pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0216666**
Facility Type	**Non-Municipal**	APS ID	**1062286**
Major / Minor	**Minor**	Authorization ID	**1394487**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Iron Cumberland LLC**	Facility Name	**Iron Cumberland Prep Plant**
Applicant Address	855 Kirby Road PO Box 1020	Facility Address	158 Portal Road
	Waynesburg, PA 15370-3020		Waynesburg, PA 15370-3592
Applicant Contact	Noah Beazell	Facility Contact	Same as Applicant
Applicant Phone	(724) 395-3231	Facility Phone	Same as Applicant
Client ID	329531	Site ID	532875
Ch 94 Load Status	Not Overloaded	Municipality	Whiteley Township
Connection Status	No Limitations	County	Greene
Date Application Received	April 22, 2022	EPA Waived?	Yes
Date Application Accepted	May 2, 2022	If No, Reason	

Purpose of Application: Application for renewal of a NPDES Permit for treated sewage.

Summary of Review

The permittee has applied for renewal of NPDES Permit No. PA0216666. PA0216666 was previously issued by the PA Department of Environmental Protection (DEP) on August 22, 2017 and expired on August 31, 2022. The renewal application was not submitted 180 days prior to expiration.

Sewage at this facility is treated with flow equalization, extended aeration, clarification, and chlorine disinfection prior to discharge through Outfall 002 to Whitelely Creek (Stream Code ID 41178). Whiteley Creek is a Trout Stock Fishery (TSF) permit Chapter 93 Designated Use.

The permittee is currently enrolled in and will continue to use eDMR.

The applicant has complied with Act 14 Notification with letters dated March 16, 2022 to Whiteley Township and Greene County.

Sewage sludge at this facility is hauled off site and disposed of by H&H Water Controls Inc.

Since the last permit, the TRC limit has changed to become more restrictive and annual *E. coli* monitoring has been added.

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

Approve	Deny	Signatures	Date
X		Stephanie Conrad / Environmental Engineering Specialist	November 22, 2022
x		Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineering Manager	December 2, 2022

Summary of Review

addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

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

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

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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0.02
Latitude	39º 47' 42.9"	Longitude	-80º 9' 38.6"
Quad Name	Oak Forest	Quad Code	2004
Wastewater Description:	Sewage Effluent		

Receiving Waters	Whiteley Creek (TSF)	Stream Code	41178
NHD Com ID	99418460	RMI	20.43
Drainage Area	1.77	Yield (cfs/mi^2)	0.0698
Q_{7-10} Flow (cfs)	0.0173	Q_{7-10} Basis	USGS Stream Stats
Elevation (ft)	1080	Slope (ft/ft)	
Watershed No.	19-G	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation		
Source(s) of Impairment	Agriculture and Subsurface (Hardrock) Mining		
TMDL Status	Tentative	Name	Whiteley Creek Watershed

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

Nearest Downstream Public Water Supply Intake	Southwestern PA Water Authority		
PWS Waters	Monongahela River	Flow at Intake (MGD)	5.0
PWS RMI	14.2	Distance from Outfall (mi)	21.7

Changes Since Last Permit Issuance: Q_{7-10} basis has changed since last permit issuance to reflect department policy changing from using Bulletin 12 to USGS Stream Stats. Receiving stream flow has changed as a result.

Other Comments:

Treatment Facility Summary

Treatment Facility Name: Prep Plant STP

WQM Permit No.	Issuance Date	Purpose
3075402	September 8, 1995	Permit issued to Cumberland Contura, LLC from PADEP approving construction of a new treatment facility including: • Two (2) 10,000-gallon equalization basins • One (1) 1" manually cleaned bar screen • One (1) 0.02 mgd comminutor • One (1) 6,097-gallon primary aeration tank and 20 gpm effluent grinder pump • One (1) 9,250- gallon secondary aeration tank • One (1) 2,216-gallon intermediate clarifier • One (1) 4,007-gallon final clarifier and 20 gpm effluent pump • One (1) 5090-gallon aerated sludge digester • Gas chlorination, and • One (1) 413-gallon chlorine contact tank
3075402 A-1	January 23, 2020	Permit issued to Cumberland Contura, LLC from PADEP approving replacement of the existing chlorinator with a UVIREX model 50 disinfection unit and construction of two 5,000 gpd submersible pump stations for conveying clarified water to the disinfection unit.
3075402 T-2	January 3, 2022	Permit issued by PADEP approving the transfer of the WQM permit from Cumberland Contura, LLC to Iron Cumberland LLC.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with Ammonia Reduction	Extended Aeration	Chlorine	0.02

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.02	5	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: WQM Permit No. 3075402 A-1 was issued by the department in January 2020, approving the installation of a UV treatment unit. The unit is only capable of treating 0.005 MGD, therefore, the work would reduce hydraulic capacity and annual average flow to 0.005 MGD. The work has not been completed to date and there is no estimate for when the work will be completed. TRC limits will be included in the permit and limits were calculated for a continued design flow of 0.02 MGD. The permittee should be advised that the department must be notified when construction begins. An amendment to the NPDES Permit will be required when construction is completed.

Additionally, WQM Permit No. 3075402 approved the transfer of the facility to Iron Cumberland, LLC.

Compliance History

Operations Compliance Check Summary Report

Facility: Iron Cumberland Prep Plant

NPDES Permit No.: PA0216666

Compliance Review Period: 5/2017 – 5/2022

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
3255382	09/23/2021	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted
3058378	07/23/2020	Administrative/File Review	PA Dept of Environmental Protection	No Violations Noted
3210405	06/24/2021	Administrative/File Review	PA Dept of Environmental Protection	No Violations Noted

Violation Summary:

No violations

Open Violations by Client ID:

No open CW violations for client id 329531

Enforcement Summary:

No enforcements

DMR Violation Summary:

MONITORING END DATE	PARAMETER	STATISTICAL BASE CODE	PERMIT VALUE	SAMPLE VALUE	UNIT OF MEASURE
6/30/2019	Dissolved Oxygen	Minimum	6	5.8	mg/L
5/31/2019	Dissolved Oxygen	Minimum	6	4.8	mg/L
12/31/2018	Total Residual Chlorine (TRC)	Average Monthly	0.13	0.75	mg/L
12/31/2018	Total Residual Chlorine (TRC)	Instantaneous Maximum	0.3	10.8	mg/L
11/30/2018	Dissolved Oxygen	Minimum	6	5.9	mg/L
11/30/2018	Total Residual Chlorine (TRC)	Average Monthly	0.13	0.91	mg/L
11/30/2018	Total Residual Chlorine (TRC)	Instantaneous Maximum	0.3	2	mg/L
10/31/2018	Total Residual Chlorine (TRC)	Average Monthly	0.13	0.73	mg/L
10/31/2018	Total Residual Chlorine (TRC)	Instantaneous Maximum	0.3	3.4	mg/L
1/31/2018	Dissolved Oxygen	Minimum	6	0	mg/L
11/30/2017	Dissolved Oxygen	Minimum	6	0	mg/L

Compliance Status:

Permittee in compliance. Operations will monitor DMR exceedances.

Completed by: John Murphy

Completed date: 5/13/2022

Compliance History

DMR Data for Outfall 002 (from October 1, 2021 to September 30, 2022)

Parameter	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21
Flow (MGD) Average Monthly	0.00114	0.00167	0.00150	0.00143	0.00114	0.00183	0.00114	0.00171	0.00125	0.00125	0.00138	0.00113
pH (S.U.) Instantaneous Minimum	6.3	6.6	6.9	7.1	6.8	6.8	6.3	6.2	6.3			
pH (S.U.) Minimum										6.3	6.7	6.6
pH (S.U.) Instantaneous Maximum	8.8	8.6	8.4	8.3	8.2	8.3	8.1	8.3	8.2			
pH (S.U.) Maximum										8.5	8.2	8.0
DO (mg/L) Instantaneous Minimum	6.9	7.0	7.8	7.0	6.0	6.3	6.0	8.3	8.1			
DO (mg/L) Minimum										7.8	7.4	6.7
TRC (mg/L) Average Monthly	0.05	0.03	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
TRC (mg/L) Instantaneous Maximum	0.25	0.14	0.25	0.02	0.04	0.02	0.13	0.05	0.04	0.03	0.07	0.05
$CBOD_5$ (mg/L) Average Monthly	2.2	2.0	2.0	2.0	2.0	2.5	2.0	2.0	2.2	2.3	2.0	2.2
$CBOD_5$ (mg/L) Instantaneous Maximum	2.4	2.0	2.0	2.0	2.0	2.9	2.0	2.0	2.3	2.6	2.0	2.4
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	5.0	5.0
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	5.0	5.0
Fecal Coliform (No./100 ml) Geometric Mean	1	1	1	1	1	1	1	1	1	7	1	1

Fecal Coliform (No./100 ml) Instantaneous Maximum	1	1	1	1	1	1	1	1	1	45	1	1
Total Nitrogen (mg/L) Daily Maximum										8.83		
Ammonia (mg/L) Average Monthly	0.3	0.2	0.15	0.1	0.2	0.2	0.2	0.15	0.2	0.25	0.35	0.15
Ammonia (mg/L) Instantaneous Maximum	0.4	0.2	0.20	0.1	0.2	0.3	0.2	0.20	0.3	0.30	0.40	0.20
Total Phosphorus (mg/L) Daily Maximum										1.1		

Compliance History

Summary of Inspections: The facility was inspected twice in 2021, once as an administrative review in June and once as a compliance evaluation in September. Neither inspection resulted in violations.

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** .02
Latitude 39º 47' 42.90" **Longitude** -80º 9' 38.60"
Wastewater Description: Sewage Effluent

Technology-Based Limitations (TBELs)

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 (WQBELs)

Pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* on July 11, 2020, new water quality criteria for ammonia-nitrogen apply to waters of the commonwealth. Therefore, WQBELs for Outfall 002 are being re-evaluated even though there have been no changes to the facility.

WQM 7.0 Water Quality Modeling

The Department's WQM 7.0 version 1.1 model is a Microsoft Access® Program used for sewage dischargers to determine whether TBELs are sufficient to meet in-stream water quality criteria for ammonia-nitrogen, carbonaceous biochemical oxygen demand ($CBOD_5$), and dissolved oxygen (DO). To accomplish this, the model simultaneously simulates mixing and degradation of ammonia-nitrogen and mixing and consumption of DO through $CBOD_5$ and ammonia-nitrogen degradation. WQM 7.0 determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

The model is a two-step process. The discharge is first modeled for the summer period (May through October) because warm temperatures are more likely to result in critical loading conditions. Reduced DO levels likely also play a role in ammonia toxicity and solubility of DO decreases at increased water temperature. If summer modeling determines WQBELs are appropriate for the summer period, then modeling is completed for the winter period (November through April). This is in accordance with the Department's *"Implementation Guidance of Section 93.7 Ammonia Criteria"* [Doc. No. 391-2000-013] (Ammonia Guidance).

River Mile Index (RMI) was measured in eMAP PA as the distance from the facility's outfall to the mouth of the Ohio River. Elevation was read by applying a topomap in eMAP PA. Discharge point and downstream drainage areas as well as Q_{7-10} flow were generated by USGS Stream Stats. USGS Stream Stats output files are included in Attachment A. In the absence of site-specific data, discharge temperature, stream temperature, and stream pH were assumed to be 20, 25, and 7 in accordance with the Ammonia Guidance. Stream width to depth was assumed to be 10.

WQM 7.0 modeling inputs are documented in the table below:

Discharge Characteristics		Basin/Stream Characteristics	
Parameter	**Value**	**Parameter**	**Value**
River Mile Index (RMI)	20.43	Drainage Area (mile)	1.77
Discharge Flow (MGD)	0.02	$Q_{7\text{-}10\ (cfs)}$	0.0173
Discharge Temp (°C)	20	Low-flow yield (cfs/mi^2)	0.0098
Ammonia-Nitrogen (mg/L)	2.0	Elevation (ft)	1080
$CBOD_5$ (mg/L)	25	Stream Width/Depth	10
DO (mg/L)	6	Stream Temp (°C)	25
pH (s.u.)	7	Stream pH (s.u.)	7

The effluent was modeled using WQM 7.0 to evaluate $CBOD_5$, ammonia-nitrogen, and dissolved oxygen (DO) parameters. Modeling confirmed that technology based effluent limits are appropriate for $CBOD_5$. Modeling also confirmed that water quality-based effluent limits (WQBELs) for ammonia-nitrogen and DO are necessary to meet in-stream water quality criterion. In accordance with The Department's Standard Operating Procedure (SOP) *for the Clean Water Program-Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. PCW-PMT-033, version 1.0], winter ammonia-nitrogen limits are assessed by comparing the winter WQM 7.0 output value with one calculated from the summer limit using a seasonal multiplier of three. The more restrictive of the two values is then imposed. For this facility, the winter ammonia-nitrogen limit to be imposed is the value generated using WQM 7.0 modeling. Ammonia-nitrogen and DO limits are not changing from the previous permit cycle. WQM 7.0 output files are provided in Attachment B.

Total Residual Chlorine Modeling

The Department's Total Residual Chlorine (TRC) Spreadsheet is a Microsoft Excel® Program used to evaluate WQBELs for TRC using a mass balance. In accordance with the Department's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9], default values of 0.3 mg/L and 0 mg/L for in-stream and discharge chlorine demand were used as model inputs. Additionally, a discharge flow of 0.02 MGD and a $Q_{7\text{-}10}$ flow of 0.0098 were used as model inputs.

TRC was modeled with PADEP's TRC Spreadsheet and it was determined that a new, more restrictive WQBEL is necessary to meet in-stream water quality standards. The facility as currently operating should be able to meet the new, more restrictive limits. TRC Spreadsheet output files are included in Attachment C.

TRC modeling was conducted using default stream parameter values. Because of this, the permittee has the option to conduct a site-specific study in accordance with the Department's guidance document, *Implementation Guidance Total Residual Chlorine (TRC) Regulation.* If the permittee elects to conduct a site-specific study, then they shall notify DEP of this within 60 days of permit issuance and submit the study results within 15 months of permit issuance. If the Department agrees that the study results in modification of the WQBELs, then the Department will initiate an amendment to the permit. Part C. II. has been added to the permit.

WQM Permit No. 3075402 A-1 was issued in January 2020 approving the replacement of chlorine disinfection with UV disinfection and a reduction of hydraulic loading and design flow. The work has not been completed, so TRC limits will be included in this permit. WQBELs were modeling with a design flow rate of 0.02 MGD. When construction is complete, the permittee will need to apply for an amendment to the NPDES permit to remove TRC limits and impose monitoring for UV.

WQBELs

The table below summarizes the WQBELs which will be imposed in this permit.

Parameter	Limit (mg/l)	SBC	Model
Ammonia-Nitrogen (winter)	4.0	Average Monthly	WQM 7.0
Ammonia-Nitrogen (summer)	2.0	Average Monthly	WQM 7.0
Dissolved Oxygen (DO)	6.0	Average Monthly	WQM 7.0

Total Residual Chlorine (TRC)	0.091	Average Monthly	TRC Spreadsheet

Additional Considerations

In accordance with Section 1.A. of the Department's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9], pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* on July 11, 2020 and under the authority of 25 Pa. Code § 93.7(a) and § 92.a.61, sewage discharges will include monitoring, at a minimum for *E. coli*. For new and reissued permits, a monitoring frequency of 1/year will be imposed for facilities with a design flow between 0.002 and 0.05 MGD.

In accordance with Section 1.A. of the Department's SOP for *Establishing Effluent Limits for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9], and under the authority of 25 Pa. Code § 92a.61(b), nutrient monitoring for total nitrogen and total phosphorus will be imposed. The intent of this monitoring is to establish the nutrient load of the wastewater and evaluate the impact that load may have on the quality of the receiving stream. During the last permit cycle, total nitrogen monitoring resulted in four samples with results ranging from 1.51 mg/L to 8.83 mg/L. Total phosphorus sampling resulted in four samples with results ranging from 0.04 mg/L to 1.1 mg/L. The SOP states that if the receiving stream is not impaired for nutrients, then discretion may be used in setting the monitoring frequency. Whiteley Creek is not impaired for nutrients, therefore, a monitoring frequency of 1/year will again be imposed.

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Department's *Technical Guidance for the Development and Specification of Effluent Limitations* [Doc No. 362-0400-001]. Please note that no monitoring frequencies have changed from the previous 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 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	0.02	XXX	XXX	XXX	XXX	XXX	2/month	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.091	XXX	0.296	1/day	Grab
$CBOD_5$	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
TSS	XXX	XXX	XXX	30.0	XXX	60.0	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	4.0	XXX	8.0	2/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.0	XXX	4.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Compliance Sampling Location: Outfall 002
Other Comments:

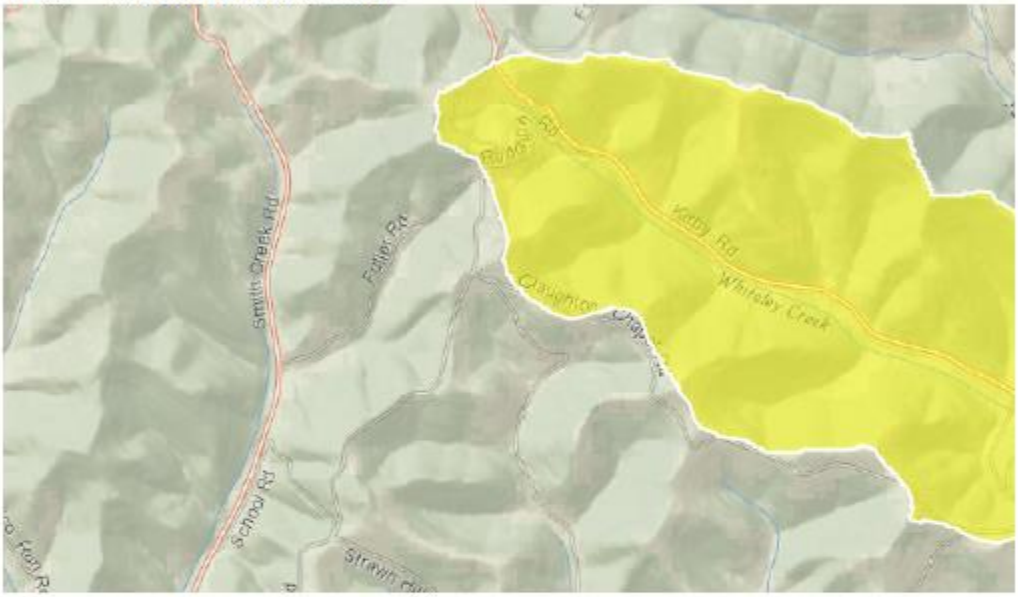
ATTACHMENT A

USGS Stream Stats Output

Discharge Point

StreamStats Report

Region ID: PA
Workspace ID: PA20220614122307588000
Clicked Point (Latitude, Longitude): 39.79521, -80.16049
Time: 2022-06-14 08:23:27 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.77	square miles
ELEV	Mean Basin Elevation	1291	feet

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0572	ft^3/s
30 Day 2 Year Low Flow	0.108	ft^3/s
7 Day 10 Year Low Flow	0.0173	ft^3/s
30 Day 10 Year Low Flow	0.0358	ft^3/s
90 Day 10 Year Low Flow	0.0723	ft^3/s

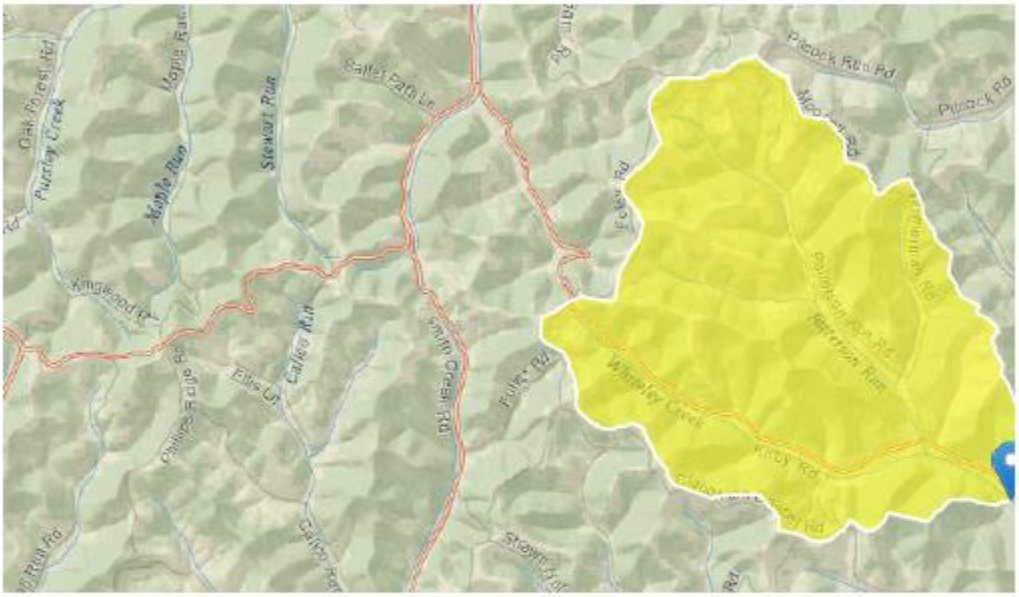
Low-Flow Statistics Citations

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/)

Downstream of Discharge

StreamStats Report

Region ID: PA
Workspace ID: PA20220614123117103000
Clicked Point (Latitude, Longitude): 39.79241, -80.14363
Time: 2022-06-14 08:31:37 -0400



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Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5.45	square miles
ELEV	Mean Basin Elevation	1273	feet

ATTACHMENT B

WQM 7.0 Modeling Results

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
19G	41178	WHITELEY CREEK	20.430	1080.00	1.77	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	0.010	0.00	0.00	0.000	0.000	10.0	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
Iron Cumberland	PA0216666	0.0000	0.0200	0.0000	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	6.00	8.24	0.00	0.00
NH3-N	2.00	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
19G	41178	WHITELEY CREEK	19.010	1050.00	5.45	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	0.010	0.00	0.00	0.000	0.000	10.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19G	41178	WHITELEY 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												
20.430	0.02	0.00	0.02	.0309	0.00400	.317	4.58	14.45	0.03	2.604	21.80	7.00
Q1-10 Flow												
20.430	0.01	0.00	0.01	.0309	0.00400	NA	NA	NA	0.03	2.814	21.32	7.00
Q30-10 Flow												
20.430	0.02	0.00	0.02	.0309	0.00400	NA	NA	NA	0.04	2.433	22.16	7.00

WQM 7.0 Modeling Specifications

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

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19G	41178	WHITELEY 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
20.430	Iron Cumberland	15.02	4	15.02	4	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
20.430	Iron Cumberland	1.64	2	1.64	2	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)		
20.43	Iron Cumberland	25	25	2	2	6	6	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19G	41178	WHITELEY CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
20.430	0.020	21.796	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
4.577	0.317	14.455	0.033
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
16.74	0.751	1.28	0.804
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.806	19.465	Owens	6
Reach Travel Time (days)			
2.604			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.260	13.53	1.04	7.76
0.521	10.94	0.84	7.98
0.781	8.85	0.68	7.98
1.042	7.16	0.55	7.98
1.302	5.79	0.45	7.98
1.562	4.68	0.37	7.98
1.823	3.78	0.30	7.98
2.083	3.06	0.24	7.98
2.344	2.47	0.19	7.98
2.604	2.00	0.16	7.98

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19G	41178	WHITELEY 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)
20.430	Iron Cumberland	PA0216666	0.000	CBOD5	25		
				NH3-N	2	4	
				Dissolved Oxygen			6

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
19G	41178	WHITELEY CREEK	20.430	1080.00	1.77	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	0.020	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Iron Cumberland	PA0216666	0.0000	0.0200	0.0000	0.000	15.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	6.00	12.51	0.00	0.00
NH3-N	4.00	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
19G	41178	WHITELEY CREEK	19.010	1050.00	5.45	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	0.020	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19G	41178	WHITELEY 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												
20.430	0.03	0.00	0.03	.0309	0.00400	.332	4.99	15.03	0.04	2.196	9.73	7.00
Q1-10 Flow												
20.430	0.02	0.00	0.02	.0309	0.00400	NA	NA	NA	0.04	2.471	10.83	7.00
Q30-10 Flow												
20.430	0.05	0.00	0.05	.0309	0.00400	NA	NA	NA	0.04	1.992	8.97	7.00

WQM 7.0 Modeling Specifications

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

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19G	41178	WHITELEY 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
20.430	Iron Cumberland	24.1	8	24.1	8	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
20.430	Iron Cumberland	3.84	4	3.84	4	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)		
20.43	Iron Cumberland	25	25	4	4	6	6	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19G	41178	WHITELEY CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
20.430	0.020	9.727	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
4.989	0.332	15.025	0.040
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
12.87	1.176	1.89	0.317
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
9.433	15.007	Owens	6
Reach Travel Time (days)			
2.196			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.220	10.96	1.76	10.20
0.439	9.32	1.64	10.20
0.659	7.94	1.53	10.20
0.878	6.76	1.43	10.20
1.098	5.75	1.33	10.20
1.318	4.89	1.24	10.20
1.537	4.17	1.16	10.20
1.757	3.55	1.08	10.20
1.976	3.02	1.01	10.20
2.196	2.57	0.94	10.20

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19G	41178	WHITELEY 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)
20.430	Iron Cumberland	PA0216666	0.000	CBOD5	25		
				NH3-N	4	8	
				Dissolved Oxygen			6

ATTACHMENT C

TRC Modeling Results

TRC_CALC_PA0216666

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0173	= Q stream (cfs)	0.5	= CV Daily
0.02	= 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)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	0.197	1.3.2.iii	WLA cfc =	0.185
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.074	5.1d	LTA_cfc =	0.107

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.091	AFC
		INST MAX LIMIT (mg/l) =	0.296	

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)