pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0098060**
Facility Type	**Non-Municipal**	APS ID	**893475**
Major / Minor	**Minor**	Authorization ID	**1371063**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Eugene J. Smith, Jr. and Jackie A. Smith**	Facility Name	**Smithwind MHP STP**
Applicant Address	106 Chrissy's Crossing Fombell, PA 16123-1804	Facility Address	Lancaster Road Fombell, PA 16123
Applicant Contact	Eugene/Jackie Smith	Facility Contact	Same as applicant
Applicant Phone	(724) 816-7640	Facility Phone	Same as applicant
Client ID	43972	Site ID	240130
Ch 94 Load Status	Not Overloaded	Municipality	Franklin Township
Connection Status		County	Beaver
Date Application Received	September 21, 2021	EPA Waived?	Yes
Date Application Accepted	September 30, 2021	If No, Reason	

Purpose of Application: Application for a renewal of an NPDES permit for discharge of treated sewage

Summary of Review

The permittee has applied for a renewal of NPDES Permit No. PA0098060. NPDES Permit No. PA0098060 was previously issued by the PA Department of Environmental Protection (DEP) on April 1, 2017 and expires on March 31, 2022.

Sewage from this facility is treated with:

- Four (4) septic tanks
- Two (2) holding tanks
- Two (2) wet wells (with float system)
- Two (2) gravity sand filters
- One (1) chlorinator
- One (1) dechlorinator

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

The Act-14 PL 834 Municipal Notification was provided by the June 30, 2021 letters and no comments were received.

Approve	Deny	Signatures	Date
X		Grace Polakoski Grace Polakoski, E.I.T. / Environmental Engineering Specialist	October 6, 2021
X		Christopher Kriley Christopher Kriley, P.E. / Program Manager	October 21, 2021

Summary of Review
Sludge use and disposal description and location(s): sludge is hauled off-site by an external operator 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.	001	Design Flow (MGD)	0.0022
Latitude	40º 50' 48.00"	Longitude	-80º 12' 3.00"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	UNT of Slippery Rock Creek	Stream Code	34037
NHD Com ID		RMI	0.2
Drainage Area	0.0886 sq mi	Yield (cfs/mi^2)	0.0047
Q_{7-10} Flow (cfs)	0.000417	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1,153	Slope (ft/ft)	
Watershed No.	17-D	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)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	PA American Water Co Ellwood City		
PWS Waters		Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	3.6

Changes Since Last Permit Issuance:

Other Comments:

Treatment Facility Summary

Treatment Facility Name: Smithwind MHP STP

WQM Permit No.	Issuance Date
0487410	06/13/1989
0487410 T-1	05/09/1994

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Septic tank with sand filter	Chlorine	0.0022

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0022	30	Not Overloaded	N/A	External hauler

Changes Since Last Permit Issuance: N/A

Other Comments:

Compliance History

DMR Data for Outfall 001 (from September 1, 2020 to August 31, 2021)

Parameter	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20
Flow (MGD) Average Monthly	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Flow (MGD) Daily Maximum	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
pH (S.U.) Minimum	6.5	6.55	6.8	6.51	6.61	7.29	7.21	7.31	7.18	6.93	7.18	6.59
pH (S.U.) Maximum	6.7	7.55	7.11	7.05	7.08	7.68	7.53	7.7	7.67	7.40	7.31	7.33
DO (mg/L) Minimum	5.01	5.59	6.0	6.01	6.0	6.01	6.04	6.01	6.01	6.01	6.32	7.20
TRC (mg/L) Average Monthly	0.01	0.01	0.02	0.019	0.22	0.01	0.02	0.01	0.01	0.02	0.02	0.021
TRC (mg/L) Instantaneous Maximum	0.03	0.06	0.04	0.06	0.07	0.03	0.07	0.05	0.03	0.09	0.06	0.07
CBOD5 (mg/L) Average Monthly	9.80	9.75	7.9	7.0	17.25	8.95	6.4	7.5	7.16	5.55	6.03	5.95
TSS (mg/L) Average Monthly	8.0	7.0	2.4	3.5	67.5	1.5	1.0	4.0	5.66	1.0	8.66	5.95
Fecal Coliform (No./100 ml) Geometric Mean	14.83	9.48	9.64	4.89	10.39	4.2	0.02	1.00	5.60	1.00	6.83	4.47
Fecal Coliform (No./100 ml) Instantaneous Maximum	22	15	31	6	36	18	1.0	1.00	11	1.00	32	20
Total Nitrogen (mg/L) Instantaneous Maximum									12.0			
Ammonia (mg/L) Average Monthly	4.45	0.5	1.36	1.04	2.52	0.30	2.52	3.24	2.53	1.83	2.39	0.6
Ammonia (mg/L) Instantaneous Maximum	6.07	0.7	1.75	1.44	3.0	0.30	2.66	3.24	6.04	2.83	4.99	0.90
Total Phosphorus (mg/L) Instantaneous Maximum									2.0			

Compliance History

Effluent Violations for Outfall 001, from: October 1, 2020 To: August 31, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TRC	04/30/21	Avg Mo	0.22	mg/L	0.06	mg/L
TSS	04/30/21	Avg Mo	67.5	mg/L	30.0	mg/L
Ammonia	08/31/21	Avg Mo	4.45	mg/L	2.5	mg/L
Ammonia	08/31/21	IMAX	6.07	mg/L	5.0	mg/L

Summary of Inspections:

Other Comments:

Compliance Review Period: 10/7/2016 – 10/7/2021
Open Violations by Client Summary:
None.

Inspection Summary

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC	INSPECTION COMMENT	# OF VIOLATIONS
2533120	11/01/2016	Administrative/File Review	PA Dept of Environmental Protection	Violation(s) Noted		1
2575749	03/24/2017	Complaint Inspection	PA Dept of Environmental Protection	No Violations Noted		0
3209074	06/22/2021	Administrative/File Review	PA Dept of Environmental Protection	Administratively Closed	Review of eDMR Non-Compliance data for routine monitoring	0
2797146	11/01/2018	Administrative/File Review	PA Dept of Environmental Protection	Violation(s) Noted		1
2838889	02/12/2019	Compliance Evaluation	PA Dept of Environmental Protection	Violation(s) Noted		1
2726074	05/03/2018	Administrative/File Review	PA Dept of Environmental Protection	Violation(s) Noted		1

Violation Summary

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE
771459	11/01/2016	302.202	Operator Certification - Failure to submit annual system fee	11/15/2016
815653	05/03/2018	92A.62	NPDES - Failure to pay annual fee	05/09/2018
832238	11/01/2018	302.202	Operator Certification - Failure to submit annual system fee	01/31/2019
845005	02/12/2019	92A.44	NPDES - Violation of effluent limits in Part A of permit	03/26/2019

Enforcement Summary

ENF ID	ENF TYPE DESC	EXECUTED DATE	ENF FINALSTATUS	ENF CLOSED DATE
348336	Notice of Violation	11/01/2016	Comply/Closed	11/15/2016
363674	Notice of Violation	05/03/2018	Comply/Closed	05/09/2018
368936	Notice of Violation	11/01/2018	Comply/Closed	01/31/2019
373347	Notice of Violation	03/26/2019	Administrative Close Out	12/09/2019

eDMR Violation Summary: 10/7/2016 – 10/7/2021

MONITORING END DATE	OUTFALL	PARAMETER	SAMPLE VALUE	PERMIT VALUE	UNIT OF MEASURE	STATISTICAL BASE CODE
05/31/2017	001	Dissolved Oxygen	0.0	5.0	mg/L	Minimum
05/31/2017	001	Carbonaceous Biochemical Oxygen Demand (CBOD5)	116.4	25.0	mg/L	Average Monthly
05/31/2017	001	Total Residual Chlorine (TRC)	0.60	0.06	mg/L	Average Monthly
05/31/2017	001	Total Suspended Solids	227.0	30.0	mg/L	Average Monthly
05/31/2017	001	Total Residual Chlorine (TRC)	0.90	0.14	mg/L	Instantaneous Maximum
06/30/2017	001	Dissolved Oxygen	0.0	5.0	mg/L	Minimum
06/30/2017	001	Carbonaceous Biochemical Oxygen Demand (CBOD5)	30.75	25.0	mg/L	Average Monthly
06/30/2017	001	Fecal Coliform	347	200	No./100 ml	Geometric Mean
06/30/2017	001	Total Suspended Solids	46.0	30.0	mg/L	Average Monthly
06/30/2017	001	Fecal Coliform	24200	1000	No./100 ml	Instantaneous Maximum
07/31/2017	001	Dissolved Oxygen	3.4	5.0	mg/L	Minimum
07/31/2017	001	Fecal Coliform	219	200	No./100 ml	Geometric Mean
07/31/2017	001	Total Residual Chlorine (TRC)	0.07	0.06	mg/L	Average Monthly
07/31/2017	001	Fecal Coliform	4839	1000	No./100 ml	Instantaneous Maximum
07/31/2017	001	Total Residual Chlorine (TRC)	0.56	0.14	mg/L	Instantaneous Maximum
08/31/2017	001	Total Residual Chlorine (TRC)	0.82	0.06	mg/L	Average Monthly
08/31/2017	001	Total Residual Chlorine (TRC)	6.06	0.14	mg/L	Instantaneous Maximum
09/30/2017	001	Total Residual Chlorine (TRC)	0.87	0.06	mg/L	Average Monthly
09/30/2017	001	Total Residual Chlorine (TRC)	6.05	0.14	mg/L	Instantaneous Maximum
10/31/2017	001	Total Residual Chlorine (TRC)	0.41	0.06	mg/L	Average Monthly
03/31/2018	001	Total Residual Chlorine (TRC)	0.11	0.06	mg/L	Average Monthly

03/31/2018	001	Total Residual Chlorine (TRC)	0.62	0.14	mg/L	Instantaneous Maximum
06/30/2018	001	Dissolved Oxygen	4.9	5.0	mg/L	Minimum
06/30/2018	001	Fecal Coliform	2420	1000	No./100 ml	Instantaneous Maximum
07/31/2018	001	Dissolved Oxygen	4.81	5.0	mg/L	Minimum
07/31/2018	001	Total Residual Chlorine (TRC)	0.30	0.14	mg/L	Instantaneous Maximum
10/31/2018	001	Total Residual Chlorine (TRC)	0.45	0.06	mg/L	Average Monthly
01/31/2019	001	Dissolved Oxygen	4.09	5.0	mg/L	Minimum
03/31/2019	001	Dissolved Oxygen	4.03	5.0	mg/L	Minimum
04/30/2019	001	Total Residual Chlorine (TRC)	0.24	0.06	mg/L	Average Monthly
05/31/2019	001	Fecal Coliform	28412	200	No./100 ml	Geometric Mean
05/31/2019	001	Fecal Coliform	6000	1000	No./100 ml	Instantaneous Maximum
10/31/2019	001	Ammonia-Nitrogen	2.8	2.5	mg/L	Average Monthly
10/31/2019	001	Ammonia-Nitrogen	5.4	5.0	mg/L	Instantaneous Maximum
06/30/2020	001	Ammonia-Nitrogen	14.5	2.5	mg/L	Average Monthly
06/30/2020	001	Ammonia-Nitrogen	15.0	5.0	mg/L	Instantaneous Maximum
07/31/2020	001	Ammonia-Nitrogen	2.58	2.5	mg/L	Average Monthly
04/30/2021	001	Total Residual Chlorine (TRC)	0.22	0.06	mg/L	Average Monthly
04/30/2021	001	Total Suspended Solids	67.5	30.0	mg/L	Average Monthly
08/31/2021	001	Ammonia-Nitrogen	4.45	2.5	mg/L	Average Monthly
08/31/2021	001	Ammonia-Nitrogen	6.07	5.0	mg/L	Instantaneous Maximum

Compliance Status:
Facility has had numerous effluent violations since 2017, and Operations will be inspecting this site in the future to deal with continued noncompliance.

Completed by: David Roote
Completed date: 10/7/2021

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0022
Latitude 40º 50' 48.00" **Longitude** -79º 12' 3.00"
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:

Water Quality-Based Limitations

The discharge was evaluated using WQM 7.0 to evaluate the $CBOD_5$, Ammonia Nitrogen and Dissolved Oxygen parameters. The modeling results show technology based effluent limitations for $CBOD_5$ are appropriate. The modeling results also confirm that Ammonia-Nitrogen and Dissolved Oxygen limitations are necessary to meet in-stream water quality criterion.

The discharge was evaluated using the Total Residual Chlorine (TRC) spreadsheet. The modeling results confirm that a total residual chlorine limit is necessary to meet the in-stream water quality criterion. The TRC spreadsheet did recommend a limit of 0.027 mg/L but since the detection limit for TRC is 0.02 mg/L, the limit has been rounded to 0.03 mg/L for this permit.

The summer Ammonia-Nitrogen, dissolved oxygen, and total residual chlorine limits for this permit are stricter than those previously imposed, however, the facility should be able to comply with the new limits.

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

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	5.0	Minimum	WQM7.0
Ammonia-Nitrogen (Nov 1 – Apr 30)_	6.0	Average Monthly	WQM7.0
Ammonia-Nitrogen (May 1 – Oct 31)	2.2	Average Monthly	WQM7.0
Total Residual Chlorine (TRC)	0.03	Average Monthly	WQM7.0

Comments:

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

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 >= 0.002 and < 0.05 MGD.

The receiving stream is not impaired for nutrients, therefore, annual sampling for nitrogen and phosphorus will be imposed per 25 PA Code §92a.6.

For pH, DO, and TRC, a monitoring frequency of 1/day has been imposed. In general, less frequent monitoring may be established only when the permittee demonstrates that there will be no discharge on days where monitoring is not required.

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.

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	0.0022	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.03	XXX	0.087	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
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	XXX	Report	1/year	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	6.0	XXX	12.0	2/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.2	XXX	4.4	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

Compliance Sampling Location: Outfall 001

Other Comments:

ATTACHMENT A:
WQM7.0 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
	20C	34037	Trib 34037 of Slippery Rock Creek	**0.200**	1153.00	0.09	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	0.005	0.00	0.00	0.000	0.000	10.0	0.00	0.00	20.00	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
Smithwind MHP	PA0098060	0.0022	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	5.00	9.01	0.00	0.00
NH3-N	2.50	0.00	0.00	0.70

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
20C	34037	Trib 34037 of Slippery Rock 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												
0.200	0.00	0.00	0.00	.0034	0.00399	.221	1.11	5.04	0.02	0.747	20.00	7.00
Q1-10 Flow												
0.200	0.00	0.00	0.00	.0034	0.00399	NA	NA	NA	0.02	0.764	20.00	7.00
Q30-10 Flow												
0.200	0.00	0.00	0.00	.0034	0.00399	NA	NA	NA	0.02	0.731	20.00	7.00

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20C	34037	Trib 34037 of Slippery Rock Creek

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.200	Smithwind MHP	16.76	5	16.76	5	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
0.200	Smithwind MHP	1.89	2.2	1.89	2.2	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)		
0.20	Smithwind MHP	25	25	2.2	2.2	6	6	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34037	Trib 34037 of Slippery Rock Creek

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
0.200	Smithwind MHP	PA0098060	0.002	CBOD5	25		
				NH3-N	2.2	4.4	
				Dissolved Oxygen			6

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34037	Trib 34037 of Slippery Rock Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.200	0.002	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1.112	0.221	5.038	0.016
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
22.49	1.473	1.96	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.328	21.803	Owens	6
Reach Travel Time (days)			
0.747			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.075	20.15	1.86	6.67
0.149	18.05	1.77	6.93
0.224	16.17	1.68	7.15
0.299	14.49	1.59	7.34
0.373	12.98	1.51	7.52
0.448	11.62	1.43	7.68
0.523	10.41	1.36	7.82
0.597	9.33	1.29	7.95
0.672	8.36	1.23	8.06
0.747	7.49	1.16	8.17

ATTACHMENT B:
WQM7.0 MODELING RESULTS (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
20C	34037	Trib 34037 of Slippery Rock Creek	**0.200**	1153.00	0.09	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	0.009	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
Smithwind MHP	PA0098060	0.0022	0.0000	0.0000	0.000	5.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	12.51	0.00	0.00
NH3-N	6.00	0.00	0.00	0.70

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
20C	34037	Trib 34037 of Slippery Rock 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												
0.200	0.00	0.00	0.00	.0034	0.00399	.225	1.14	5.08	0.02	0.705	5.00	7.00
Q1-10 Flow												
0.200	0.00	0.00	0.00	.0034	0.00399	NA	NA	NA	0.02	0.734	5.00	7.00
Q30-10 Flow												
0.200	0.00	0.00	0.00	.0034	0.00399	NA	NA	NA	0.02	0.678	5.00	7.00

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20C	34037	Trib 34037 of Slippery Rock Creek

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.200	Smithwind MHP	24.1	12	24.1	12	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
0.200	Smithwind MHP	4.36	5.81	4.36	5.81	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)		
0.20	Smithwind MHP	25	25	5.81	5.81	5	5	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34037	Trib 34037 of Slippery Rock Creek

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
0.200	Smithwind MHP	PA0098060	0.002	CBOD5	25		
				NH3-N	5.81	11.62	
				Dissolved Oxygen			5

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34037	Trib 34037 of Slippery Rock Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.200	0.002	5.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1.142	0.225	5.076	0.016
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
20.48	1.462	4.67	0.221
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.476	15.334	Owens	6
Reach Travel Time (days)			
0.705			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.070	19.45	4.60	9.46
0.141	18.47	4.53	10.53
0.211	17.53	4.46	10.94
0.282	16.65	4.39	11.12
0.352	15.81	4.32	11.23
0.423	15.01	4.26	11.30
0.493	14.26	4.19	11.37
0.564	13.54	4.13	11.43
0.634	12.86	4.06	11.45
0.705	12.21	4.00	11.45

ATTACHMENT C:
TOTAL RESIDUAL CHLORINE (TRC) MODELING RESULTS

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.000417	= Q stream (cfs)	0.5	= CV Daily
0.0022	= 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 = 0.058	1.3.2.iii	WLA cfc = 0.049
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.022	5.1d	LTA_cfc = 0.029

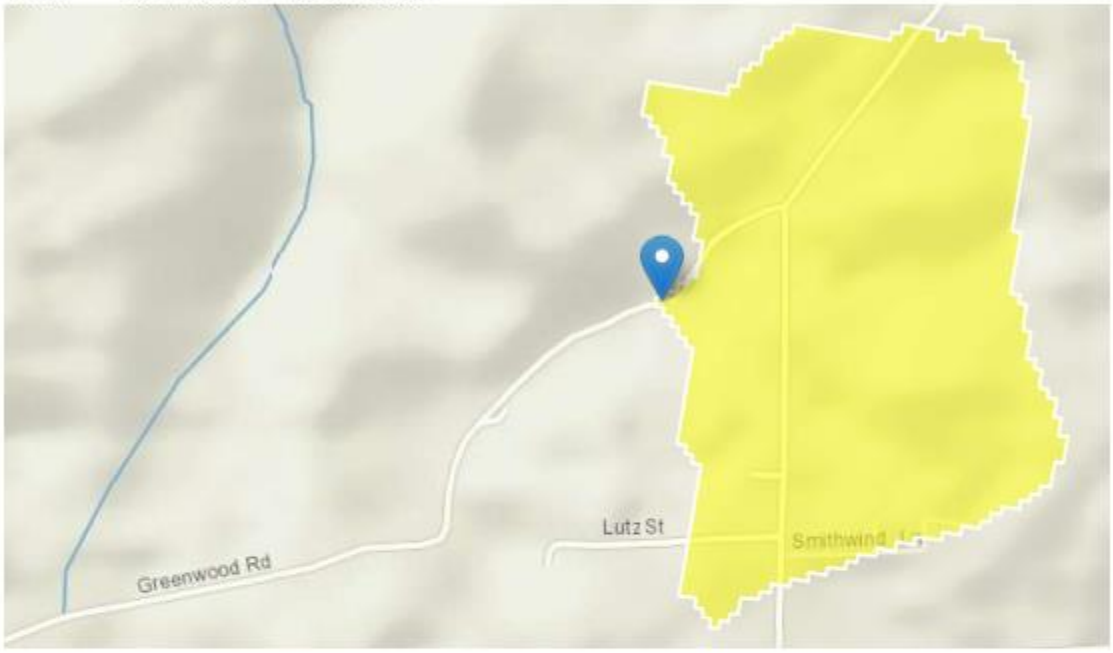
Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.027	AFC
		INST MAX LIMIT (mg/l) = 0.087	

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 D:
USGS STREAMSTATS REPORT

StreamStats Report

Region ID: PA
Workspace ID: PA20211006150014084000
Clicked Point (Latitude, Longitude): 40.84656, -80.20045
Time: 2021-10-06 11:00:34 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.0886	square miles
ELEV	Mean Basin Elevation	1217	feet

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.0886	square miles	2.26	1400

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
ELEV	Mean Basin Elevation	1217	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

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 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0018	ft^3/s
30 Day 2 Year Low Flow	0.00388	ft^3/s
7 Day 10 Year Low Flow	0.000417	ft^3/s
30 Day 10 Year Low Flow	0.00107	ft^3/s
90 Day 10 Year Low Flow	0.00248	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/)

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