Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0040380**
Facility Type	**Non-Municipal**	APS ID	**1086452**
Major / Minor	**Minor**	Authorization ID	**1436082**

Applicant and Facility Information

Applicant Name	**Sandra Moyer**	Facility Name	**Country Roads MHP**
Applicant Address	811 Rose Stop Road	Facility Address	3551 Ellwood Road
	New Castle, PA 16101-6117		New Castle, PA 16101-6137
Applicant Contact	Sandra Moyer	Facility Contact	
Applicant Phone	(724) 598-0222	Facility Phone	
Client ID	290632	Site ID	244039
Ch 94 Load Status	Not Overloaded	Municipality	Shenango Township
Connection Status	No Limitations	County	Lawrence
Date Application Received	March 31, 2023	EPA Waived?	Yes
Date Application Accepted	April 24, 2023	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit for an existing discharge of treated sewage.

Summary of Review

The mobile home park was long thought to connect to public sewer, when service was made available. Plans to have a pump station located near the facility to collect all their sewage flows and convey it was part of Shenango Township's approved 537 plan update and was also permitted as part of WQM Permit No. 3715401. The township ultimately decided not to construct the pump station, nor was the mobile home park required by the township to connect to the constructed public sewer, after objections from the permittee. The Department previously required the Permittee to connect to the public sewer during the current permit cycle, and cease the stream discharge, as a standard condition of this proposed permit and Standard Condition No. D of the current NPDES Permit. To date the permittee has not connected to public sewer and the Department has decided not to pursue the requirement to connect at this time.

There is currently one open violation (Safe Drinking Water Program) listed for the client in EFACTS. (1/30/2025).

Sludge use and disposal description and location(s): No removal of sludge reported in recent history.

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		Adam J. Pesek Adam J. Pesek, E.I.T. / Project Manager	January 30, 2025
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	February 7, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.0125
Latitude	40º 56' 16.2"	Longitude	-80º 16' 20"
Quad Name	New Castle South	Quad Code	05021
Wastewater Description:	Domestic Sewage		

Receiving Waters	Unnamed tributary to Hell Run (EV)	Stream Code	---
NHD Com ID	126221271	RMI	0.33
Drainage Area	0.09 (dry), 0.53 (perennial)	Yield (cfs/mi^2)	0.001(dry), 0.077(perennial)
Q_{7-10} Flow (cfs)	0 (dry), 0.04081 (perennial)	Q_{7-10} Basis	USGS #03102500 ('98-'00)
Elevation (ft)	1244	Slope (ft/ft)	0.01722
Watershed No.	20-C	Chapter 93 Class.	EV
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)	7.50	Median of numerous downstream samples in 2016 near mouth
Temperature (°F)	20	EV (CWF) default
Hardness (mg/L)		
Other: NH_3-N	0.1	Default

Nearest Downstream Public Water Supply Intake		PA American Water Company – Ellwood District	
PWS Waters	Connoquenessing Creek	Flow at Intake (cfs)	67
PWS RMI	0.2	Distance from Outfall (mi)	15.4

Changes Since Last Permit Issuance: The intake on Slippery Rock Creek is no longer active. The intake above is approximately 5.4 miles downstream of the old one.

Other Comments:

Treatment Facility Summary

Treatment Facility Name: Country Roads MHP

WQM Permit No.	Issuance Date
2595201 A-1	11/23/2010

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia Reduction	Stabilization Lagoon	Hypochlorite	0.0125

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0125	50	Not Overloaded	Anaerobic Digestion	Combination of methods

Changes Since Last Permit Issuance:

Other Comments:

Compliance History	
Summary of DMRs:	There have been 18 reported effluent violations since the beginning of 2019. Nine were for ammonia nitrogen, six for TRC, and three for fecal coliform.
Summary of Inspections:	A Compliance Evaluation Inspection (CEI) was conducted on 9/9/2022. No violations were noted but numerous non-compliances were noted such as improperly calibrated testing equipment, failure to submit monitoring reports, test and report for all parameters in the permit, failure to maintain permitted treatment units, properly monitor solids in the lagoons, and properly document monitoring activities and results. A CACP was executed by the Department on 9/6/2023 for effluent discharge exceedances.

Other Comments:

Compliance History

DMR Data for Outfall 001 (from December 1, 2023 to November 30, 2024)

Parameter	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23
Flow (MGD) Average Monthly		0.001			0.001	0.001	0.001				0.001	0.001
pH (S.U.) Daily Minimum		7.0			6.7	6.7	6.8				6.6	6.5
pH (S.U.) Daily Maximum		7.1			6.7	6.7	6.9				6.9	7.0
DO (mg/L) Daily Minimum		5.63			5.1	5.1	5.2				5.0	5.0
TRC (mg/L) Average Monthly		0.21			0.29	0.29	0.27				0.28	0.28
TRC (mg/L) Instantaneous Maximum		0.25			0.3	0.29	0.29				0.3	0.3
CBOD5 (mg/L) Average Monthly		< 2			< 3	3	< 2				< 10	< 2
TSS (mg/L) Average Monthly		< 8			< 5	< 5	< 6				12	< 5
Fecal Coliform (No./100 ml) Geometric Mean		< 1			< 1	> 70	< 1				< 42	< 1
Fecal Coliform (No./100 ml) Instantaneous Maximum		< 1			1	> 2420	< 1				1733	1
Total Nitrogen (lbs/day) Annual Average												0.1
Total Nitrogen (mg/L) Annual Average												17.8
Ammonia (mg/L) Average Monthly		< 0.466			< 5.3	3.578	0.875				< 4.78	3.1
Total Phosphorus (lbs/day) Annual Average												0.02
Total Phosphorus (mg/L) Annual Average												2

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0125

Latitude 40º 56' 16.20" **Longitude** -80º 16' 20.00"

Wastewater Description: Domestic sewage

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)
E. Coli	Report (No./100 ml)	IMAX	-	92a.61

Comments: Monitoring for E. Coli is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Water Quality-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Model
Ammonia Nitrogen May 1 - Oct 31	2.7	Average Monthly	WQM 7.0 Version 1.1
Dissolved Oxygen	6.0	Average Monthly	WQM 7.0 Version 1.1
Total Residual Chlorine	0.31	Average Monthly	TRC Calculation Spreadsheet
Total Residual Chlorine	1.0	IMAX	TRC Calculation Spreadsheet

Comments: Ammonia nitrogen receives a seasonal multiplier of "3."

Best Professional Judgment (BPJ) Limitations

Comments: N/A

Other Considerations

Comments: Monitoring for total nitrogen and total phosphorus were placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Anti-Backsliding

No backsliding of limits is being proposed.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	6.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.31	XXX	1.0	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	8.1	XXX	18	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.7	XXX	6	2/month	8-Hr Composite
Total Phosphorus	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite

Compliance Sampling Location: Outfall 001 (after disinfection)

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	34061	HELL RUN	**4.620**	1244.00	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	0.000	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.80	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
Country Roads M	PA0040380	0.0125	0.0000	0.0000	0.000	20.00	6.80

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	0.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

X

Adam Olesnanik, P.E. / Environmental Engineer Manager

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	34061	HELL RUN	**4.290**	1214.00	0.40	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	0.000	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.80	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
20C	34061	HELL RUN

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
4.620	0.00	0.00	0.00	.0193	0.01722	.287	1.56	5.43	0.04	0.463	20.00	6.80
Q1-10 Flow												
4.620	0.00	0.00	0.00	.0193	0.01722	NA	NA	NA	0.00	0.000	0.00	0.00
Q30-10 Flow												
4.620	0.00	0.00	0.00	.0193	0.01722	NA	NA	NA	0.00	0.000	0.00	0.00

WQM 7.0 Modeling Specifications

Parameters	D.O.	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	2		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20C	34061	HELL RUN

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
4.62	Country Roads M	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34061	HELL RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
4.620	0.012	20.000	6.800
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1.558	0.287	5.433	0.044
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
24.87	1.500	24.87	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
4.022	26.798	Owens	2
Reach Travel Time (days)			
0.463			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.046	23.20	24.08	4.18
0.093	21.64	23.31	4.39
0.139	20.19	22.57	4.60
0.185	18.83	21.84	4.81
0.232	17.57	21.15	5.00
0.278	16.39	20.47	5.19
0.324	15.29	19.82	5.37
0.371	14.26	19.19	5.54
0.417	13.31	18.57	5.70
0.463	12.41	17.98	5.85

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34061	HELL RUN

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
4.620	Country Roads M	PA0040380	0.013	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
20C	34061	HELL RUN	**4.290**	1214.00	0.53	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	0.077	0.00	0.00	0.000	0.000	0.0	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
Country Roads M	PA0040380	0.0125	0.0000	0.0000	0.000	20.00	6.80

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	12.41	2.00	0.00	1.50
Dissolved Oxygen	5.85	8.24	0.00	0.00
NH3-N	17.98	0.10	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
20C	34061	HELL RUN	**3.000**	1178.00	1.29	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	0.077	0.00	0.00	0.000	0.000	0.0	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
		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
20C	34061	HELL RUN

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
4.290	0.00	0.00	0.00	.0193	0.00529	.271	2.68	9.89	0.03	2.951	20.00	6.80
Q1-10 Flow												
4.290	0.00	0.00	0.00	.0193	0.00529	NA	NA	NA	0.03	2.954	20.00	6.80
Q30-10 Flow												
4.290	0.00	0.00	0.00	.0193	0.00529	NA	NA	NA	0.03	2.948	20.00	6.80

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
20C	34061	HELL RUN

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
4.290	Country Roads M	19.49	19.56	19.49	19.56	1	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
4.290	Country Roads M	2.01	2.02	2.01	2.02	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)		
4.29	Country Roads M	12.41	12.41	2.02	2.02	6	6	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34061	HELL RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
4.290	0.012	20.000	6.801
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
2.683	0.271	9.891	0.027
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
12.36	0.617	2.01	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.012	21.414	Owens	6
Reach Travel Time (days)			
2.951			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.295	10.30	1.64	8.24
0.590	8.58	1.33	8.24
0.885	7.16	1.08	8.24
1.180	5.96	0.88	8.24
1.476	4.97	0.72	8.24
1.771	4.14	0.58	8.24
2.066	3.45	0.47	8.24
2.361	2.88	0.39	8.24
2.656	2.40	0.31	8.24
2.951	2.00	0.26	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34061	HELL RUN

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
4.290	Country Roads M	PA0040380	0.013	CBOD5	12.41		
				NH3-N	2.02	4.04	
				Dissolved Oxygen			6

Since NH3-N is still declining Co =2.02e^(0.7x0.463) = 2.7 mg/l

1A	B	C	D	E	F	G
2	**TRC EVALUATION**			Country Roads MHP		
3	Input appropriate values in B4:B8 and E4:E7					
4	0.04081	= Q stream (cfs)		0.5	= CV Daily	
5	0.0125	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 0.692		1.3.2.iii	WLA cfc = 0.667
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 0.258		5.1d	LTA_cfc = 0.388
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.317		AFC	
18			INST MAX LIMIT (mg/l) = 1.038			

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)**

Country Roads MHP
Shenango Township, Lawrence County
PA0040380 Discharge pH

Outfall 001

Date	pH min	pH max	10^ -pH min	10^ -pH max	& pH max)	-Log (Ave pH)
Jul-21	6.28	6.65	5.25E-07	2.24E-07	3.74E-07	**6.4**
Aug-21	6.04	6.41	9.12E-07	3.89E-07	6.51E-07	**6.2**
Sep-21	6.56	6.91	2.75E-07	1.23E-07	1.99E-07	**6.7**
Jul-22	6.9	7.2	1.26E-07	6.31E-08	9.45E-08	**7.0**
Aug-22	6.9	7.2	1.26E-07	6.31E-08	9.45E-08	**7.0**
Sep-22	6.8	7.1	1.58E-07	7.94E-08	1.19E-07	**6.9**
Jul-24	6.7	6.7	2E-07	2E-07	2E-07	**6.7**
					Median:	**6.8**

There was no pH reporting during 2023 summer period or Aug & Sept 2024