Tablet Chlorination	0.009

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.009		Not Overloaded	Sludge Digester Tank	Pumped/Hauled to Regional WWTP

Changes Since Last Permit Issuance: NONE

Other Comments: N/A

Compliance History

Operations Compliance Check Summary Report

Facility: Clelian Heights STP

NPDES Permit No.: PA0096334

Compliance Review Period: 9/2017 – 9/2022

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
3236032	08/17/2021	Administrative/File Review	PA Dept of Environmental Protection	No Violations Noted
3233092	08/10/2021	Compliance Evaluation	PA Dept of Environmental Protection	Violation(s) Noted
2885164	04/04/2019	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted

Violation Summary:

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE
926191	08/10/2021	92A.44	NPDES - Violation of effluent limits in Part A of permit	08/10/2021

Open Violations by Client ID:

No open violations for client id 45162

Enforcement Summary:

ENF ID	ENF TYPE	EXECUTED DATE	ENF FINALSTATUS	ENF CLOSED DATE
396538	FLNOV	08/10/2021	Administrative Close Out	07/12/2022

DMR Violation Summary:

BEGIN	END	PARAMETER	SAMPLE	PERMIT	UNIT	STAT_BASE_CODE
6/1/22	6/30/22	Total Phosphorus	2.4	2	mg/L	Average Monthly
4/1/21	4/30/21	Total Phosphorus	2.3	2	mg/L	Average Monthly
4/1/21	4/30/21	Total Phosphorus	4.2	4	mg/L	Instantaneous Maximum
3/1/21	3/31/21	Total Phosphorus	2.8	2	mg/L	Average Monthly
2/1/21	2/28/21	Total Phosphorus	2.4	2	mg/L	Average Monthly
2/1/21	2/28/21	Total Suspended Solids	112	60	mg/L	Instantaneous Maximum
2/1/21	2/28/21	Total Suspended Solids	76	30	mg/L	Average Monthly
12/1/20	12/31/20	Total Suspended Solids	34.7	30	mg/L	Average Monthly
4/1/20	4/30/20	Total Phosphorus	2.1	2	mg/L	Average Monthly
2/1/20	2/29/20	Ammonia-Nitrogen	21.4	10	mg/L	Average Monthly
2/1/20	2/29/20	Ammonia-Nitrogen	36.1	20	mg/L	Instantaneous Maximum
2/1/20	2/29/20	Fecal Coliform	3056	2000	No./100 m	Geometric Mean
2/1/20	2/29/20	Fecal Coliform	93400	10000	No./100 m	Instantaneous Maximum
2/1/20	2/29/20	Total Phosphorus	2.9	2	mg/L	Average Monthly
2/1/20	2/29/20	Total Suspended Solids	61.8	30	mg/L	Average Monthly
2/1/20	2/29/20	Total Suspended Solids	86	60	mg/L	Instantaneous Maximum
12/1/19	12/31/19	Fecal Coliform	48392	10000	No./100 m	Instantaneous Maximum
5/1/19	5/31/19	Total Phosphorus	2.1	2	mg/L	Average Monthly
11/1/18	11/30/18	Total Phosphorus	2.7	2	mg/L	Average Monthly
11/1/18	11/30/18	Total Phosphorus	4.9	4	mg/L	Instantaneous Maximum
11/1/18	11/30/18	Total Suspended Solids	41.2	30	mg/L	Average Monthly
11/1/18	11/30/18	Total Suspended Solids	62.8	60	mg/L	Instantaneous Maximum

Compliance Status:

DMR exceedances. Possible CACP prior to permit issuance

Completed by: John Murphy

Completed date: 9/19/2022

Other Comments: **This case was discussed with Operations and for now a CACP will not be pursued. This facility will be recommended to the Department's Technical Assistance Program.**

Compliance History

DMR Data for Outfall 001 (from August 1, 2021 to July 31, 2022)

Parameter	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21
Flow (MGD) Average Monthly	0.003	0.004	0.002	0.003	0.002	0.004	0.003	0.003	0.003	0.003	0.003	0.002
Flow (MGD) Daily Maximum	0.003	0.004	0.002	0.003	0.002	0.004	0.003	0.003	0.003	0.003	0.003	0.002
pH (S.U.) Instantaneous Minimum	6.4	6.3	6.2	6.2	6.4	6.7	7.4	7.4	6.6	6.5	6.6	7.2
pH (S.U.) Instantaneous Maximum	7.4	8.0	7.6	7.8	8.1	7.9	8.2	8.1	7.8	7.7	7.4	7.8
DO (mg/L) Instantaneous Minimum	7.7	7.5	7.8	8.1	7.6	8.9	8.1	7.9	7.6	7.4	7.2	7.5
TRC (mg/L) Average Monthly	0.2	0.2	0.3	0.4	0.2	0.3	0.3	0.3	0.4	0.3	0.4	0.4
TRC (mg/L) Instantaneous Maximum	0.4	0.9	1.2	1.1	1.6	0.74	1.6	0.9	1.2	0.6	0.8	1.5
CBOD5 (mg/L) Average Monthly	< 3.0	< 5.2	< 3.7	< 4.1	< 4.3	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
CBOD5 (mg/L) Instantaneous Maximum	< 3.0	7.4	4.3	5.2	5.6	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
TSS (mg/L) Average Monthly	8.6	17.6	12.8	16.2	12.4	11.4	16.0	8.6	27.5	9.8	1.7	11.0
TSS (mg/L) Instantaneous Maximum	9.6	18.0	7.2	23.2	14.8	12.8	16.8	13.6	31.0	16.6	2.1	16.0
Fecal Coliform (No./100 ml) Geometric Mean	2.5	75	< 1	< 1	< 1	< 1	< 1	< 2	< 6	< 7	< 2	< 4
Fecal Coliform (No./100 ml) Instantaneous Maximum	3.1	225	< 1.0	< 1	< 1	< 1	< 1	< 4	30	34	< 2	< 4
Total Nitrogen (mg/L) Daily Maximum								< 40.87				

Ammonia (mg/L) Average Monthly	< 0.1	0.2	< 0.10	< 0.1	< 0.4	0.7	1.6	0.5	0.7	< 0.1	< 0.1	< 0.1
Ammonia (mg/L) Instantaneous Maximum	< 0.1	0.2	< 0.10	0.1	0.6	1.2	2.2	0.6	0.9	< 0.1	< 0.1	< 0.1
Total Phosphorus (mg/L) Average Monthly	1.3	2.4	1.4	2.0	0.9	1.2	1.9	1.9	1.8	0.6	1.7	0.9
Total Phosphorus (mg/L) Instantaneous Maximum	1.6	2.7	1.2	2.9	1.1	1.3	1.9	2.6	2.6	0.9	2.1	1.0

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.009
Latitude 40º 22' 24.00" **Longitude** -79º 33' 54.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: The discharge was evaluated using WQM 7.0 Version 1.1 to evaluate $CBOD_5$, Ammonia Nitrogen and Dissolved Oxygen parameters. The modeling results show technology based effluent limitations for $CBOD_5$ are appropriate.

This facility was permitted prior to final publication of the Department's Policy and Procedure for Evaluating Wastewater Dischargers to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers (391-2000-014) & Water Quality Antidegradation Implementation Guidance (391-0300-002). The receiving stream is impaired by siltation and pathogens, and this discharge is not expected to contribute to the impairment.

DMR data confirm that more stringent advanced technology based effluent limitation, found in documents 391-2000-014 & 391-0300-002, cannot be achieved and would only apply if the existing facility is expanded or if the receiving stream is impaired and the point source discharge contributes to the impairment.

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (Attachment # 2, 3, and 4):

Parameter	Limit (mg/l)	SBC	Model
Ammonia-Nitrogen (Nov 1 to Apr 30)	6.7	Average Monthly	WQM 7.0 Version 1.1
Ammonia-Nitrogen (May 1 to Oct 31)	2.7	Average Monthly	WQM 7.0 Version 1.1
Dissolved Oxygen	6.0 (Minimum)	Average Monthly	WQM 7.0 Version 1.1
TRC	0.05	Average Monthly	TRC_CALC

Comments: DMR data above confirms that the applicant can comply with the revised ammonia-nitrogen limits, which are based upon updated criteria and StreamStat data (Attachment # 1).

DMR data above confirms that the applicant cannot comply with the revised more stringent TRC limits and they will be given 1 year to comply. It is recommended that the WQM Permit be amended to install a tablet dechlorinator or UV disinfection system.

Best Professional Judgment (BPJ) Limitations

Comments: N/A

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 (l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.

The facility is not seeking to revise the previously permitted effluent limits.

Additional Considerations

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Departments Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits (362-0400-001).

For pH, Dissolved Oxygen (DO) and TRC, a monitoring frequency of "daily when discharging" has been imposed in accordance with section E.2 of Department SOP – New and Reissuance Individual Sewage NPDES Permits Revised, February 3, 2022.

Sewage discharges will include monitoring, at a minimum, for *E. Coli*, in new and reissued permits, with a monitoring frequency of 1/year for facilities with a design flows of 0.002 – 0.05 MGD.

The Beaver Run Reservoir is located downstream of this discharge. A Lake Phosphorus Study was conducted by the Department in 1987, which recommended a Total Phosphorus limit of 2.0 mg/L be imposed on all upstream point source discharges per Chapter 96.5(c). A Total Phosphorus limit of 2.0 mg/L will again be established for this facility.

Nutrient monitoring is required to establish the nutrient load from the wastewater treatment facility and the impacts that load may have on the quality of the receiving stream(s). A 1/year monitoring requirement for Total N has been added to the permit per Chapter 92.a.61. The receiving stream is not impaired by nutrients and the nearest downstream potable water intake is the MAWC Sweeney Plant, which and is over 10 miles downstream. This surface water intake should not be impacted by this minor sewage discharger and no Total N limitation will be imposed on this facility.

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 001, Effective Period: Permit Effective Date through 12th Month.

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		
TRC	XXX	XXX	XXX	0.5	XXX	1.6	Daily when Discharging	Grab

Compliance Sampling Location: 001

Other Comments: N/A

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 001, Effective Period: 13th Month through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
TRC	XXX	XXX	XXX	0.05	XXX	0.18	Daily when Discharging	Grab

Compliance Sampling Location: 001

Other Comments: N/A

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	0.009	XXX	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Daily when Discharging	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	Daily when Discharging	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
TSS	XXX	XXX	XXX	30.0	XXX	60.0	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	6.7	XXX	13.4	2/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.7	XXX	5.4	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4.0	2/month	Grab
Total Aluminum	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Total Iron	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

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	Maximum	Instant. Maximum		
Total Manganese	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

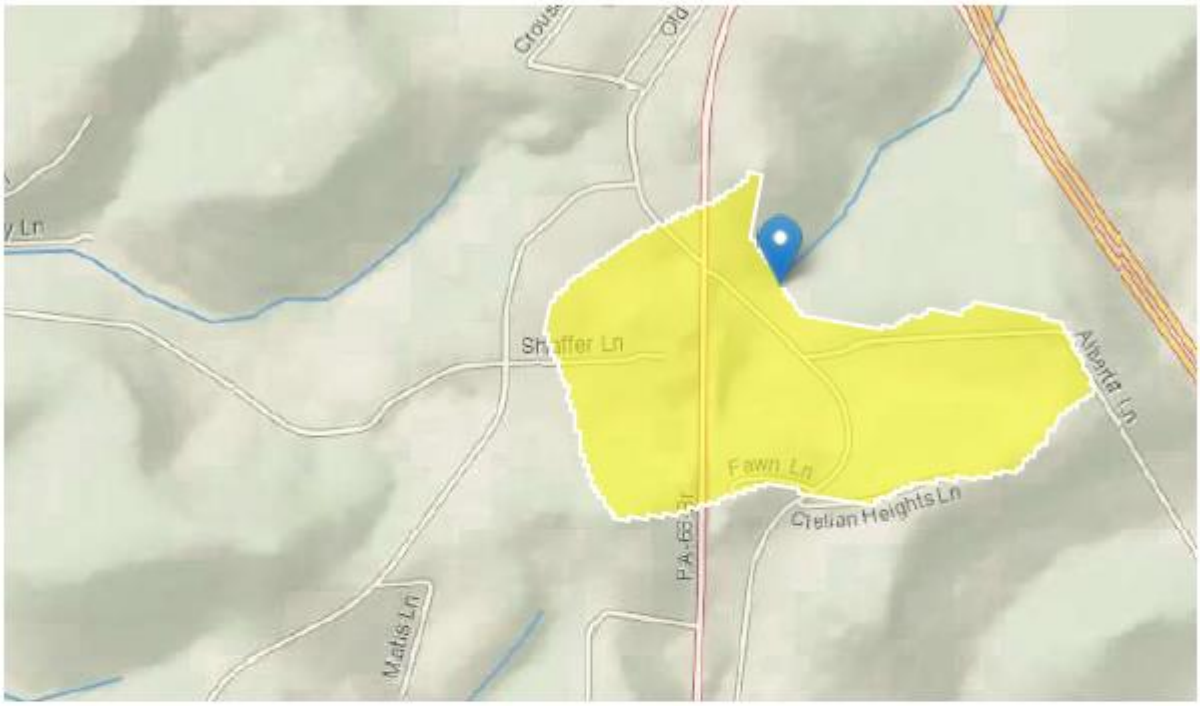
Compliance Sampling Location: 001

Other Comments: N/A

Attachment #1 – USGS StreamStats Report

StreamStats Report - PA0096334

Region ID: PA
Workspace ID: PA20220915181911508000
Clicked Point (Latitude, Longitude): 40.37629, -79.57142
Time: 2022-09-15 14:19:31 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.18	square miles
ELEV	Mean Basin Elevation	1356	feet
PRECIP	Mean Annual Precipitation	41	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [99.1 Percent (0.18 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.18	square miles	2.33	1720
ELEV	Mean Basin Elevation	1356	feet	898	2700
PRECIP	Mean Annual Precipitation	41	inches	38.7	47.9

Low-Flow Statistics Disclaimers [99.1 Percent (0.18 square miles) Low Flow Region 3]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors. Weighted flows were not calculated. Users should be careful to evaluate the applicability of the provided estimates. Percentage of area falls outside where region is undefined. Whole estimates have been provided using available regional equations.

Low-Flow Statistics Flow Report [99.1 Percent (0.18 square miles) Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0141	ft^3/s
30 Day 2 Year Low Flow	0.0215	ft^3/s
7 Day 10 Year Low Flow	0.00462	ft^3/s
30 Day 10 Year Low Flow	0.00728	ft^3/s
90 Day 10 Year Low Flow	0.0114	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: 4.10.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment #2 – WQM 7.0 Version 1.1 – Warmer Period

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
18B	43038	Trib 43038 of Beaver Run	0.910	1434.00	0.18	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	0.026	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
Clelian Heights	PA0096334	0.0090	0.0090	0.0000	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	9.01	0.00	0.00
NH3-N	4.20	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
18B	43038	Trib 43038 of Beaver Run	0.010	1193.00	0.62	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	0.026	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
18B	43038	Trib 43038 of Beaver Run

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
0.910	0.00	0.00	0.00	.0139	0.05072	.281	1.66	5.92	0.04	1.382	20.00	7.00
Q1-10 Flow												
0.910	0.00	0.00	0.00	.0139	0.05072	NA	NA	NA	0.04	1.456	20.00	7.00
Q30-10 Flow												
0.910	0.01	0.00	0.01	.0139	0.05072	NA	NA	NA	0.04	1.317	20.00	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☑
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☑
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☐
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
18B	43038	Trib 43038 of Beaver Run

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.910	Clelian Heights	16.76	8.4	16.76	8.4	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.910	Clelian Heights	1.89	2.74	1.89	2.74	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)		
0.91	Clelian Heights	25	25	2.74	2.74	6	6	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
18B	43038	Trib 43038 of Beaver Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.910	0.009	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1.661	0.281	5.920	0.040
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
19.27	1.380	2.06	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.750	26.285	Owens	6
Reach Travel Time (days)			
1.382			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.138	15.92	1.87	7.59
0.276	13.16	1.69	7.85
0.415	10.87	1.54	8.06
0.553	8.99	1.40	8.24
0.691	7.42	1.27	8.24
0.829	6.14	1.15	8.24
0.967	5.07	1.04	8.24
1.105	4.19	0.95	8.24
1.244	3.46	0.86	8.24
1.382	2.86	0.78	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
18B	43038	Trib 43038 of Beaver Run

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
0.910	Clelian Heights	PA0096334	0.009	CBOD5	25		
				NH3-N	2.74	5.48	
				Dissolved Oxygen			6

Attachment #3 – WQM 7.0 Version 1.1 – Colder Period

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
18B	43038	Trib 43038 of Beaver Run	0.910	1434.00	0.18	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	0.051	0.00	0.00	0.000	0.000	0.0	0.00	0.00	5.00	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
Clelian Heights	PA0096334	0.0090	0.0090	0.0000	0.000	15.00	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	6.00	12.51	0.00	0.00
NH3-N	10.00	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
18B	43038	Trib 43038 of Beaver Run	0.010	1193.00	0.62	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	0.051	0.00	0.00	0.000	0.000	0.0	0.00	0.00	5.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
18B	43038	Trib 43038 of Beaver Run

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
0.910	0.01	0.00	0.01	.0139	0.05072	.292	1.76	6.02	0.05	1.220	11.01	7.00
Q1-10 Flow												
0.910	0.01	0.00	0.01	.0139	0.05072	NA	NA	NA	0.04	1.331	12.02	7.00
Q30-10 Flow												
0.910	0.01	0.00	0.01	.0139	0.05072	NA	NA	NA	0.05	1.132	10.26	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☑
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☑
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☐
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
18B	43038	Trib 43038 of Beaver Run

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.910	Clelian Heights	24.1	20	24.1	20	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.910	Clelian Heights	3.54	6.73	3.54	6.73	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)		
0.91	Clelian Heights	25	25	6.73	6.73	6	6	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
18B	43038	Trib 43038 of Beaver Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.910	0.009	11.012	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1.758	0.292	6.017	0.045
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
15.83	1.361	4.04	0.350
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.597	26.495	Owens	6
Reach Travel Time (days)			
1.220			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.122	14.18	3.88	9.91
0.244	12.70	3.71	9.91
0.366	11.38	3.56	9.91
0.488	10.20	3.41	9.91
0.610	9.14	3.27	9.91
0.732	8.19	3.13	9.91
0.854	7.33	3.00	9.91
0.976	6.57	2.87	9.91
1.098	5.89	2.75	9.91
1.220	5.27	2.64	9.91

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
18B	43038	Trib 43038 of Beaver Run

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
0.910	Clelian Heights	PA0096334	0.009	CBOD5	25		
				NH3-N	6.73	13.46	
				Dissolved Oxygen			6

Attachment #4 – TRC_CALC

Copy of TRC_CALC

TRC EVALUATION

0.00462	= Q stream (cfs)	0.5	= CV Daily
0.009	= 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)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.125	1.3.2.iii	WLA cfc = 0.114
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.047	5.1d	LTA_cfc = 0.066

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.057	AFC
		INST MAX LIMIT (mg/l) = 0.187	

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)**