pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0082627**
Facility Type	**Non-Municipal**	APS ID	**277129**
Major / Minor	**Minor**	Authorization ID	**1439075**

Applicant and Facility Information

Applicant Name	**CBM Ministries Inc.**	Facility Name	**Camp Joy El**
Applicant Address	3741 Joy El Drive	Facility Address	3741 Joy El Drive
	Greencastle, PA 17225-9001		Greencastle, PA 17225-9001
Applicant Contact	Aaron Ziebarth	Facility Contact	Harry Miller
Applicant Phone	(717) 369-4539	Facility Phone	(717) 369-4539
Client ID	7814	Site ID	331537
Ch 94 Load Status	Not Overloaded	Municipality	Saint Thomas Township
Connection Status		County	Franklin
Date Application Received	May 8, 2023	EPA Waived?	Yes
Date Application Accepted	June 13, 2023	If No, Reason	
Purpose of Application	NPDES Renewal.		

Summary of Review

CBM Ministries Inc., has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit. The permit was last reissued on October 25, 2018 and became effective on November 1, 2018. The permit expired on October 31, 2023.

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

Public Participation

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

Approve	Deny	Signatures	Date
X		*Jinsu Kim* Jinsu Kim / Environmental Engineering Specialist	April 10, 2024
X		Maria D. Bebenek for Daniel W. Martin, P.E. / Environmental Engineer Manager	April 17, 2024
X		Maria D. Bebenek Maria D. Bebenek, P.E. / Program Manager	April 17, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.01
Latitude	39º 52' 29.08"	Longitude	-77º 46' 50.10"
Quad Name	Williamson	Quad Code	2023
Wastewater Description:	Sewage Effluent		
Receiving Waters	Back Creek	Stream Code	59902
NHD Com ID	134367934	RMI	3.41
Drainage Area	80	Yield (cfs/mi^2)	0.0386
Q_{7-10} Flow (cfs)	3.09	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)		Slope (ft/ft)	
Watershed No.	13-C	Chapter 93 Class.	WWF, MF
Existing Use	None	Existing Use Qualifier	None
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	N/A		
Source(s) of Impairment	N/A		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Hagerstown, MD		
PWS Waters	Potomac River	Flow at Intake (cfs)	Unknown
PWS RMI	Unknown	Distance from Outfall (mi)	+20

Drainage Area
The discharge is to Back Creek at RMI 3.41. A drainage area upstream of the point of discharge is estimated to be 80 sq.mi. using USGS StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
USGS gage station no. 01614140 just upstream of the point of discharge holds the flow records only between 1976 and 1978. The downstream gage station is on Conocheague Creek. As a result, a Q7-10 of 3.09 cfs produced from USGS StreamStats is used for this upcoming permit renewal. This is significantly different from the previous-used Q7-10 of 8.96 cfs which was obtained using the USGS gage station on Conococheague Creek in Maryland, approximately 25 miles from the point of discharge. DEP typically considers the distance between the point of discharge and the gage station to determine whether the use of the Q7-10 flow from the gage station is acceptable.

Back Creek
Under 25 Pa Code §93.9z, Back Creek from US 30 to Mouth is designated as warm water and migratory fisheries surface water. No special protection water(s) is impacted by this discharge. DEP's latest integrated water quality report prepared in 2024 shows that the discharge is located within a stream segment listed as attaining uses(s). No Class A Wild Trout Fishery is impacted by this discharge.

Public Water Supply Intake
The fact sheet prepared for the last permit renewal indicates that the nearest downstream public water supply intake is Hagerstown, Maryland. Because of the distance, dilution and effluent limits, the discharge will not affect the intake.

Treatment Facility Summary				
Treatment Facility Name: Camp Joy El				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Hypochlorite	0.01
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.01	N/A	Not Overloaded	Digestion	Other WWTP

Sanitary wastewater generated from Camp Joy El, a church camp/retreat center, is treated via an on-site wastewater treatment facility which is an extended aeration activated sludge treatment system consisting of a comminutor, equalization tank, aeration tanks (2), clarifier, chlorine contact tank, and outfall structure. Chlorine tablets are used for disinfection. Sludge generated from the facility is partially treated by the on-site sludge digester prior to hauled off-site via a local septic hauler.

It is noteworthy that the facility was originally designed and permitted for 0.02 MGD. During the 2011 permit renewal, the permittee requested via letter dated June 14, 2011 to use a design flow of 0.01 MGD for the development of permit requirements. After reviewing this request, DEP has renewed the NPDES permit with requirements that were developed using 0.01 MGD which resulted in derating the treatment plant capacity. Past DMR data shows that the facility has not exceeded the 0.01 MGD (as an average monthly flow).

Compliance History	
Summary of DMRs:	A summary of past 12-month DMR data is presented on the next page.
Summary of Inspections:	05/31/2023: DEP conducted a routine inspection and noted that the facility failed to achieve compliance with the permit conditions related to maintaining records.
Other Comments:	Since the last permit reissuance, there were a number of permit violations including effluent violations and late DMR submission. These violations are listed on next pages of this fact sheet. DEP's database shows that there are open violations associated with this facility or permittee. The draft permit letter will indicate that the permit may not be finalized until all violations are resolved.

Effluent Data

DMR Data for Outfall 001 (from March 1, 2023 to February 29, 2024)

Parameter	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23
Flow (MGD) Average Monthly	0.00032	0.00032	0.00032	0.00032	0.00321	0.00032	0.00032 1	0.00032 1	0.00032 1	0.00032	0.0082	0.0058
Flow (MGD) Daily Maximum	0.0032	0.00032	0.0032	0.0032	0.00321	0.00032	0.00032 1	0.00032 1	0.00032 1	0.00032	0.0113	0.0113
pH (S.U.) Daily Minimum	6.9	6.6	6.5	6.1	6.2	6.2	6.7	6.3	7.4	7.2	7.4	6.0
pH (S.U.) Daily Maximum	8.9	8.5	8.2	7.9	7.8	8.2	8.5	7.7	8.6	8.2	8.2	7.8
DO (mg/L) Daily Minimum	9.1	10.9	7.2	11.0	10.2	9.0	5.4	5.7	0.03	4.9	9.7	5.2
TRC (mg/L) Average Monthly	0.7	0.6	0.5	0.2	0.4	< 0.1	0.4	0.3	0.5	0.2	0.01	0.3
TRC (mg/L) Instantaneous Maximum	1.6	1.55	1.44	1.14	1.48	0.2	1.22	2.2	2.2	0.34	0.91	0.5
CBOD5 (mg/L) Average Monthly	2.8	4.9	7.9	43.8	3.9	22.1	3.8	12.9	9.9	4.2	3.0	2.0
TSS (mg/L) Average Monthly	14.3	17.0	13.0	11.0	10.8	13.5	14.3	25.0	11.8	5.3	9.5	25.5
Fecal Coliform (No./100 ml) Geometric Mean	< 2	< 23	29	222	< 3	829	208	120	201	1	< 75	< 799
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 5	105	416	248	< 10	1600	405	3280	688	1	1140	1140
Nitrate-Nitrite (lbs/day) Daily Maximum			7.25			5.13			0.568			7.66
Nitrate-Nitrite (mg/L) Daily Maximum			7.25			5.13			0.568			7.66
Total Nitrogen (lbs/day) Daily Maximum			1.02			5.13			0.568			7.66
Total Nitrogen (mg/L) Daily Maximum			1.02			5.13			0.568			7.66
Ammonia (mg/L) Average Monthly	< 0.731	< 0.5	1.135	9.9	< 0.662	1.23	1.3	16.8	6.42	0.613	1.24	0.5
TKN (lbs/day) Daily Maximum			8.2			0.9492			0.7430			< 1.00

Parameter	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23
TKN (mg/L) Daily Maximum			8.2			0.9492			0.7430			< 1.00
Total Phosphorus (lbs/day) Daily Maximum			7.25			3.87			0.819			4.38
Total Phosphorus (mg/L) Daily Maximum			7.25			3.87			0.819			4.38

Non-Compliance History

Date	Description	Parameter	Results	Limits	Units	SBC
2/1/2019	Violation of permit condition	Dissolved Oxygen	4.3	5	mg/L	Daily Minimum
3/1/2019	Violation of permit condition	Fecal Coliform	2980	2000	No./100 ml	Geometric Mean
3/1/2019	Violation of permit condition	Total Suspended Solids	34	30	mg/L	Average Monthly
4/1/2019	Late DMR Submission					
5/1/2019	Violation of permit condition	Fecal Coliform	1470	1000	No./100 ml	Instantaneous Maximum
6/1/2019	Violation of permit condition	Fecal Coliform	1320	1000	No./100 ml	Instantaneous Maximum
8/1/2019	Violation of permit condition	Fecal Coliform	3700	1000	No./100 ml	Instantaneous Maximum
10/1/2019	Late DMR Submission					
12/1/2019	Late DMR Submission					
1/1/2020	Sample collection less frequent than requi					
6/1/2020	Violation of permit condition	Total Residual Chlorine (TR	0.8	0.5	mg/L	Average Monthly
2/1/2021	Violation of permit condition	pH	9.5	9	S.U.	Daily Maximum
5/1/2021	Late DMR Submission					
10/1/2021	Late DMR Submission					
1/1/2022	Late DMR Submission					
2/1/2022	Late DMR Submission					
3/1/2022	Late DMR Submission					
4/1/2022	Late DMR Submission					
8/1/2022	Late DMR Submission					
10/1/2022	Late DMR Submission					
10/1/2022	Violation of permit condition	Total Residual Chlorine (TR	0.6	0.5	mg/L	Average Monthly
11/1/2022	Late DMR Submission					
11/1/2022	Violation of permit condition	CBOD	38.7	25	mg/L	Average Monthly
1/1/2023	Late DMR Submission					
3/1/2023	Late DMR Submission					
3/1/2023	Sample collection less frequent than requi	Flow				
3/1/2023	Sample type not in accordance with permit	Flow				
4/1/2023	Late DMR Submission					
4/1/2023	Sample collection less frequent than requi	Flow				
4/1/2023	Sample type not in accordance with permit	Flow				
4/1/2023	Late DMR Submission					
5/1/2023	Late DMR Submission					
6/1/2023	Violation of permit condition	Dissolved Oxygen	0.03	5	mg/L	Daily Minimum
6/1/2023	Violation of permit condition	Fecal Coliform	201	200	No./100 ml	Geometric Mean
6/1/2023	Violation of permit condition	Total Residual Chlorine (TR	2.2	1.6	mg/L	Instantaneous Maximum
7/1/2023	Violation of permit condition	Fecal Coliform	3280	1000	No./100 ml	Instantaneous Maximum
7/1/2023	Violation of permit condition	Total Residual Chlorine (TR	2.2	1.6	mg/L	Instantaneous Maximum
8/1/2023	Violation of permit condition	Fecal Coliform	208	200	No./100 ml	Geometric Mean
9/1/2023	Late DMR Submission					
11/1/2023	Violation of permit condition	CBOD	43.8	25	mg/L	Average Monthly
1/1/2024	Violation of permit condition	Total Residual Chlorine (TR	0.6	0.5	mg/L	Average Monthly
2/1/2024	Violation of permit condition	Total Residual Chlorine (TR	0.7	0.5	mg/L	Average Monthly

Existing Effluent Limits and Monitoring Requirements

Effluent Limits and Monitoring Requirements specified in the existing permit.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/day	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	25.0	XXX	50	2/month	8-Hr Composite
Total Suspended Solids	XXX	XXX	XXX	30.0	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Nitrate-Nitrite as N	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite
Total Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	Calculation
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Kjeldahl Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite
Total Phosphorus	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite

Development of Effluent Limitations and Monitoring Requirements

Outfall No. 001 **Design Flow (MGD)** .01
Latitude 39º 52' 28.86" **Longitude** -77º 46' 50.44"
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)

Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen (DO)
WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's technical guidance no. 391-2000-007 describes the technical methods contained in the model for conducting wasteload allocation analyses and for determining recommended limits for point source discharges. The model was utilized and the model output indicated that existing effluent limits for CBOD5 and DO are still adequate for protections of the receiving stream. DEP's SOP no. BPNPSM-PMT-033 recommends a year-round monitoring of NH3-N for existing facilities even if the model recommends no WQBEL for NH3-N. Accordingly, a year-round monitoring of NH3-N will continue to be included in the draft permit.

Total Residual Chlorine
DEP's TRC_CALC worksheet indicates that existing BAT TBEL of 0.5 mg/L (average monthly) is still adequate. Accordingly, existing limits of 0.5 mg/L (average monthly) and 1.6 mg/L (IMAX) will remain unchanged in the permit.

Toxics
The facility only receives sanitary wastewater. Also, DEP's permit renewal application for minor facilities less than 0.1 MGD do not require sampling of pollutants other than conventional and NH3-N. Therefore, no reasonable potentially analysis for toxic pollutants is performed for this permit renewal.

Best Professional Judgment (BPJ) Limitations

Dissolved Oxygen
A minimum of 5.0 mg/L for DO is an existing effluent limit and will remain unchanged in the draft permit as recommended by DEP's SOP. This requirement has also been assigned to other major sewage facilities in the region. 5.0 mg/L is taken directly from 25 Pa. Code § 93.7(a) and it is also determined to be appropriate according to water quality modeling.

Additional Considerations

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

Nutrient Monitoring Requirement
DEP's Standard Operating Procedure no. BCW-PMT-033 recommends nutrient monitoring for all sewage facilities. Therefore, the existing quarterly monitoring requirements will remain unchanged in the permit.

E. Coli Monitoring Requirement
DEP's Standard Operating Procedure no. BCW-PMT-033 recommends an annual monitoring of E. Coli for all sewage facilities with design flows <0.05 MGD and > 0.002 MGD. Therefore, a new annual monitoring requirement will be included in the permit.

Mass Loading Limitations
No mass loading limitations will be written in the permit as this is a non-POTW facility. This approach is consistent with DEP's technical guidance no. 362-0400-001.

Antidegradation Requirements
All effluent limitations and monitoring requirements have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected.

Anti-Backsliding Requirements
All proposed permit requirements have been developed at least as stringent as requirements specified in the latest permit renewal unless stated otherwise in this fact sheet in accordance with 40 CFR §122.44(l)(1).

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

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

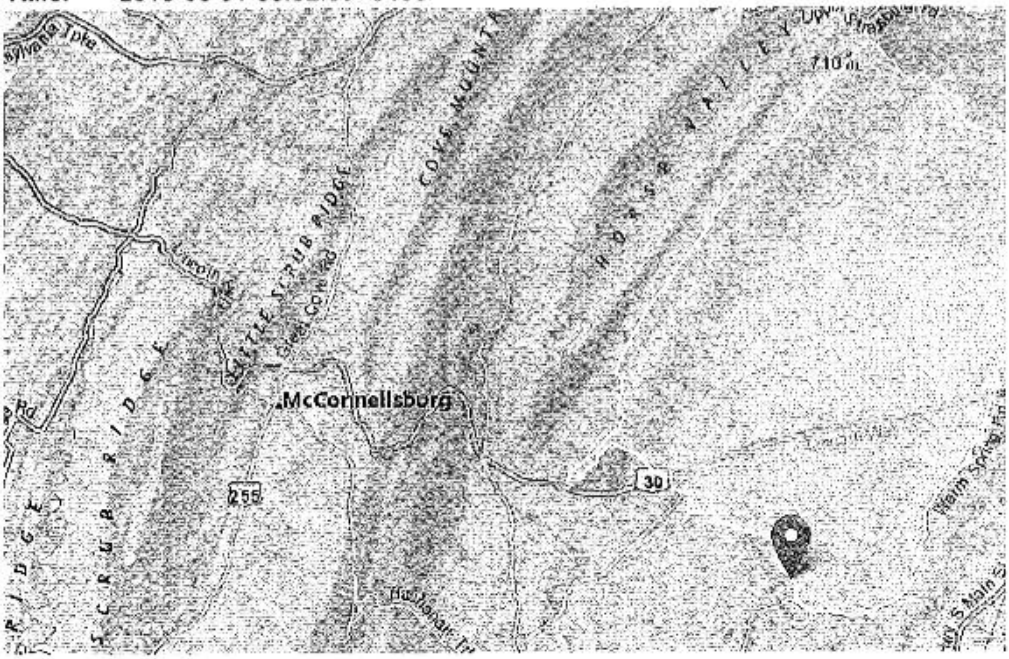
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30.0	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Nitrate-Nitrite	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite
Total Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	Calculation
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TKN	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite
Total Phosphorus	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite
E. Coli (no. / 100mL)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

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

Node #-1

StreamStats Report

Region ID: PA
Workspace ID: PA20180531123154148000
Clicked Point (Latitude, Longitude): 39.87439, -77.78063
Time: 2018-05-31 08:32:09 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	80	square miles
PRECIP	Mean Annual Precipitation	40	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	2.79	miles per square mile
ROCKDEP	Depth to rock	4.1	feet
CARBON	Percentage of area of carbonate rock	20	percent

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	80	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	40	inches	35	50.4
STRDEN	Stream Density	2.79	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.1	feet	3.32	5.65
CARBON	Percent Carbonate	20	percent	0	99

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

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	6.65	ft^3/s	38	38
30 Day 2 Year Low Flow	9	ft^3/s	33	33
7 Day 10 Year Low Flow	3.09	ft^3/s	51	51
30 Day 10 Year Low Flow	4.26	ft^3/s	46	46
90 Day 10 Year Low Flow	6.37	ft^3/s	36	36

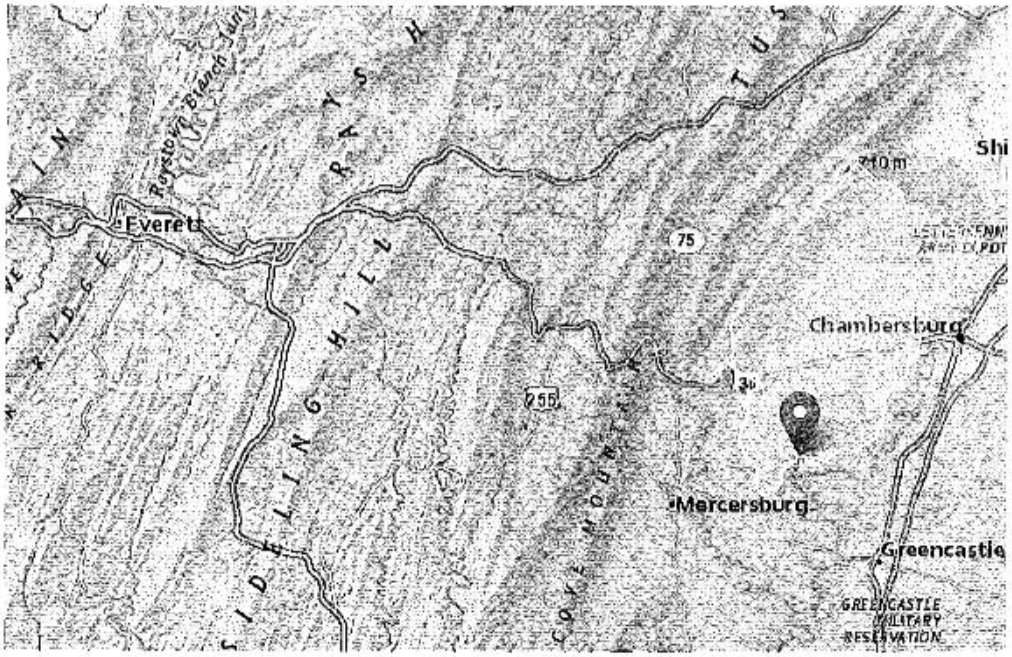
Low-Flow Statistics Citations

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/)

StreamStats Report

Node #2.

Region ID: PA
Workspace ID: PA20180601131422754000
Clicked Point (Latitude, Longitude): 39.85892, -77.79582
Time: 2018-06-01 09:14:38 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	90.6	square miles
PRECIP	Mean Annual Precipitation	40	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	2.69	miles per square mile
ROCKDEP	Depth to rock	4.3	feet
CARBON	Percentage of area of carbonate rock	25	percent

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	90.6	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	40	inches	35	50.4
STRDEN	Stream Density	2.69	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.3	feet	3.32	5.65
CARBON	Percent Carbonate	25	percent	0	99

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

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	9.13	ft^3/s	38	38
30 Day 2 Year Low Flow	11.9	ft^3/s	33	33
7 Day 10 Year Low Flow	4.62	ft^3/s	51	51
30 Day 10 Year Low Flow	6.11	ft^3/s	46	46
90 Day 10 Year Low Flow	8.63	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/)

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	59902	BACK CREEK	**3.410**	494.00	80.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	3.09	0.000	0.000	0.0	0.00	0.00	25.00	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
Camp Joy El	PA0082627	0.0100	0.0100	0.0100	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	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	59902	BACK CREEK	**1.000**	480.00	90.60	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	0.100	0.00	4.62	0.000	0.000	0.0	0.00	0.00	25.00	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	59902	BACK CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.410	0.010	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
33.874	0.688	49.246	0.133
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.11	0.038	0.12	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.227	1.569	Tsivoglou	5
Reach Travel Time (days)			
1.105			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.111	2.10	0.11	7.54
0.221	2.09	0.10	7.54
0.332	2.08	0.09	7.54
0.442	2.07	0.08	7.54
0.553	2.06	0.07	7.54
0.663	2.05	0.06	7.54
0.774	2.04	0.06	7.54
0.884	2.03	0.05	7.54
0.995	2.02	0.04	7.54
1.105	2.01	0.04	7.54

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
13C	59902	BACK 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												
3.410	3.09	0.00	3.09	.0155	0.00110	.688	33.87	49.25	0.13	1.105	25.00	7.00
Q1-10 Flow												
3.410	1.98	0.00	1.98	.0155	0.00110	NA	NA	NA	0.10	1.417	25.00	7.00
Q30-10 Flow												
3.410	4.20	0.00	4.20	.0155	0.00110	NA	NA	NA	0.16	0.931	25.00	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	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
13C	59902	BACK 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
3.410	Camp Joy El	11.07	50	11.07	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
3.410	Camp Joy El	1.37	25	1.37	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)		
3.41	Camp Joy El	25	25	25	25	5	5	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
13C	59902	BACK 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)
3.410	Camp Joy El	PA0082627	0.010	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

TRC_CALC

	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	3.09	**= Qstream (cfs)**		0.5	**= CV Daily**	
5	0.01	**= Qdischarge (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)**			**=Decay Coefficient (K)**	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	**1.3.2.iii**	WLA afc = 63.737		**1.3.2.ii**	WLA cfc = 62.131
12	PENTOXSD TRG	**5.1a**	LTAMULT afc = 0.373		**5.1c**	LTAMULT cfc = 0.581
13	PENTOXSD TRG	**5.1b**	LTA_afc= 23.750		**5.1d**	LTA_cfc = 36.120
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)**