pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0097047**
Facility Type	**Non-Municipal**	APS ID	**854583**
Major / Minor	**Minor**	Authorization ID	**1296900**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Westmoreland County Housing Authority**	Facility Name	**Nike Site 37 Shaner Hts STP**
Applicant Address	167 S Greengate Road	Facility Address	Mars Hill Road
	Greensburg, PA 15601		Rillton, PA 15637
Applicant Contact	Erik Spiegel	Facility Contact	Same as applicant
Applicant Phone	(724) 832-7248	Facility Phone	Same as applicant
Client ID	63969	Site ID	4632
Ch 94 Load Status	Not Overloaded	Municipality	Sewickley Township
Connection Status		County	Westmoreland
Date Application Received	November 20, 2019	EPA Waived?	Yes
Date Application Accepted	November 25, 2019	If No, Reason	
Purpose of Application	NPDES Renewal		

Summary of Review

The permittee has applied for a renewal of NPDES Permit No. PA0097047 on November 20, 2019. NPDES Permit No. PA0097047 was previously issued by the PA Department of Environmental Protection (DEP) on June 24, 2015 and expired on June 30, 2020.

Sewage from this facility is treated through aeration, a clarifier, and chlorination before discharging to an unnamed tributary of Little Sewickley Creek through outfall 001.

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

The applicant has complied with Act 14 Notifications and no comments were received.

Public Participation

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

Approve	Deny	Signatures	Date
X		Jordan T Coldsmith Jordan Coldsmith / Environmental Engineering Specialist	April 12, 2022
x		Mahbuba Iasmin Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineering Manager	April 18, 2022

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.008
Latitude	40º 16' 39.22"	Longitude	-79º 44' 17.83"
Quad Name		Quad Code	40079C6
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary of Little Sewickley Creek (TSF)	Stream Code	37560
NHD Com ID	69912563	RMI	1.91
Drainage Area	3.39	Yield (cfs/mi^2)	0.0184
Q_{7-10} Flow (cfs)	0.0352	Q_{7-10} Basis	USGS StreamStat
Elevation (ft)		Slope (ft/ft)	
Watershed No.	19-D	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	**Iron, Manganese, Aluminum, pH.**		
Source(s) of Impairment	**Acid Mine Drainage (AMD)**		
TMDL Status	Final	Name	Sewickley Creek Watershed

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

Nearest Downstream Public Water Supply Intake	WEST CNTY MUNI AUTH MCKEESPORT		
PWS Waters	Youghiogheny River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	21.3

Changes Since Last Permit Issuance: None

Other Comments: This facility discharges to the Sewickley Creek Watershed. This Watershed has a Final TMDL and is impaired by metals. Abandoned mine drainage is a source of such impairment. Nike Site 37 Shaner Hts STP (PA0097047) was initially permitted on September 11, 1995 and is not identified in the TMDL, which was finalized on March 12, 2009. Therefore, this sewage discharge is not expected to contribute to the stream impairment. No WLAs have been developed for this sewage discharge, and they are not expected to contribute to the stream impairment for these pollutants. No monitoring requirements for Total Iron, Total Manganese and Total Aluminum will be imposed on this facility.

Treatment Facility Summary

Treatment Facility Name: Nike Site 37 Shaner Hts STP

WQM Permit No.	Issuance Date
6595406	09/11/1995

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Activated Sludge	Hypochlorite	0.008

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.008	15	Not Overloaded		Other WWTP

Changes Since Last Permit Issuance: None

Other Comments: N/A

Compliance History

Operations Compliance Check Summary Report

Facility: Nike Site 37 Shaner Hts STP

NPDES Permit No.: PA0097047

Compliance Review Period: 3/2017 – 3/2022

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
3007361	03/02/2020	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted

Violation Summary:

No Violations

Open Violations by Client ID:

No open violations for client id 63969

Enforcement Summary:

No open enforcements

DMR Violation Summary:

MONITORING END DATE	OUTFALL	PARAMETER	STATISTICAL BASE CODE	PERMIT VALUE	SAMPLE VALUE	UNIT OF MEASURE
1/31/2018	1	Flow	Average Monthly	0.008	0.009	MGD
6/30/2018	1	Total Suspended Solids	Instantaneous Maximum	60	84	mg/L

Compliance Status:

Permittee in compliance.

Completed by: John Murphy

Completed date: 3/17/2022

Compliance History

DMR Data for Outfall 001 (from March 1, 2021 to February 28, 2022)

Parameter	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21
Flow (MGD) Average Monthly	0.006	0.004	0.004	0.004	0.0050	0.003	0.005	0.003	0.003	0.003	0.003	0.003
pH (S.U.) Minimum	6.5	6.4	6.2	6.4	6.5	6.3	6.2	6.5	6.3	6.2	6.4	6.3
pH (S.U.) Maximum	7.3	7.2	7.1	7.2	7.2	7.2	7.1	7.2	7.2	7.3	7.1	7.1
DO (mg/L) Minimum	6.9	6.4	5.1	6.1	5.6	5.0	5.0	5.0	5.0	5.1	6.7	6.3
TRC (mg/L) Average Monthly	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
TRC (mg/L) Instantaneous Maximum	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
CBOD5 (mg/L) Average Monthly	3.0	5.0	4	3	3	3.0	3	3	3	3	3	3
CBOD5 (mg/L) Instantaneous Maximum	3.0	6.0	4	3	3	3.0	3	3	3	3	3	3
TSS (mg/L) Average Monthly	3.0	5.0	6	5	3	3.0	3	5	5	6	2	6
TSS (mg/L) Instantaneous Maximum	4.0	8.0	8	6	5	4.0	5	5	7	10	3	11
Fecal Coliform (CFU/100 ml) Geometric Mean	3	18	12	1	1	2	12	1	2	1	1	1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	10	325	71	1	1	4	16	1	5	1	1	2
Total Nitrogen (mg/L) Daily Maximum			1.345									
Ammonia (mg/L) Average Monthly	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
Ammonia (mg/L) Instantaneous Maximum	0.1	0.1	0.1	0.4	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.1
Total Phosphorus (mg/L) Daily Maximum			3.000									

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .008
Latitude 40º 16' 27.00" **Longitude** -79º 44' 26.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Comments: The previously issued permit imposed the above technology-based limitation on this facility due to adequate flow at the point of first surface water use, i.e., Unnamed Tributary of Little Sewickley Creek. Planning and Permitting of the existing facility occurred prior to finalization of DEP Guidance Document 391-2000-014 (April 12, 2008), Policy and Procedure for Evaluating Wastewater Dischargers to Intermittent and Ephemeral Stream, Drainage Channels and Swales, and Storm Sewer

Advanced Treatment Requirements

In accordance with the Department Guidance Document, *Policy and Procedure for Evaluating Wastewater Dischargers to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers,* this facility is subject to a higher degree of treatment due to the lack of assimilative capacity in the receiving stream. The facility therefore should be subject to the following advanced treatment requirements:

Parameter	(mg/l)
Dissolved Oxygen	6.0
$CBOD_5$	10.0
Total Suspended Solids (TSS)	10.0
Total Nitrogen	5.0
Total Phosphorus	0.5

However, per Section I.C.3 of the Department's SOP, Establishing Effluent Limitations for Individual Sewage Permits, states the following:

For renewal permits of an existing discharge, if the more stringent treatment requirements cannot be achieved, do not apply the standards in DEP's Policy and Procedure for Evaluating Wastewater Dischargers to Intermittent and Ephemeral Stream, Drainage Channels and Swales, and Storm Sewer (391-2000-014) unless the receiving stream is impaired and the point source discharge contributes to the impairment.

The receiving stream is not impaired by nutrients and the point source discharge from Outfall 001 is not contributing to the impairment of UNT of Little Sewickley Creek. The existing discharge will not be able to meet all of the more stringent treatment requirements of DEP Guidance Document 391-2000-014 therefore, in accordance with Department Policy for facilities that discharge to a dry swale, water quality-based effluents will be evaluated at the point of first use. Based on eMAP PA Satellite Imagery and stream information as well as USGS Stream Stats stream information, the point of first use was determined to occur at an RMI of 1.91 miles on the Unnamed Tributary of Little Sewickley Creek (ID 37560). The Technology-based effluent limitations and water quality-based effluent limits will be compared, and the facility will receive the stricter of the two limits.

Design flow increases to this facility will not be approved without applying the more stringent treatment requirements found in DEP Guidance Document 391-2000-014.

Water Quality-Based Limitations

The effluent was modeled using WQM 7.0 to evaluate the $CBOD_5$, Ammonia Nitrogen and Dissolved Oxygen parameters. Modeling determined that technology-based limits are appropriate for $CBOD_5$, however, water quality-based limits are necessary for Ammonia Nitrogen. WQM 7.0 output files are attached.

Total Residual Chlorine (TRC) was re-modeled with the TRC Spreadsheet, and it was determined that a stricter limit should be imposed. TRC Spreadsheet output files are attached

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	4.0	Instantaneous Minimum	WQM 7.0
Ammonia-Nitrogen May-October	7.0	Average Monthly	WQM 7.0
Ammonia-Nitrogen November- April	21.0	Average Monthly	WQM 7.0
Total Residual Chlorine	0.4	Average Monthly	TRC_CALC

Comments: The facility is receiving new, more restrictive limits for TRC. and Ammonia-Nitrogen this permit cycle. Based on eDMR data, the facility as currently operating is able to meet the new, more restrictive TRC and Ammonia-Nitrogen limit. This limit will become effective when the permit becomes effective.

Best Professional Judgment (BPJ) Limitations

A Dissolved Oxygen minimum limitation of 4.0 mg/L will be implemented based on the standard in 25 PA Code Chapter 93 and best professional judgment.

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 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.

Additional Considerations

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, sewage discharges will include monitoring, at a minimum, for *E. coli*, in new and reissued permits, with a monitoring frequency of 1/year for design flows of >0.002 – 0.05 MGD per Chapter 92.a.61.

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Departments Technical Guidance for the Development and Specification of Effluent Limitations. Please note that Monitoring Requirements were changed for Flow to 1/week Metered to be consistent with the guidance.

For existing discharges (NPDES Renewal Applications), if WQM7.0 modeling results for summer indicates that an average monthly warm period limit of 25 mg/L (default in model) is acceptable for ammonia-nitrogen, a year-round monitoring requirement, at a minimum should be established. Since technology-based effluent limitations are applicable for this facility, assume that a monthly warm period limit of 25 mg/L is acceptable for ammonia-nitrogen and impose a year-round monitoring requirement for ammonia-nitrogen that is consistent with Table 6-3 of the Permit Writers Manual. Application data for Outfall # 001 indicates that long-term average ammonia-nitrogen concentration in the discharge is less than 0.5 mg/L.

An annual sampling frequency for total phosphorus and total nitrogen will again be imposed per 25 PA Code §92a.61.

Per section IV.E.8 of the DEP SOP No. BCW-PMT-002 – New and Reissuance Sewage individual NPDES permit applications (revised, February 3, 2022), which covers facilities with design flows greater than 2000 GPD and for non-municipal facilities that service municipalities or portions thereof, influent BOD5 and TSS monitoring will be established for this facility.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	0.008	XXX	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	0.4	XXX	1.4	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	40.0	2/month	Grab
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	Grab
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	Grab
TSS	XXX	XXX	XXX	30.0	XXX	45.0	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	21.0	XXX	42.0	2/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	7.0	XXX	14.0	2/month	Grab

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001

Other Comments: None

ATTACHMENT A

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
19D	37560	Trib 37560 to Little Sewickley Cr	**1.910**	1097.00	3.39	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	0.018	0.04	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
Shaner Hts STP	PA0097047	0.0080	0.0000	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	4.00	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
19D	37560	Trib 37560 to Little Sewickley Cr

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												
1.910	0.04	0.00	0.04	.0124	0.00249	.325	5.3	16.31	0.03	4.226	23.69	7.00
Q1-10 Flow												
1.910	0.02	0.00	0.02	.0124	0.00249	NA	NA	NA	0.02	5.024	23.22	7.00
Q30-10 Flow												
1.910	0.05	0.00	0.05	.0124	0.00249	NA	NA	NA	0.03	3.703	23.97	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
19D	37560	Trib 37560 to Little Sewickley Cr

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
1.910	Shaner Hts STP	12.83	36.06	12.83	36.06	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
1.910	Shaner Hts STP	1.46	7.08	1.46	7.08	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)		
1.91	Shaner Hts STP	25	25	7.08	7.08	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19D	37560	Trib 37560 to Little Sewickley Cr

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.910	0.008	23.694	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
5.303	0.325	16.308	0.027
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
8.01	0.277	1.85	0.930
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.135	17.032	Owens	6
Reach Travel Time (days)			
4.226			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.423	6.97	1.25	7.71
0.845	6.07	0.84	7.71
1.268	5.28	0.57	7.71
1.690	4.60	0.38	7.71
2.113	4.00	0.26	7.71
2.535	3.48	0.17	7.71
2.958	3.03	0.12	7.71
3.380	2.64	0.08	7.71
3.803	2.30	0.05	7.71
4.226	2.00	0.04	7.71

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19D	37560	Trib 37560 to Little Sewickley Cr

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)
1.910	Shaner Hts STP	PA0097047	0.008	CBOD5	25		
				NH3-N	7.08	14.16	
				Dissolved Oxygen			4

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
19D	37560	Trib 37560 to Little Sewickley Cr	**1.910**	1097.00	3.39	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	0.036	0.04	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
Shaner Hts STP	PA0097047	0.0080	0.0000	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	4.00	12.51	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
19D	**37560**	**Trib 37560 to Little Sewickley Cr**

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												
1.910	0.04	0.00	0.04	.0124	0.00249	.325	5.3	16.31	0.03	4.226	7.61	7.00
Q1-10 Flow												
1.910	0.02	0.00	0.02	.0124	0.00249	NA	NA	NA	0.02	5.024	8.56	7.00
Q30-10 Flow												
1.910	0.05	0.00	0.05	.0124	0.00249	NA	NA	NA	0.03	3.703	7.06	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
19D	37560	Trib 37560 to Little Sewickley Cr

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
1.910	Shaner Hts STP	24.1	50	24.1	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
1.910	Shaner Hts STP	4.35	21.06	4.35	21.06	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)		
1.91	Shaner Hts STP	25	25	21.06	21.06	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19D	37560	Trib 37560 to Little Sewickley Cr

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.910	0.008	7.612	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
5.303	0.325	16.308	0.027
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
8.01	0.580	5.50	0.270
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
10.287	11.631	Owens	6
Reach Travel Time (days)			
4.226			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.423	6.97	4.91	10.73
0.845	6.07	4.38	10.73
1.268	5.28	3.91	10.73
1.690	4.60	3.49	10.73
2.113	4.00	3.11	10.73
2.535	3.48	2.78	10.73
2.958	3.03	2.48	10.73
3.380	2.64	2.21	10.73
3.803	2.30	1.97	10.73
4.226	2.00	1.76	10.73

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19D	37560	Trib 37560 to Little Sewickley Cr

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)
1.910	Shaner Hts STP	PA0097047	0.008	CBOD5	25		
				NH3-N	21.06	42.12	
				Dissolved Oxygen			4

ATTACHMENT B

TRC Modeling Results

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0352	= Q stream (cfs)	0.5	= CV Daily
0.008	= 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 = 0.926	1.3.2.iii	WLA cfc = 0.896
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.345	5.1d	LTA_cfc = 0.521

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.425	AFC
		INST MAX LIMIT (mg/l) = 1.389	

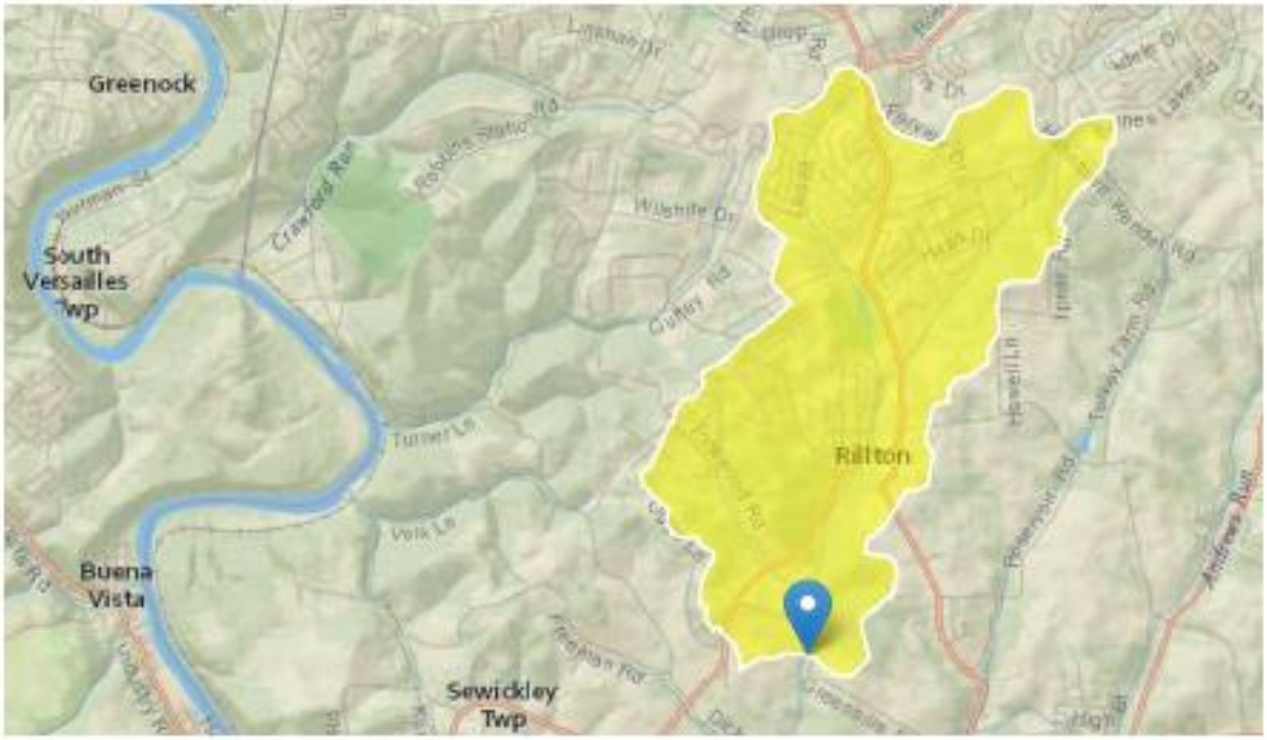
WLA afc	(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))... ...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))... ...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT_cfc	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)

ATTACHMENT C

USGS Stream Stats Output

StreamStats Report

Region ID: PA
Workspace ID: PA20220127143502868000
Clicked Point (Latitude, Longitude): 40.27109, -79.73431
Time: 2022-01-27 09:35:22 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	3.39	square miles
ELEV	Mean Basin Elevation	1097	feet

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.39	square miles	2.26	1400

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
ELEV	Mean Basin Elevation	1097	feet	1050	2580

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

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.105	ft^3/s	43	43
30 Day 2 Year Low Flow	0.19	ft^3/s	38	38
7 Day 10 Year Low Flow	0.0352	ft^3/s	66	66
30 Day 10 Year Low Flow	0.0682	ft^3/s	54	54
90 Day 10 Year Low Flow	0.129	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/)

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

StreamStats Report

Region ID: PA
Workspace ID: PA20220127144658909000
Clicked Point (Latitude, Longitude): 40.25646, -79.74858
Time: 2022-01-27 09:47:19 -0500

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	4.91	square miles
ELEV	Mean Basin Elevation	1072	feet

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.91	square miles	2.26	1400

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
ELEV	Mean Basin Elevation	1072	feet	1050	2580

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

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.157	ft^3/s	43	43
30 Day 2 Year Low Flow	0.279	ft^3/s	38	38
7 Day 10 Year Low Flow	0.0549	ft^3/s	66	66
30 Day 10 Year Low Flow	0.103	ft^3/s	54	54
90 Day 10 Year Low Flow	0.19	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/)

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

ATTACHMENT D

eMAP PA Site Imagery