pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0082287**
Facility Type	**Non-Municipal**	APS ID	**640**
Major / Minor	**Minor**	Authorization ID	**1311152**

Applicant and Facility Information

Applicant Name	**PA DE District Council Assemblies Of God**	Facility Name	**Bongiorno Conference Center**
Applicant Address	430 Union Hall Road	Facility Address	430 Union Hall Road
	Carlisle, PA 17013-8303		Carlisle, PA 17013-8303
Applicant Contact	George Krebs	Facility Contact	Durrell Bear
Applicant Phone	(717) 243-7381	Facility Phone	(717) 243-7381
Client ID	92616	Site ID	443086
Ch 94 Load Status	Not Overloaded	Municipality	North Middleton Township
Connection Status	No Limitations	County	Cumberland
Date Application Received	March 26, 2020	EPA Waived?	Yes
Date Application Accepted	April 28, 2020	If No, Reason	
Purpose of Application	NPDES Renewal.		

Summary of Review

PA DE District Council Assemblies of God (PADCAG) applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit. The permit was last reissued on September 22, 2015 and became effective on October 1, 2015. The permit expired on September 30, 2020.

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

Sludge use and disposal description and location(s): Sludge is hauled off site via a septic hauler to a landfill.

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	March 8, 2021
X		/s/ Daniel W. Martin, P.E. / Environmental Engineer Manager	March 12, 2021
X		/s/ Maria D. Bebenek, P.E. / Program Manager	March 12, 2021

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.025
Latitude	40° 13’ 21.72”	Longitude	77° 14’ 19.05”
Quad Name	Carlisle	Quad Code	1728
Wastewater Description:	Treated Sewage		
Receiving Waters	Conodoguinet Creek	Stream Code	10194
NHD Com ID	56406207	RMI	40.88
Drainage Area	368 mi^2	Yield (cfs/mi^2)	0.12
Q_{7-10} Flow (cfs)	45.8	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-B	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	Carlisle Borough Municipal Authority Water System		
PWS Waters	Conodoguinet Creek	Flow at Intake (cfs)	64.14
PWS RMI	35.95	Distance from Outfall (mi)	4.92

Drainage Area
The discharge is to Conodoguinet Creek at RM 40.88. A drainage area upstream of the discharge point is estimated to be 368 sq.mi. according to USGS StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
USGS StreamStats produced a Q7-10 flow of 45.8 cfs at the point of discharge.

Conodoguinet Creek
Under 25 Pa Code §93.9o, Conodoguinet Creek from PA 997 at Roxbury to Mouth is designated as warm water fishes and supports migratory fishes. Conodoguinet Creek is a tributary of Susquehanna River which is also designated as warm water fishes. No special protection water is therefore impacted by this discharge. DEP’s latest integrated water quality report prepared in 2020 shows that sections of the Conodoguinet Creek near the discharge location is impaired for organic enrichment and low dissolved oxygen as a result of unknown sources. This impairment was identified as Category 5 by DEP in 2020 which requires the development of a Total Maximum Daily Load (TMDL). The TMDL development date is not yet defined as of the date of this fact sheet.

Public Water Supply Intake
The fact sheet developed for the last permit renewal indicates that the nearest downstream potable water supply intake is Carlisle Borough Municipal Authority Water System on the Conodoguinet Creek in North Middleton Township at RMI 35.95 about 4.92 miles downstream of the discharge. The Q_{7-10} at the intake is about 64.14 cfs. Stream flow to discharge ratio is 61.46: 0.025 or 2,400:1. The discharge will not impact the intake because of the distance, dilution, and effluent limits.

Treatment Facility Summary				
Treatment Facility Name: Bongiorno Conference Center				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Hypochlorite	0.025
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.025		Not Overloaded	Aerobic digester	Landfill

PADCAG owns and operates a sanitary wastewater treatment plant located 430 Union Hall Road, PA 17013. This plant serves Bongiorno Conference Center (BCC). BCC is a Christian Retreat Center consisting of hotel, office, cabins, campsites, conference building and other related buildings. The plant utilizes an extended aeration activated sludge process rated for 0.025 MGD. The plant consists of EQ tanks (2), aeration tanks (2), clarifier, chlorine contact tank, post aeration tank, and outfall structure. A sludge digester is used for sludge processing. Final sludge product is hauled off site via a septic hauler to a landfill. Chlorine tablets are used for chlorination, lime and Alum are used for pH control and phosphorous removal, respectively.

Compliance History	
Summary of DMRs:	A summary of past 12-month DMR data is presented on the next page.
Summary of Inspections:	03/11/2020: Mike Benham, DEP Water Quality Specialist, conducted a routine inspection. No violation was noted at the time of inspection. 05/23/2018: Mike Benham conducted a routine inspection. No violation was noted at the time of inspection.
Other Comments:	Over the past five (5) years, this facility had multiple effluent violations, particularly associated with low dissolved oxygen. A notice of violation (NOV) letter was sent out on November 1, 2019 for these violations. All violations were resolved and closed on November 30, 2019. DEP's database revealed that there is no open violation associated with the permittee or facility.

Effluent Data

DMR Data for Outfall 001 (from February 1, 2020 to January 31, 2021)

Parameter	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20
Flow (MGD) Average Monthly	0.0065	0.0056	0.002	0.0037	0.00155	0.0019	0.0038	0.002	0.0061	0.0086	0.0084	0.0091
Flow (MGD) Daily Maximum	0.0222	0.0311	0.0071	0.0117	0.0034	0.0066	0.0166	0.0114	0.0263	0.0334	0.0257	0.0229
pH (S.U.) Minimum	7.1	7.0	6.9	7.0	6.9	6.9	7.2	7.2	7.1	7.1	7.1	7.2
pH (S.U.) Maximum	8.9	7.6	8.1	7.9	7.7	7.8	7.9	7.7	7.6	7.8	7.8	7.8
DO (mg/L) Minimum	10.8	10.8	7.5	8.6	7.8	7.2	6.4	6.8	8.2	9.9	8.9	10.4
TRC (mg/L) Average Monthly	0.4	0.2	0.2	0.2	< 0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2
TRC (mg/L) Instantaneous Maximum	0.93	0.49	0.36	0.6	0.27	0.34	1.27	0.39	0.4	0.4	0.54	0.5
CBOD5 (mg/L) Average Monthly	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 3	< 2.0
TSS (mg/L) Average Monthly	4.0	5.0	2.0	2.0	< 1.0	< 1.0	< 2	< 1.0	< 1	< 2	3.0	4.0
Fecal Coliform (CFU/100 ml) Geometric Mean	2	52	56	73	< 2	74	9	< 4	< 1	< 1	19	33
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	3	226	106	108	3	288	27	18	< 1.0	1	88	38
Nitrate-Nitrite (mg/L) Average Monthly	< 6.48	< 22.9	< 98.8	< 54.1	< 41.8	< 45.9	< 34.2	< 5.86	< 4.2	< 7.62	< 8.83	< 16.3
Nitrate-Nitrite (lbs) Total Monthly	< 14	< 10.0	< 89	< 75	< 10	< 13	< 67	< 3	< 7	< 16	< 8	< 1.88
Total Nitrogen (mg/L) Average Monthly	< 7.48	< 24.02	< 99.8	< 55.24	< 42.8	< 46.9	< 35.2	< 6.86	< 5.7	< 0.6	< 12.3	< 17.8
Total Nitrogen (lbs) Total Monthly	< 16	< 11	< 90	< 77	< 11	< 13	< 69	< 4	< 9	< 19	< 12	< 2.11
Ammonia (mg/L) Average Monthly	< 0.5	< 0.50	< 0.5	< 0.5	< 0.5	< 0.5	< 1.07	< 0.5	< 0.5	< 0.5	< 1.78	< 0.5
Ammonia (lbs) Total Monthly	< 1	< 0.2	< 0.3	< 0.8	< 0.1	< 0.1	< 1	< 0.2	< 0.8	< 0.9	< 2.0	< 0.068

TKN (mg/L) Average Monthly	< 1	< 1.17	< 1.0	< 1.14	< 1	< 1	< 1	< 1.0	< 1.5	1.23	3.47	1.52
TKN (lbs) Total Monthly	< 2	< 0.5	< 0.7	< 2	< 0.3	< 0.3	< 2	< 0.5	< 3	2	4.0	0.2
Total Phosphorus (mg/L) Average Monthly	< 0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.09
Total Phosphorus (lbs) Total Monthly	< 0.1	< 0.03	< 0.05	< 0.08	< 0.01	< 0.01	< 0.1	< 0.03	< 0.08	< 0.3	0.1	0.013

Existing Effluent Limits and Monitoring Requirements

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly		Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
Total Suspended Solids	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4.0	2/month	8-Hr Composite
Kjeldahl---N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	Calculation

Development of Effluent Limitations and Monitoring Requirements

Outfall No. 001 **Design Flow (MGD)** .025
Latitude 40º 13' 21.73" **Longitude** -77º 14' 19.06"
Wastewater Description: 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

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. A multi-discharge analysis has been conducted as another discharge is located about a mile upstream of this discharge. WQM model output indicates that existing effluent limits are still appropriate. DEP's SOP No. BCW-PMT-033 recommends a year-round monitoring of ammonia-nitrogen (NH3-N) if WQM modeling results for summer indicates that an average monthly limit of 25 mg/L is acceptable. Accordingly, a year-round monitoring requirement will be included in the permit for NH3-N.

Total Residual Chlorine (TRC)
DEP's TRC_CALC worksheet was used to determine if a WQBEL for TRC is appropriate. The worksheet indicates that the existing average monthly BAT limit if 0.5 mg/L and the instantaneous maximum limit of 1.6 mg/L are still adequate.

Toxics
DEP's minor sewage facility permit application does not require sampling of toxic pollutants for facilities less than 0.1 MGD. No toxic pollutants have therefore been taken into consideration as pollutants of concern at this time.

Best Professional Judgement (BPJ) Effluent Limitations

Dissolved Oxygen
A minimum of 5.0 mg/L for DO is an existing effluent limit and is a current state water quality criterion found in 25 Pa. Code § 93.7(a). This effluent limit will remain unchanged for the upcoming permit renewal to ensure the protection of water quality standards. This approach is also consistent with DEP's SOP no. BPNPSM-PMT-033.

Total Phosphorus
The existing Total Phosphorus effluent limit of 2.0 mg/L (30-day average) was developed to protect the lower Susquehanna River as recommended by DEP's technical guidance no. 391-2000-018. There is no reason to relax or remove this effluent; as a result, the existing effluent limit will be maintained in the permit.

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).

Local Watershed TMDL
As mentioned before, Conodoguinet Creek near the discharge point is impaired for organic enrichment and low dissolved oxygen as a result of unknown sources. A TMDL has not been developed to address these impairments. DEP believes that the permit requirements proposed in this fact sheet were developed to ensure that the discharge will not contribute to these impairments.

Chesapeake Bay TMDL & TN/TP SOP Monitoring Requirement
The discharge is located within the Chesapeake Bay watershed and is considered under the Supplement to Phase III Watershed Implementation Plan (WIP) a Phase 5 facility designed to treat between 0.002 MGD and 0.2 MGD. The facility has been monitoring for Total Phosphorus and Total Nitrogen. While the WIP does not recommend further monitoring for these nutrients when the monitoring was performed at least for 2 years, the SOP recommends that a routine monitoring for Total Phosphorous and Total Nitrogen regardless for any sewage facilities. It is important to collect ample datasets for DEP to understand impacts of all point source discharges to the Chesapeake Bay watershed. It is therefore recommended to maintain existing nutrient monitoring requirements. As the permit contains average monthly effluent limits for Total Phosphorus, the existing monthly sampling requirement needs to be maintained. For Total Nitrogen and its constituents, it is recommended to reduce the monitoring frequency from 2/month to 1/quarter given the size of this facility.

Monitoring Frequency and Sample Type
Unless stated otherwise in this fact sheet, all existing monitoring frequencies and sample types will remain unchanged in the permit and are consistent with recommended requirements specified in DEP's technical guidance no. 362-0400-001.

Class A Wild Trout Fishery
A Class A Wild Trout Fishery is not impacted by this discharge.

Anti-Backsliding
All effluent limits have been developed as stringent as the ones specified in the current permit.

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	Instant. Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	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	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	10000 Daily Max	XXX	2/month	Grab
Fecal Coliform May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	1000 Daily Max	XXX	2/month	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4.0	2/month	8-Hr Composite
Nitrate-Nitrite	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite
TKN	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

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

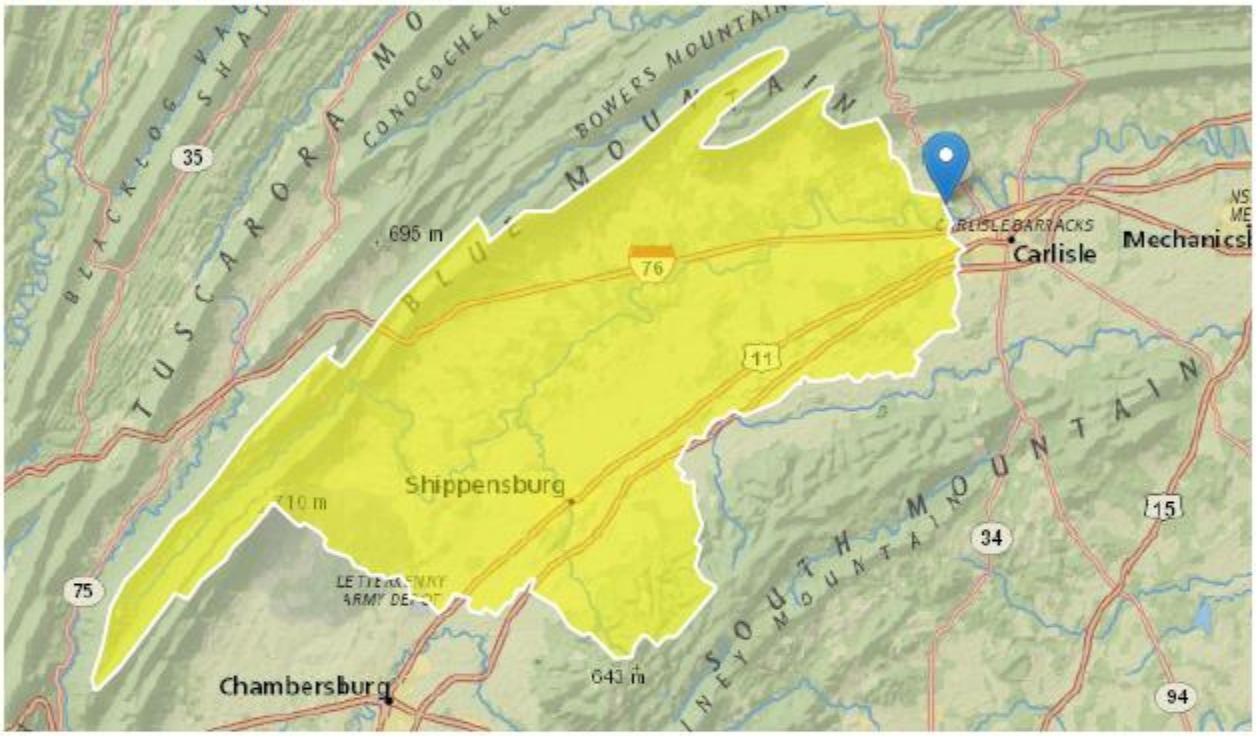
Attachments

1. StreamStats

3/8/2021 StreamStats

StreamStats Report

Region ID: PA
Workspace ID: PA20210308133908899000
Clicked Point (Latitude, Longitude): 40.22258, -77.23824
Time: 2021-03-08 08:39:28 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	368	square miles
PRECIP	Mean Annual Precipitation	39	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.78	miles per square mile
ROCKDEP	Depth to rock	4.6	feet
CARBON	Percentage of area of carbonate rock	35.09	percent

Low-Flow Statistics Parameters[Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	368	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	1.78	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.6	feet	3.32	5.65
CARBON	Percent Carbonate	35.09	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	71.9	ft^3/s	38	38
30 Day 2 Year Low Flow	86.1	ft^3/s	33	33
7 Day 10 Year Low Flow	45.8	ft^3/s	51	51
30 Day 10 Year Low Flow	55.1	ft^3/s	46	46
90 Day 10 Year Low Flow	69.4	ft^3/s	36	36

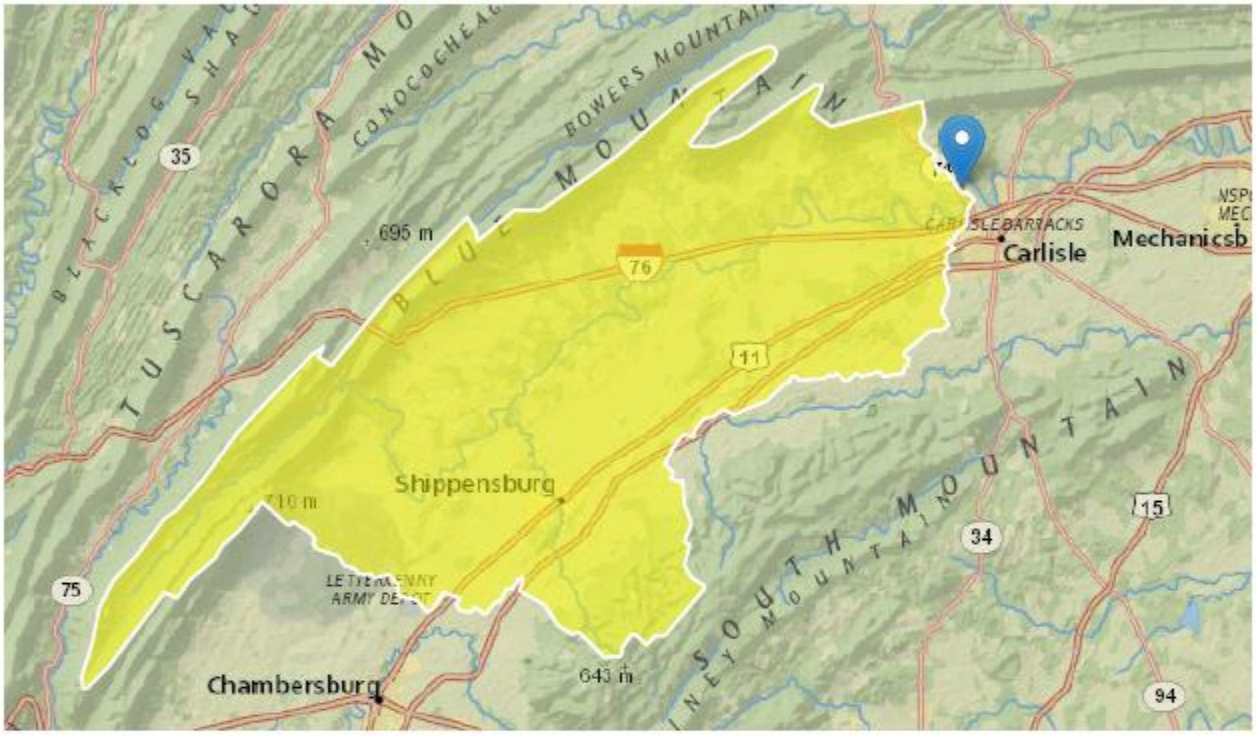
Low-Flow Statistics Citations

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/)

3/8/2021 StreamStats

StreamStats Report

Region ID: PA
Workspace ID: PA20210308135101261000
Clicked Point (Latitude, Longitude): 40.23138, -77.21758
Time: 2021-03-08 08:51:20 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	377	square miles
PRECIP	Mean Annual Precipitation	39	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.78	miles per square mile
ROCKDEP	Depth to rock	4.6	feet
CARBON	Percentage of area of carbonate rock	34.53	percent

Low-Flow Statistics Parameters[Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	377	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	1.78	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.6	feet	3.32	5.65
CARBON	Percent Carbonate	34.53	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	73.4	ft^3/s	38	38
30 Day 2 Year Low Flow	87.9	ft^3/s	33	33
7 Day 10 Year Low Flow	46.8	ft^3/s	51	51
30 Day 10 Year Low Flow	56.3	ft^3/s	46	46
90 Day 10 Year Low Flow	71	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/)

2. WQM 7.0b

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
07B	10194	CONODOGUINET CREEK	41.300	419.00	367.80	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	45.00	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
Eagles Crossing	PA0088307	0.0035	0.0035	0.0035	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
07B	10194	CONODOGUINET CREEK	40.880	417.00	368.00	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	45.80	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
Council Assembl	PA0082287	0.0250	0.0250	0.0250	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
07B	10194	CONODOGUINET CREEK	38.500	412.00	377.59	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	46.80	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	0.00	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
07B	10194	CONODOGUINET 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												
41.300	45.00	0.00	45.00	.0054	0.00090	.984	109.21	111.01	0.42	0.061	25.00	7.00
40.880	45.80	0.00	45.80	.0441	0.00040	1.013	114.48	113.02	0.40	0.368	25.00	7.00
Q1-10 Flow												
41.300	28.80	0.00	28.80	.0054	0.00090	NA	NA	NA	0.33	0.079	25.00	7.00
40.880	29.31	0.00	29.31	.0441	0.00040	NA	NA	NA	0.31	0.472	25.00	7.00
Q30-10 Flow												
41.300	61.20	0.00	61.20	.0054	0.00090	NA	NA	NA	0.50	0.052	25.00	7.00
40.880	62.29	0.00	62.29	.0441	0.00040	NA	NA	NA	0.47	0.310	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 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07B	10194	CONODOGUINET CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
41.300	0.004	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
109.212	0.984	111.006	0.419
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.00	0.002	0.00	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.243	1.984	Tsivoglou	5
Reach Travel Time (days)			
0.061			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.006	2.00	0.00	7.54
0.012	2.00	0.00	7.54
0.018	2.00	0.00	7.54
0.025	2.00	0.00	7.54
0.031	2.00	0.00	7.54
0.037	2.00	0.00	7.54
0.043	2.00	0.00	7.54
0.049	2.00	0.00	7.54
0.055	2.00	0.00	7.54
0.061	2.00	0.00	7.54

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
40.880	0.029	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
114.477	1.013	113.023	0.395
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.02	0.013	0.02	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.549	0.826	Tsivoglou	5
Reach Travel Time (days)			
0.368			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.037	2.02	0.02	7.54
0.074	2.02	0.02	7.54
0.110	2.02	0.02	7.54
0.147	2.02	0.02	7.54
0.184	2.02	0.02	7.54
0.221	2.01	0.02	7.54
0.258	2.01	0.02	7.54
0.294	2.01	0.02	7.54
0.331	2.01	0.02	7.54
0.368	2.01	0.02	7.54

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07B	10194	CONODOGUINET 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
41.300	Eagles Crossing	6.76	50	6.76	50	0	0
40.880	Council Assembl	6.76	50	6.76	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
41.300	Eagles Crossing	1.34	25	1.34	25	0	0
40.880	Council Assembl	1.34	25	1.34	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)		
41.30	Eagles Crossing	25	25	25	25	5	5	0	0
40.88	Council Assembl	25	25	25	25	5	5	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07B	10194	CONODOGUINET 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)
41.300	Eagles Crossing	PA0088307	0.004	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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)
40.880	Council Assembl	PA0082287	0.025	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

3. TRC_CALC

TRC_CALC

	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	45.8	= Q stream (cfs)		0.5	= CV Daily	
5	0.025	= 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)			=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 377.788		1.3.2.iii	WLA cfc = 368.306
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 140.773		5.1d	LTA_cfc = 214.116
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)