Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0103519**
Facility Type	**Non-Municipal**	APS ID	**1086022**
Major / Minor	**Minor**	Authorization ID	**1435340**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Whitehall Camp & Conference Center Inc.**	Facility Name	**Whitehall Campground**
Applicant Address	580 Whitehall Road	Facility Address	580 Whitehall Road
	Emlenton, PA 16373-8040		Emlenton, PA 16373-8040
Applicant Contact	Mark Pollock	Facility Contact	Mark Pollock
Applicant Phone	(724) 867-6861	Facility Phone	(724) 867-6861
Client ID	45016	Site ID	261682
Ch 94 Load Status	Not Overloaded	Municipality	Richland Township
Connection Status		County	Venango
Date Application Received	March 28, 2023	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: NPDES permit renewal for discharge of treated sewage.

Summary of Review

1.0 General Discussion

This factsheet supports the renewal of an existing NPDES permit for discharge of treated domestic wastewater from Whitehall Campground wastewater treatment facility. Whitehall Camp & Conference Center Inc. owns and operates the wastewater treatment facility, which provides sanitary services to the campground. The 2-cell lagoon treatment system at the site has a design hydraulic capacity of 0.015MGD. Effluent is disinfected with chlorine tabs and de-chlorinated before continuously discharged to Unnamed Tributary to Richey Run which is an intermittent stream classified for Cold Water Fishes (CWF), aquatic life, water supply and recreation. The existing NPDES permit was issued on September 10, 2018, with an effective date of October 1, 2018, and expiration date of September 30, 2023. The applicant submitted a timely permit renewal application to the Department is currently operating under the terms and conditions in the existing permit under administrative extension provisions pending Department action on the renewal application. A topographic map showing the discharge location is presented in attachment A

1.1 Sludge use and disposal description and location(s):

Sludge is removed from the lagoons periodically.

1.2 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-

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	March 26, 2025
		Adam Olesnanik, P.E. / Environmental Engineer Manager	Okay to Draft JCD 4/4/2025

Summary of Review

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.

1.3 Changes to Existing Permit

E. coli monitoring 1/year has been added to the permit.
Solids management requirement for lagoon system has been added.

1.4 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.015
Latitude	41º 11' 29"	Longitude	79º 41' 13.4"
Quad Name	Emlenton	Quad Code	0908
Wastewater Description:	Sewage Effluent		

Receiving Waters	Unnamed Tributary to Richey Run	Stream Code	51146
NHD Com ID	100479727	RMI	0.7
Drainage Area	0.57 (dry); 6.6 (perennial)	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	0.02 (dry); 0.27 (perennial)	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1320	Slope (ft/ft)	
Watershed No.	16-G	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)	7.3	Upstream sample taken 7/27/87 on Richey Run
Temperature (°C)	20	Default (CWF)
Hardness (mg/L)		
Other: NH_3-N (mg/l)		

Nearest Downstream Public Water Supply Intake	Parker Area Water Authority		
PWS Waters	Allegheny River	Flow at Intake (cfs)	
PWS RMI	83.8	Distance from Outfall (mi)	7.5

Changes Since Last Permit Issuance: None

Comments: The secondary receiving stream is Richey Run, Stream code 51144 at RMI 0.8mi. Richey Run is impaired due to Abandoned Mine Drainage (AMD).

The nearest downstream water supply intake is approximately 7.5 miles downstream by Parker Area Water Authority on Allegheny River. Due to the distance and dilution, no impact is expected from this discharge on the intake.

2.0 Treatment Facility Summary				
Treatment Facility Name: Whitehall Camp				
WQM Permit No.	**Issuance Date**			
363-S-027				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Stabilization Lagoon	Hypochlorite	0.015
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.015	30	Not Overloaded		

Changes Since Last Permit Issuance: none

2.1 Treatment System

The treatment system consists of 2 lagoons (primary lagoon and secondary lagoon), chlorination contact tank and de-chlorination tank.

3.0 Existing Effluent Limitations and Monitoring Requirements for outfall 001

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 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	4.0 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
Total Nitrogen	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite

3.1 Compliance History

3.1.1 DMR Data for Outfall 001 (from February 1, 2024 to January 31, 2025)

Parameter	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24
Flow (MGD) Average Monthly	0.014	0.016	0.014	0.015	0.014	0.014	0.014	0.014	0.01	0.011	0.008	0.012
Flow (MGD) Daily Maximum	0.015	0.018	0.015	0.018	0.018	0.014	0.014	0.014	0.014	0.012	0.008	0.012
pH (S.U.) Daily Minimum	7.7	7.1	7.9	7.8	8.4	8.1	8.1	8.1	8.0	8.0	8.0	7.6
pH (S.U.) Daily Maximum	8.9	8.8	8.9	8.8	8.8	8.9	8.9	8.9	8.9	8.9	8.9	8.7
DO (mg/L) Daily Minimum	7.6	11.1	11.3	8.4	7.1	8.5	7.1	8.3	10.1	7.5	9.1	11.1
TRC (mg/L) Average Monthly	0.29	0.32	0.29	0.36	0.33	0.37	0.38	0.38	0.38	0.27	0.34	0.35
TRC (mg/L) Instantaneous Maximum	0.49	0.53	0.41	0.98	0.49	0.95	0.75	0.57	0.50	0.55	0.59	0.51
CBOD5 (mg/L) Average Monthly	10.8	11.88	4.89	13.01	15.4	24.6	28.9	18.0	5.44	7.69	8.37	< 2.0
TSS (mg/L) Average Monthly	15.0	7.0	6.0	9.0	10.0	12.0	14.0	11.33	8.0	22.0	24.0	14.0
Fecal Coliform (No./100 ml) Geometric Mean	13.0	1	4	1	1	3.0	126	1	1	1	1	1
Fecal Coliform (No./100 ml) Instantaneous Maximum	22	1	7.0	2	1	5.0	238	1	1	2	1	1
Total Nitrogen (mg/L) Annual Average		7.24										
Ammonia (mg/L) Average Monthly	4.78	6.15	5.82	13.5	11.5	33.6	10.5	1.85	1.60	0.441	< 0.4	3.72
Total Phosphorus (mg/L) Annual Average		1.00										

3.1.2 Effluent Violations for Outfall 001, from: March 1, 2024 To: January 31, 2025

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
CBOD5	07/31/24	Avg Mo	28.9	mg/L	25.0	mg/L

3.1.2 Summary of DMRs:

DMRs review for the facility for the last 12 months of operation, presented on the table in section 3.1.1 indicate permit limits have been met most of the time. One CBOD5 violation noted during the period reviewed and presented in section 3.1.2.

3.1.3 Summary of Inspections:

The facility was last inspected on August 10, 2023. No effluent violations found during the inspection. The report indicated heavy duckweed presence on the ponds. The report also noted a non-compliance with monitoring requirement. The facility is collecting grab samples instead of composite samples. The report indicated the permittee had challenges in collecting composite samples and suggested permit require grab samples. The facility is a lagoon system that typically have long detention time, grab sample would be appropriate. The permit will be revised to reflect grab samples.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .015
Latitude 41º 11' 29.00" **Longitude** -79º 41' 13.40"
Wastewater Description: Sewage Effluent

4.1 Technology-Based Limitations

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

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

Comments: Weekly averages are not applicable to this discharge.

4.2 Water Quality-Based Limitations

4.2.1 WQM 7.0 Stream Model

WQM 7.0 is a water quality model DEP utilizes to establish appropriate effluent limits for $CBOD_5$, NH_3-N and DO in permits. The model simulates mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria and also simulates mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria and recommends effluent limits.

4.2.2 Stream flows

The drainage area upstream of the discharge location on the intermittent stream and the drainage area upstream of the secondary perennial stream and their respective Q_{7-10} flows were calculated using USGS streamStats and the results are presented in attachment E and F. The calculated drainage area upstream of discharge is 0.57 sq. mi and the Q_{7-10} flow is 0.02 cfs and the calculated drainage area upstream of the perennial stream is 6.6 sq. mi and the Q_{7-10} flow is 0.27 cfs.

4.2.3 $CBOD_5$ & NH_3-N

It appears the facility predates the Implementation Guidance for Evaluating Wastewater Discharges to Drainage Ditches and Swales (ID # 391-2000-014). The existing secondary treatment effluent limits for $CBOD_5$ & NH_3-N were based on WQM 7.0 DO model for the intermittent stream. A WQM D.O model run for the intermittent stream is presented in attachment B. The existing limits were confirmed to be protective at the point of first use on the perennial stream with a WQM 7.0 model run for both $CBOD_5$ & NH_3-N. See WQM model results presented in attachment C.

4.2.4 Dissolved Oxygen

The existing minimum Dissolved Oxygen (DO) limit of 4.0 mg/L based on Best Professional Judgement (BPJ) to ensure adequate operation and maintenance will remain for the current permit renewal.

4.2.5 Total Suspended Solids (TSS):

There is no water quality criterion for TSS. The existing limit of 30 mg/l AML based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 PA § 92a.47(a)(1) will remain in the permit.

4.2.6 Total Nitrogen and Total Phosphorus

The discharge is outside the Chesapeake Bay watershed and the receiving stream is not showing nutrient enrichment issues. The existing annual monitoring requirement for Total Nitrogen and Total Phosphorus based on BPJ best professional judgement will be retained in the permit for the current permit renewal.

4.2.7 Total Residual Chlorine:

The attached TRC results presented in attachment D utilizes the equations and calculations as presented in the Department's 2003 Implementation Guidance for Residual Chlorine (TRC) (ID # 391-2000-015) for developing chlorine limitations. The Guidance references Chapter 92a, Section 92a.48 (b) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The results presented in attachment C indicates that a water quality limit of 0.5 mg/l monthly average and IMAX of 1.6 mg/l would be needed to prevent toxicity concerns at the point of first use on the perennial stream. This limit is consistent with the existing permit and the facility is meeting the permit requirement.

4.2.8 Toxics

A reasonable potential (RP) analysis was done for pollutants in the discharge. The discharge consists entirely of domestic wastewater with no pollutants of concern that needs further analysis.

4.2.9 Fecal Coliform and E. Coli

The existing Fecal Coliform limit is consistent with the technology limits recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. In March of 2021, EPA approved DEP's Triennial Review of Water Quality Standards, which included a new swimming season criterion for E. coli. As a result, DEP is including monitoring requirements for E. Coli in new and renewed sewage permits above 2000gpd. Monitoring frequency is based on annual average flow as follows: 1/month for design flows >= 1 MGD, 1/quarter for design flows >= 0.05 and < 1 MGD and 1/year for design flows of 0.002 and < 0.05 MGD. Your discharge of 0.015 MGD requires 1/year monitoring as included in the permit.

5.0 Other Requirements

5.1 Anti-backsliding

Not applicable to this permit

5.2 Stormwater:

No storm water outfall is associated with this facility

5.3 Special Permit Conditions

The permit will contain the following special conditions:

1. Stormwater Prohibition. 2. Approval Contingencies, 3. Management of Solids and collected screenings, slurries, sludges and other solids 4. Requirement to connect if a public sewer becomes available in the area. 5. Dry stream discharge condition, 6. Chlorine minimization

5.4 Anti-Degradation (93.4)

The effluent limits for this discharge 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. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

5.5 Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

5.6 303d Listed Streams:

The discharge is not on a 303d listed stream segment. The secondary receiving stream is impaired due to abandoned mine drainage. The discharge does not contribute to the impairment. No further action is warranted at the time.

6.0 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 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	4.0 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	Grab
TSS	XXX	XXX	XXX	30.0	XXX	60	2/month	Grab
E. coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	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
Total Nitrogen	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Grab
Total Phosphorus	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab

Compliance Sampling Location: At outfall 001

7.0 Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B & C**)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **D**)
☐	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: Establishing effluent limitation for individual sewage permit
☐	Other:

Attachments

A. Topographical Map

B. WQM Model Results-Dry Stream

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16G	51146	Trib 51146 to Richey Run

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
0.700	Witehall Cmpgrd	PA0103519	0.015	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

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
16G	51146	Trib 51146 to Richey Run	**0.700**	1326.00	0.57	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	0.02	0.000	0.000	0.0	0.00	0.00	20.00	7.30	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
Witehall Cmpgrd	PA0103519	0.0150	0.0150	0.0150	0.000	20.00	8.10

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
16G	51146	Trib 51146 to Richey Run	**0.010**	1040.00	0.65	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	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.30	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	2.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
16G	51146	Trib 51146 to Richey Run

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
0.70	Witehall Cmpgrd	25	25	25	25	4	4	0	0

WQM 7.0 Modeling Specifications

Parameters	D.O.	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	2		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
16G	51146	Trib 51146 to Richey Run

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
0.700	0.02	0.00	0.02	.0232	0.07850	.339	2.48	7.3	0.05	0.820	20.00	7.56
Q1-10 Flow												
0.700	0.01	0.00	0.00	.0232	0.07850	NA	NA	NA	0.00	0.000	0.00	0.00
Q30-10 Flow												
0.700	0.03	0.00	0.00	.0232	0.07850	NA	NA	NA	0.00	0.000	0.00	0.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16G	51146	Trib 51146 to Richey Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.700	0.015	20.000	7.561
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
2.476	0.339	7.301	0.051
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
14.35	1.323	13.43	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.964	21.964	Owens	2
Reach Travel Time (days)			
0.820			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.082	12.88	12.68	6.05
0.164	11.55	11.97	6.25
0.246	10.37	11.30	6.46
0.328	9.30	10.67	6.66
0.410	8.35	10.08	6.84
0.492	7.49	9.52	7.01
0.574	6.72	8.99	7.16
0.656	6.03	8.48	7.30
0.738	5.41	8.01	7.43
0.820	4.85	7.56	7.55

C. WQM Model Results-Perennial Stream

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16G	51144	RICHEY RUN

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
0.800	Whitehall Campg	PA0103519	0.015	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

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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
16G	51144	RICHEY RUN	**0.800**	1040.00	6.60	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	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.30	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
Whitehall Campg	PA0103519	0.0150	0.0150	0.0150	0.000	20.00	8.10

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
16G	51144	RICHEY RUN	**0.100**	1008.00	7.20	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	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.30	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	4.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
16G	51144	RICHEY RUN

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.800	Whitehall Campg	11.88	50	11.88	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	Whitehall Campg	1.61	25	1.61	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)		
0.80	Whitehall Campg	25	25	25	25	4	4	0	0

WQM 7.0 Modeling Specifications

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
16G	51144	RICHEY RUN

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
0.800	0.66	0.00	0.66	.0232	0.00866	.48	12.14	25.32	0.12	0.365	20.00	7.31
Q1-10 Flow												
0.800	0.42	0.00	0.42	.0232	0.00866	NA	NA	NA	0.09	0.463	20.00	7.32
Q30-10 Flow												
0.800	0.90	0.00	0.90	.0232	0.00866	NA	NA	NA	0.14	0.309	20.00	7.31

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16G	51144	RICHEY RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.800	0.015	20.000	7.313
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
12.145	0.480	25.322	0.117
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.78	0.378	0.85	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.099	20.100	Owens	6
Reach Travel Time (days)			
0.365			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.036	2.74	0.83	8.24
0.073	2.71	0.81	8.24
0.109	2.67	0.79	8.24
0.146	2.63	0.77	8.24
0.182	2.60	0.75	8.24
0.219	2.56	0.73	8.24
0.255	2.53	0.71	8.24
0.292	2.49	0.69	8.24
0.328	2.46	0.67	8.24
0.365	2.42	0.66	8.24

D. TRC Calculations Results

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.27	= Q stream (cfs)	0.5	= CV Daily
0.015	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 3.731	1.3.2.iii	WLA cfc = 3.630
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 1.390	5.1d	LTA_cfc = 2.110

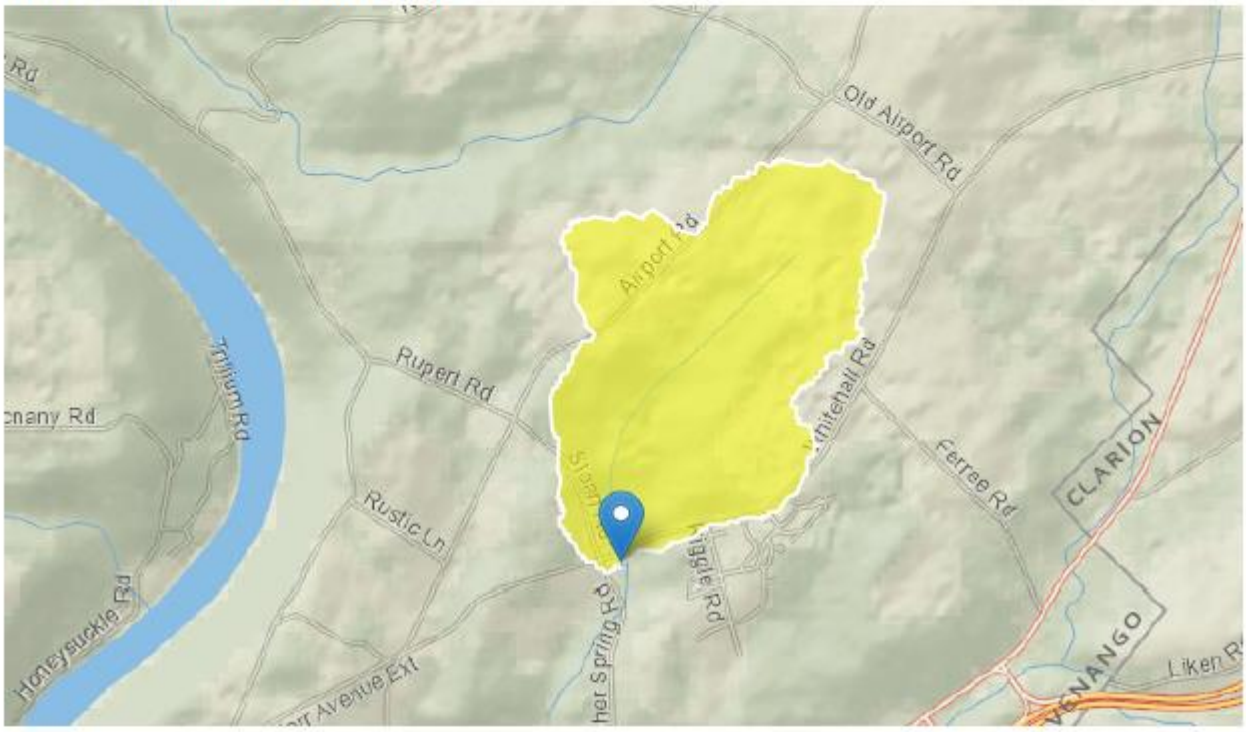
Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

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)**

E. StreamStats Report for UNT Richley Run

Whitehall Campground StreamStats Report

Region ID: PA
Workspace ID: PA20250314225252365000
Clicked Point (Latitude, Longitude): 41.19077, -79.69131
Time: 2025-03-14 18:53:18 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.57	square miles
ELEV	Mean Basin Elevation	1394	feet
PRECIP	Mean Annual Precipitation	43	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.57	square miles	2.33	1720
ELEV	Mean Basin Elevation	1394	feet	898	2700
PRECIP	Mean Annual Precipitation	43	inches	38.7	47.9

Low-Flow Statistics Disclaimers [Low Flow Region 3]

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

Low-Flow Statistics Flow Report [Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.052	ft^3/s
30 Day 2 Year Low Flow	0.0787	ft^3/s
7 Day 10 Year Low Flow	0.0195	ft^3/s
30 Day 10 Year Low Flow	0.0294	ft^3/s
90 Day 10 Year Low Flow	0.0448	ft^3/s

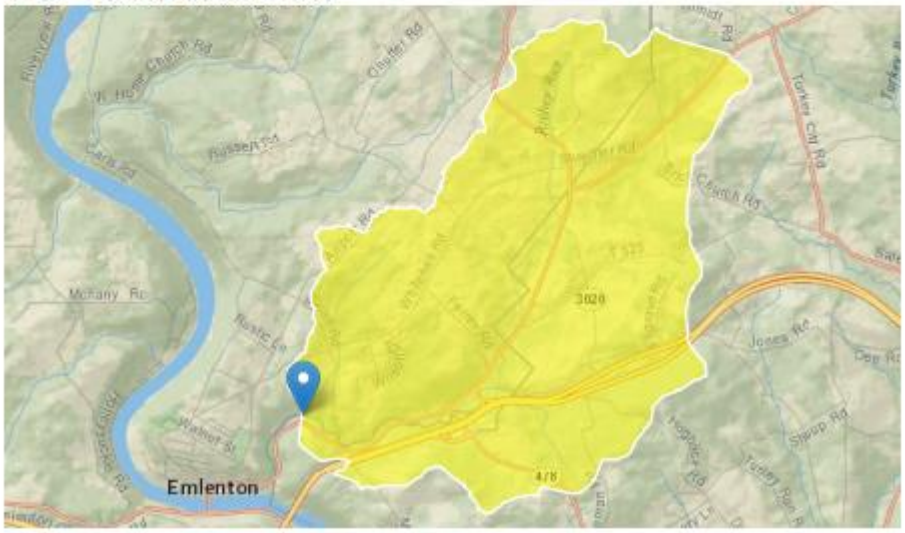
Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

F. StreamStats Report for Richley Run

Richey Run confluence StreamStats Report

Region ID: PA
Workspace ID: PA20250316131153876000
Clicked Point (Latitude, Longitude): 41.18452, -79.69594
Time: 2025-03-16 09:12:19 -0400



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Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	0	percent
DRNAREA	Area that drains to a point on a stream	6.59	square miles
ELEV	Mean Basin Elevation	1383	feet
FOREST	Percentage of area covered by forest	62.8207	percent
PRECIP	Mean Annual Precipitation	43	inches
URBAN	Percentage of basin with urban development	2.8522	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	6.59	square miles	2.33	1720
ELEV	Mean Basin Elevation	1383	feet	898	2700
PRECIP	Mean Annual Precipitation	43	inches	38.7	47.9

Low-Flow Statistics Flow Report [Low Flow Region 3]

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, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.629	ft^3/s	43	43
30 Day 2 Year Low Flow	0.912	ft^3/s	38	38
7 Day 10 Year Low Flow	0.269	ft^3/s	54	54
30 Day 10 Year Low Flow	0.386	ft^3/s	49	49
90 Day 10 Year Low Flow	0.571	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/)

Base Flow Statistics

Base Flow Statistics Parameters [Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CARBON	Percent Carbonate	0	percent	0	99
DRNAREA	Drainage Area	6.59	square miles	2.26	1720
FOREST	Percent Forest	62.8207	percent	5.1	100
PRECIP	Mean Annual Precipitation	43	inches	33.1	50.4

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
URBAN	Percent Urban	2.8522	percent	0	89

Base Flow Statistics Flow Report [Statewide Mean and Base Flow]

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, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
Base Flow 10 Year Recurrence Interval	3.78	ft^3/s	21	21
Base Flow 25 Year Recurrence Interval	3.33	ft^3/s	21	21
Base Flow 50 Year Recurrence Interval	3.08	ft^3/s	23	23

Base 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/)