



Application Type

Renewal

Facility Type

Non-Municipal

Major / Minor

Minor

Application No.

PA0217620

APS ID

1126642

Authorization ID

1508126

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Applicant and Facility Information

Applicant Name	Consol PA Coal Co. LLC	Facility Name	Bailey Mine
Applicant Address	1000 Consol Energy Drive	Facility Address	192 Crabapple Road
	Canonsburg, PA 15317-6506		Wind Ridge, PA 15380-1282
Applicant Contact	Cheri Wilson	Facility Contact	Jeff Ambrose
Applicant Phone	724-416-8444	Facility Phone	724-416-8323
Client ID	259457	Site ID	261050
Ch 94 Load Status		Municipality	Richhill Township
Connection Status		County	Greene
Date Application Received	November 27, 2024	EPA Waived?	Yes
Date Application Accepted		If No, Reason	
Purpose of Application	Renewal of authorization for treated sewage discharge		

Summary of Review

The permittee has applied to renew PA0217620. The last renewal was issued on 05/01/2020, and the permit expired on 05/31/2025.

The facility discharges to Crabapple Creek, which is a Warm-Water Fishery per Chapter 93 Designated Use.

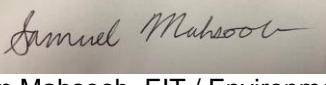
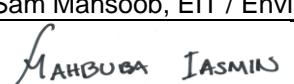
The facility consists of a flow equalization tank, 3 aeration basins in series, a clarifier tank, 2 sand filters, and a chlorination/de-chlorination tank.

Act 14 Notifications were sent on October 30, 2024.

The client has open violations with the Oil & Gas, Mining, and Air Quality programs, but none with the Clean Water Program.

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	Return	Deny	Signatures	Date
x			 Sam Mahsoob, EIT / Environmental Engineering Trainee	7/29/2025
x			 Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	8/19/2025

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	.025
Latitude	39° 55' 12"	Longitude	-80° 28' 28"
Quad Name	Wind Ridge	Quad ID	39080H4
Wastewater Description:	Sewage Effluent		
Receiving Waters	Crabapple Creek (WWF)	Stream Code	32513
NHD Com ID	73872758	RMI	0.8
Drainage Area	5.67	Yield (cfs/mi ²)	0.126
Q ₇₋₁₀ Flow (cfs)	0.0712	Q ₇₋₁₀ Basis	USGS StreamStats
Elevation (ft)	938.83	Slope (ft/ft)	0.0145
Watershed No.	20-E	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s): Supporting aquatic life		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	None	Name	Not Applicable
Background/Ambient Data	Data Source		
pH (SU)			
Temperature (°F)			
Hardness (mg/L)			
Other:			
Nearest Downstream Public Water Supply Intake	N/A – Stream Flows into West Virginia		
PWS Waters	Ohio River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Treatment Facility Summary				
Treatment Facility Name: Crabapple Portal STP				
WQM Permit No.	Issuance Date			
3081406	10/9/81			
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with NH ₃ N reduction	Extended aeration	Chlorination/de-chlorination	0.004
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.025	41.7	Not overloaded	Aerobic digestion	Short Creek Landfill and Campbell Landfill

Compliance History

Other Comments: A compliance check was requested.

Compliance History

DMR Data for Outfall 001 (from June 1, 2024 to May 31, 2025)

Parameter	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24
Flow (MGD) Average Monthly	0.012	0.010	0.013	0.014	0.009	0.009	0.007	0.009	0.01	0.0065	0.01	0.011
pH (S.U.) Instantaneous Minimum	7.26	7.11	6.64	7.14	7.05	7.11	7.28	7.28	6.92	7.05	7.25	7.11
pH (S.U.) Instantaneous Maximum	8.18	7.9	7.99	8.37	7.84	7.93	7.91	7.93	7.86	8.18	7.83	8.00
DO (mg/L) Instantaneous Minimum	5.4	8.7	8.8	9.3	9.5	8.4	8.0	7.8	6.0	4.3	6.5	5.4
TRC (mg/L) Average Monthly	0.07	0.15	0.136	0.105	0.08	0.02	0.02	0.03	0.03	0.04	0.04	0.05
TRC (mg/L) Instantaneous Maximum	0.65	0.78	0.55	0.88	0.87	0.04	0.03	0.06	0.07	0.17	0.11	0.38
CBOD5 (mg/L) Average Monthly	< 2.8	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 3.225	< 2.0	< 2.3	< 2.0	< 4.6	< 2.0
CBOD5 (mg/L) Instantaneous Maximum	3.6	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	4.45	< 2.0	2.60	< 2.0	7.25	< 2.0
TSS (mg/L) Average Monthly	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 20.5	< 5
TSS (mg/L) Instantaneous Maximum	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	36	< 5
Fecal Coliform (No./100 ml) Geometric Mean	< 1.0	< 1	< 1	< 1.0	< 2.24	< 1.0	< 1.0	< 5.0	< 5.0	32.5	< 3.16	< 5
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 1.0	< 1	< 1	< 1.0	< 5	< 1.0	< 1.0	< 5.0	5	66	< 5	< 5
Total Nitrogen (mg/L) Daily Maximum						8.16						
Ammonia (mg/L) Average Monthly	< 0.150	< 0.150	< 0.150	< 0.150	< 0.0150	< 0.1	< 0.1	< 0.1	< 0.15	< 0.1	< 0.411	< 0.1

NPDES Permit Fact Sheet
Bailey Mine

NPDES Permit No. PA0217620

Ammonia (mg/L) Instantaneous Maximum	< 0.150	< 0.150	< 0.150	< 0.150	< 0.0150	< 0.1	< 0.1	< 0.1	0.21	< 0.25	0.422	< 0.1
Total Phosphorus (mg/L) Daily Maximum						1.5						

Development of Effluent Limitations

Outfall No. 001
Latitude 39° 55' 12.00"
Wastewater Description: Sewage Effluent

Design Flow (MGD) .025
Longitude -80° 28' 28.00"

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
Flow	Report	Average Monthly	-	§§ 92a.27, 92a.61
Flow	Report	Max Daily	-	§§ 92a.27, 92a.61
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)
Total Nitrogen	Report	Average Monthly	-	92a.61(7)
Total Phosphorus	Report	Average Monthly	-	92a.61(8)
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)
E. Coli (No./100 ml)	-	Report		93a.61(11)(12)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
Total Residual Chlorine	1.6	IMAX	-	92a.47-48(3)(4)
Ammonia-Nitrogen	25	Average Monthly	-	BPJ (5)
Ammonia-Nitrogen	50	IMAX	-	BPJ (5)
Dissolved Oxygen	4.0	IMIN	-	BPJ (6)

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (See Attachments 3, 4, & 5):

Parameter	Limit (mg/l)	SBC	Model
Ammonia-Nitrogen (May 1 to Oct 31)	3.0	Average Monthly	WQM 6.3 (Previous Renewal)
Ammonia-Nitrogen (May 1 to Oct 31)	6.0	IMAX	WQM 6.3 (Previous Renewal)
Ammonia-Nitrogen (Nov 1 to Apr 30)	9.0	Average Monthly	WQM 6.3 (Previous Renewal)
Ammonia-Nitrogen (Nov 1 to Apr 30)	18.0	IMAX	WQM 6.3 (Previous Renewal)
Ammonia-Nitrogen (May 1 to Oct 31)	5.55	Average Monthly	WQM 7.0
Ammonia-Nitrogen (May 1 to Oct 31)	11.1	IMAX	WQM 7.0
Ammonia-Nitrogen (Nov 1 to Apr 30)	25.0	Average Monthly	WQM 7.0

Ammonia-Nitrogen (Nov 1 to Apr 30)	50.0	IMAX	WQM 7.0
Dissolved Oxygen	4.0	Minimum	WQM 7.0
TRC	0.278	Average Monthly	TRC_CALC
TRC	0.909	IMAX	TRC_CALC

Comments: The limits for Ammonia-Nitrogen and Dissolved Oxygen will be maintained from the previous permit. TRC_CALC recommended more stringent limits be imposed for Total Residual Chlorine. In looking at the DMR data, it appears that the permittee will currently be able to comply with the stricter limits. So, the new limits will be imposed on the permit effective date.

Additional Considerations

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. 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.

(40 CFR 122.44 (l)(2) Establishing limitations, standards, and other permit conditions., 40 CFR Ch. I (7-1-21 Edition))

No permits limits have been made less stringent in the renewal draft permit.

Effluent Multipliers

Section 2.C of the Permit Writers Manual contains the procedure for converting average monthly effluent limitations to average weekly, maximum daily, and instantaneous maximum effluent limitations. The average monthly limit is multiplied according to the following chart:

Discharge Solution	Parameters	Average Weekly	Maximum Daily	Instantaneous Maximum Multiplier
Sewage	All	1.5		2.0
Industrial	All		2.0	2.5*

(Department Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits, Updated June 28, 2023 (Document No. 362-0400-001))

Rounding Off

Section 5 C.2. of the Permit Writers Manual contains general guidelines for rounding conventional and toxic pollutants, with instructions to round down to the nearest decimal place indicated.

<u>General Magnitude</u>	<u>Conventional Pollutants</u>	<u>Toxic Pollutants</u>
<0.01	to nearest 0.001	to nearest 0.001
0.01 - 0.1	to nearest 0.01	to nearest 0.01
0.1 - 1.0	to nearest 0.1	to nearest 0.01
1.0 - 10.0	to nearest 0.5	to nearest 0.01
10.0 - 60.0	to nearest 1.0	to nearest 0.01
60.0 or greater	to nearest 5.0	to nearest 0.10

(Department Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits, Updated June 28, 2023 (Document No. 362-0400-001))

Nutrient Monitoring

Nutrient monitoring is required by the SOP for Effluent Limitations for Individual Sewage Permits. Monitoring is included 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). The receiving stream is not listed as impaired for nutrients, therefore at the discretion of the application manager, a monitoring frequency less than the equivalent of conventional pollutants in Table 6-3 of the Permit Writer's Manual has been selected.

(Section I.A, Note 7 & 8, SOP for Clean Water Program, Establishing Effluent Limitations for Individual Sewage Permits, Final November 9, 2012, Revised March 24, 2021, Version 1.9 and 25 PA Code 92a.61(b).)

E. Coli

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

(Note 12 SOP-Establishing Effluent Limitations for Individual Sewage Permits Final November 9, 2012, Revised February 5, 2024, Version 2.0. and 25 PA Code 92a.61(b).)

Table 6-3 – Self-Monitoring Requirements for SEWAGE Discharges

Plant Design Flow (MGD)	Flow Monitoring	C-BOD ₅ or BOD ₅	Suspended Solids	pH	Fecal Coliform	Chlorine Residual	NH ₃ -N	Phosphorus	DO	Toxics
Single Residence (Individual Permit)	2/year by estimate	2/year*	2/year*	1/month*	2/year*	1/month*	2/year*	2/year*	2/year*	N/A
.0005 to .002	weekly, using average pump rate or weir (a)	1/month*	1/month*	daily*	1/month*	daily*	1/month*	1/month*	daily*	N/A
.002 to .01	weekly, using average pump rate or weir (a)	2/month*	2/month*	daily*	2/month*	daily*	2/month*	2/month*	daily*	N/A
0.01 to 0.1	weekly, using average pump rate or weir (a)	2/month*	2/month*	daily*	2/month*	daily*	2/month*	2/month*	Daily*	1/week*
0.1 to 1.0	meter	1/week**	1/week**	daily*	1/week*	daily*	1/week**	1/week**	daily*	1/week****
1.0 to 5.0	meter	2/week***	2/week***	daily*	2/week*	daily*	2/week***	2/week***	daily*	1/week****
5.0 to 25.0	meter	daily***	daily***	daily*	daily*	1/shift*	daily***	daily***	daily*	1/week****
over 25.0	meter	daily***	daily***	1/shift*	daily*	1/shift*	1/shift***	1/shift***	1/shift*	1/week****

* Grab sample-these should be most representative of the effluent and are to be taken at a time when the normal daily maximum flow would reach the sampling point.

** 8-hour composite sample.

*** 24-hour composite sample.

**** Same sample type as for Industrial Process Wastewater (See Table 6-4).

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/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.278	XXX	0.909	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	Grab
TSS	XXX	XXX	XXX	30	XXX	60	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-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	9.0	XXX	18.0	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	3.0	XXX	6.0	2/month	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 Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001

Attachment 1

USGS StreamStats

Upstream

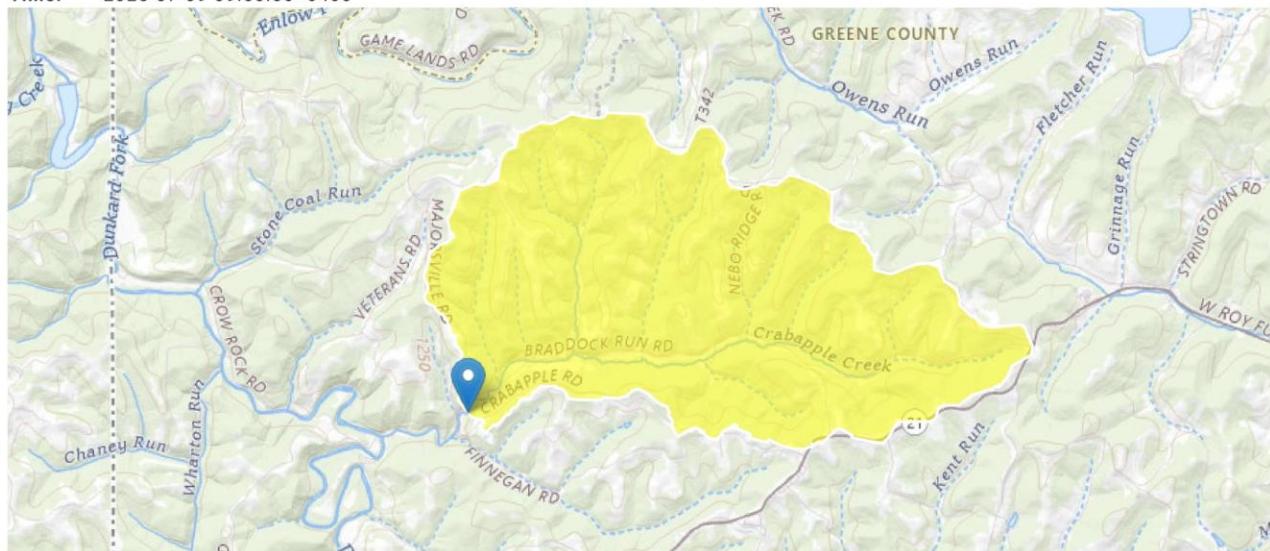
StreamStats Report - Upstream

Region ID: PA

Workspace ID: PA20250709135036339000

Clicked Point (Latitude, Longitude): 39.91996, -80.47445

Time: 2025-07-09 09:50:56 -0400



 [Collapse All](#)

➤ Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5.67	square miles
ELEV	Mean Basin Elevation	1241	feet

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.67	square miles	2.26	1400
ELEV	Mean Basin Elevation	1241	feet	1050	2580

Low-Flow Statistics Flow Report [Low Flow Region 4]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.209	ft ³ /s	43	43
30 Day 2 Year Low Flow	0.372	ft ³ /s	38	38
7 Day 10 Year Low Flow	0.0712	ft ³ /s	66	66
30 Day 10 Year Low Flow	0.134	ft ³ /s	54	54
90 Day 10 Year Low Flow	0.254	ft ³ /s	41	41

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/>)

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Application Version: 4.29.2

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

Attachment 2

USGS StreamStats

Downstream

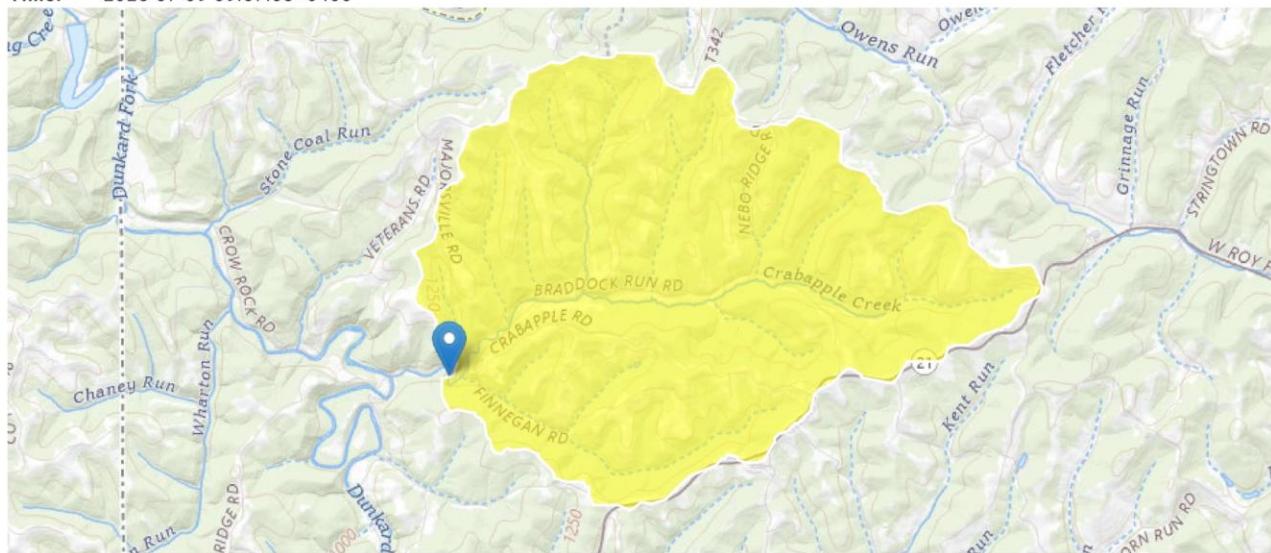
StreamStats Report - Downstream

Region ID: PA

Workspace ID: PA20250709135648245000

Clicked Point (Latitude, Longitude): 39.91757, -80.47805

Time: 2025-07-09 09:57:08 -0400



[Collapse All](#)

➤ Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	7.63	square miles
ELEV	Mean Basin Elevation	1234	feet

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	7.63	square miles	2.26	1400
ELEV	Mean Basin Elevation	1234	feet	1050	2580

Low-Flow Statistics Flow Report [Low Flow Region 4]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.291	ft ³ /s	43	43
30 Day 2 Year Low Flow	0.511	ft ³ /s	38	38
7 Day 10 Year Low Flow	0.102	ft ³ /s	66	66
30 Day 10 Year Low Flow	0.189	ft ³ /s	54	54
90 Day 10 Year Low Flow	0.352	ft ³ /s	41	41

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/>)

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Application Version: 4.29.2

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

Attachment 3

WQM 7.0 Model -

Summer

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		
20E	32513	CRABAPPLE CREEK			0.800	938.83	5.67	0.00000	0.00	<input checked="" type="checkbox"/>		
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)	Stream Temp (°C)	pH	pH
Q7-10	0.013	0.00	0.00	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				
	Outfall 001	PA0217620	0.0250	0.0250	0.0250	0.000	15.00	7.50				
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	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	
20E	32513	CRABAPPLE CREEK			0.420	909.79	7.63	0.00000	0.00	<input checked="" type="checkbox"/>	
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)	Stream Temp (°C)	Stream pH
Q7-10	0.013	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	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 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5.5		

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>			<u>Stream Code</u>			<u>Stream Name</u>							
20E			32513			CRABAPPLE CREEK							
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH	
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)		
Q7-10 Flow													
0.800	0.07	0.00	0.07	.0387	0.01447	.367	6.59	17.98	0.05	0.510	21.49	7.12	
Q1-10 Flow													
0.800	0.05	0.00	0.05	.0387	0.01447	NA	NA	NA	0.04	0.592	20.42	7.16	
Q30-10 Flow													
0.800	0.10	0.00	0.10	.0387	0.01447	NA	NA	NA	0.05	0.453	22.15	7.09	

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>		<u>Stream Code</u>	<u>Stream Name</u>					
20E	32513	CRABAPPLE 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	
0.800	Outfall 001	13.8	30.11	13.8	30.11	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	
0.800	Outfall 001	1.58	5.55	1.58	5.55	0	0	
Dissolved Oxygen Allocations								
RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	
0.80	Outfall 001	25	25	5.55	5.55	4	4	
						0	0	

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>	
20E	32513	CRABAPPLE CREEK	
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>
0.800	0.025	21.488	7.119
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>
6.594	0.367	17.980	0.046
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>
10.08	1.223	1.95	0.785
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>
6.753	18.149	Owens	5.5
<u>Reach Travel Time (days)</u>	Subreach Results		
0.510	TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)
		0.051	9.43
		0.102	8.82
		0.153	8.25
		0.204	7.72
		0.255	7.22
		0.306	6.75
		0.357	6.31
		0.408	5.91
		0.459	5.53
		0.510	5.17
			1.87
			7.19
			7.42
			7.56
			7.65
			7.73
			7.80
			7.87
			7.93
			7.99
			8.02

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name					
		20E	32513	CRABAPPLE 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)
0.800	Outfall 001	PA0217620	0.025	CBOD5	25		
				NH3-N	5.55	11.1	
				Dissolved Oxygen			4

Attachment 4

WQM 7.0 Model -

Winter

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
20E	32513 CRABAPPLE CREEK				0.800	938.83	5.67	0.00000	0.00	<input checked="" type="checkbox"/>
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)	Stream Temp (°C)
Q7-10	0.025	0.00	0.00	0.000	0.000	0.0	0.00	0.00	5.00	7.00
Q1-10		0.00	0.00	0.000	0.000					
Q30-10		0.00	0.00	0.000	0.000					
Discharge Data										
	Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH		
	Outfall 001	PA0217620	0.0250	0.0250	0.0250	0.000	15.00	7.50		
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	12.51	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
20E	32513	CRABAPPLE CREEK			0.420	909.79	7.63	0.00000	0.00	<input checked="" type="checkbox"/>
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)	Stream Temp (°C)
Q7-10	0.027	0.00	0.00	0.000	0.000	0.0	0.00	0.00	5.00	7.00
Q1-10		0.00	0.00	0.000	0.000					
Q30-10		0.00	0.00	0.000	0.000					
Discharge Data										
	Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH		
			0.0000	0.0000	0.0000	0.000	25.00	7.00		
Parameter Data										
	Parameter Name		Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	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 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5.5		

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>			<u>Stream Code</u>			<u>Stream Name</u>						
20E			32513			CRABAPPLE CREEK						
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)	
Q7-10 Flow												
0.800	0.14	0.00	0.14	.0387	0.01447	.395	7.62	19.28	0.06	0.385	7.13	7.07
Q1-10 Flow												
0.800	0.09	0.00	0.09	.0387	0.01447	NA	NA	NA	0.05	0.464	7.97	7.10
Q30-10 Flow												
0.800	0.19	0.00	0.19	.0387	0.01447	NA	NA	NA	0.07	0.335	6.66	7.05

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>		<u>Stream Code</u>	<u>Stream Name</u>					
20E	32513	CRABAPPLE 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	
0.800	Outfall 001	21.97	50	21.97	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	
0.800	Outfall 001	4.27	25	4.27	25	0	0	
Dissolved Oxygen Allocations								
RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		
0.80	Outfall 001	25	25	25	25	4	4	
						0	0	

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>	
20E	32513	CRABAPPLE CREEK	
<u>RMI</u> 0.800	<u>Total Discharge Flow (mgd)</u> 0.025	<u>Analysis Temperature (°C)</u> 7.130	<u>Analysis pH</u> 7.068
<u>Reach Width (ft)</u> 7.622	<u>Reach Depth (ft)</u> 0.395	<u>Reach WDRatio</u> 19.280	<u>Reach Velocity (fps)</u> 0.060
<u>Reach CBOD5 (mg/L)</u> 6.90	<u>Reach Kc (1/days)</u> 1.113	<u>Reach NH3-N (mg/L)</u> 5.33	<u>Reach Kn (1/days)</u> 0.260
<u>Reach DO (mg/L)</u> 10.697	<u>Reach Kr (1/days)</u> 13.555	<u>Kr Equation</u> Owens	<u>Reach DO Goal (mg/L)</u> 5.5
<u>Reach Travel Time (days)</u> 0.385	Subreach Results		
	TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)
		0.039	6.74
		0.077	6.58
		0.116	6.42
		0.154	6.27
		0.193	6.13
		0.231	5.98
		0.270	5.84
		0.308	5.71
		0.347	5.57
		0.385	5.44
			5.27
			10.85
			10.85
			10.85
			10.85
			10.85
			10.85
			10.85
			10.85
			10.85
			10.85

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name					
		20E	32513	CRABAPPLE CREEK			
RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Efl. Limit 30-day Ave. (mg/L)	Efl. Limit Maximum (mg/L)	Efl. Limit Minimum (mg/L)
0.800	Outfall 001	PA0217620	0.025	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

Attachment 5

TRC Model

TRC_CALC

TRC EVALUATION							
Input appropriate values in A3:A9 and D3:D9							
Source	Reference	AFC Calculations		Reference	CFC Calculations		
TRC	1.3.2.iii	WLA_afc = 0.606		1.3.2.iii	WLA_cfc = 0.584		
PENTOXSD TRG	5.1a		LTAMULT_afc = 0.373	5.1c	LTAMULT_cfc = 0.581		
PENTOXSD TRG	5.1b		LTA_afc = 0.226	5.1d	LTA_cfc = 0.339		
Effluent Limit Calculations							
PENTOXSD TRG	5.1f		AML MULT = 1.231				
PENTOXSD TRG	5.1g		AVG MON LIMIT (mg/l) = 0.278		INST MAX LIMIT (mg/l) = 0.909	AFC	
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)					