pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0100676**
Facility Type	**Non-Municipal**	APS ID	**1080065**
Major / Minor	**Minor**	Authorization ID	**1425444**

Applicant and Facility Information

Applicant Name	**Reorganized Church of Jesus Christ of Latter Day St**	Facility Name	**Temple Grove Campground**
Applicant Address	9017 Chillicothe Road Temple Grove Business Office Kirtland, OH 44094-9261	Facility Address	347 Hamburg Road Transfer, PA 16154-2603
Applicant Contact	Chuck Ryhal	Facility Contact	Rich Davis
Applicant Phone	(440) 463-4695	Facility Phone	(724) 962-2530
Applicant Email	chasmel@gmail.com or cryhal@parker.com	Facility Contact	rich_davis13z@yahoo.com
Client ID	45008	Site ID	257750
Ch 94 Load Status	Not Overloaded	Municipality	Delaware Township
Connection Status	No Limitations	County	Mercer
Date Application Received	February 1, 2023	EPA Waived?	Yes
Date Application Accepted	October 4, 2023	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit for an Existing Discharge of 0.01

Summary of Review

This is a renewal NPDES Permit for an existing discharge of 0.01 from a non-municipal minor sewage facility.

Treatment permitted under WQM Permit 4371423 consists of: Two 394,000-gallon lagoons in series with aluminum sulfate addition between the first and second lagoon for Phosphorus control, followed by tablet chlorine disinfection with a 500-gallon contact tank.

Treatment permitted under WQM Permit 4305402 consisting of: A 600-gallon chlorine contact tank, a tablet dechlorination unit, and an existing 500-gallon chlorine contact tank as a dechlorination contact tank.

Act 14 – Proof of Notification was submitted and received.

SPECTIAL CONDITIONS: NONE

The EPA waiver is in effect.

There are NO open violations in WMS for the subject Client ID (45008) as of October 6, 2023 *11/14/2023 CWY*

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-

Approve	Deny	Signatures	Date
X		Aeshah Shameseldin Aeshah Shameseldin / Civil Engineer Trainee	October 10, 2023
X		Chad W. Yurisic Chad W. Yurisic, P.E. / Environmental Engineer Manager	11/14/2023

Summary of Review

day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.01
Latitude	41º 19' 45.58"	Longitude	-80º 21' 19.68"
Quad Name	Fredonia	Quad Code	41080C3
Wastewater Description:	Sewage Effluent		

Receiving Waters	Shenango River (WWF)	Stream Code	35482
NHD Com ID	130025925	RMI	49.0
Drainage Area	343 square miles	Yield (cfs/mi^2)	0.16
Q_{7-10} Flow (cfs)	54.88	Q_{7-10} Basis	Calculated
Elevation (ft)	905	Slope (ft/ft)	---
Watershed No.	20-A	Chapter 93 Class.	WWF
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)	7.0	Default
Temperature (°F)	25	Default
Hardness (mg/L)	100	Default
Other:		

Nearest Downstream Public Water Supply Intake		Pennsylvania American Water Company - New Castle	
PWS Waters	Shenango River	Flow at Intake (cfs)	16.2
PWS RMI	5.1	Distance from Outfall (mi)	42.0

Changes Since Last Permit Issuance: Amendment of an WQM Permit 4305402 to install a new chlorine contact tank and a tablet dechlorination unit has been issued on 12/23/2022.

Other Comments: None.

Treatment Facility Summary

Treatment Facility Name: Temple Grove Campground

WQM Permit No.	Issuance Date
4371423	1971 - 1972
4305402	01/30/2006

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Stabilization Lagoon	Hypochlorite	0.01

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.01	13	Not Overloaded		

Changes Since Last Permit Issuance:

Other Comments:

Compliance History

DMR Data for Outfall 001 (from September 1, 2022 to August 31, 2023)

Parameter	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22
Flow (MGD) Average Monthly	0.000379	0.001159		0.001047	0.000556	0.00215	0.002459	0.004255	0.004371	0.004443	0.006	0.0060953
Flow (MGD) Daily Maximum	0.000846	0.001748		0.003742	0.006636	0.012045	0.015859	0.014063	0.031359	0.031359	0.006	0.009711
pH (S.U.) Instantaneous Minimum	7.54	7.17		8.34	8.05	8.07	8.13	8.56	8.23	8.23	8.12	7.25
pH (S.U.) Instantaneous Maximum	7.89	7.87		8.9	8.95	8.87	8.89	8.87	8.81	8.81	8.67	8.32
DO (mg/L) Instantaneous Minimum	5.23	4.32		6.29	10.48	4.15	8.38	4.32	11.36	11.36	9.95	6.19
TRC (mg/L) Average Monthly	0.5	0.5		0.5	0.5	1.0	0.5	0.5	0.5	0.3	0.5	0.2
TRC (mg/L) Instantaneous Maximum	1.48	1.48		1.18	1.33	1.96	1.04	1.48	1.54	0.89	1.47	1.56
CBOD5 (mg/L) Average Monthly	16.4	10.5		< 2	< 2.9	< 4.6	4.6	6.2	7.2	< 4.3	6.99	14.6
TSS (mg/L) Average Monthly	16.5	18.0		< 5	< 5.0	10	13.0	8.5	7	7.5	7.0	15.5
Fecal Coliform (No./100 ml) Geometric Mean	< 28	< 19		15	< 7	< 5	< 5	< 42	< 5	< 48	5	364
Fecal Coliform (No./100 ml) Instantaneous Maximum	162	74		15	< 10	< 5	< 5	361	< 5	231	5	630
Total Nitrogen (mg/L) Average Monthly	6.11	3.04		3.86	3.18	1.223	1.48	3.5	4.59	3.86	6.03	6.79
Total Nitrogen (mg/L) Instantaneous Maximum	7	3.78		3.86	3.57	1.5	1.48	3.68	4.6	3.94	6.18	7.12
Ammonia (mg/L) Average Monthly	2	< 0.4		< 0.4	2	< 0.8	< 1	5	< 2.16	2.77	4.27	4.16
Total Phosphorus (mg/L) Average Monthly	< 0.6	0.4		0.57	0.42	< 0.11	0.26	0.47	0.65	0.5	0.76	0.97

Total Phosphorus (mg/L) Instantaneous Maximum	1.1	0.42		0.57	0.58	0.12	0.26	0.057	0.71	0.52	0.83	0.98

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .01
Latitude 41º 19' 44.56" **Longitude** -80º 21' 19.38"
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)
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

A "Reasonable Potential Analysis" determined the following parameters were candidates for limitations: TRC, CBOD5, Ammonia, and Dissolved Oxygen (DO). TRC is evaluated using the TRC spread sheet (See Attachment 2).

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

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	4	Daily Min.	WQM 7.0
CBOD5	25	Monthly Avg.	WQM 7.0
Ammonia Nitrogen	25	Monthly Avg.	WQM 7.0
Summer	50	IMAX	
Ammonia Nitrogen Winter	Monitor		

Comments: CBOD5, Ammonia, and DO are evaluated using WQM 7.0 (See Attachment 1).

Best Professional Judgment (BPJ) Limitations

Comments: A dissolved oxygen effluent limit of a minimum of 4.0 mg/l, and monitoring for total nitrogen, total phosphorus are placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

The monitoring frequencies for pH, DO, and TRC have been increased from 3/week to "Daily when Discharging" in accordance with the Department's February 3, 2022 SOP "New and Reissuance Sewage Individual NPDES Permit Applications"

Annual monitoring for E. Coli has been added in accordance with the Department's March 24, 2021 SOP "Establishing Effluent Limitations for Individual Sewage Permits". 11/14/2023 CWY

Anti-Backsliding

No backsliding of limits is being proposed.

Threatened and Endangered Mussel Species Concerns and Considerations

The main segment of the Shenango River from Porter Road near Greenville, Pennsylvania, downstream to the point of inundation by Shenango River Lake near Big Bend, Mercer County, Pennsylvania was designated by the United States Fish and Wildlife Services (USFWS) as "Critical Habitat" for the rabbitsfoot mussel, a federally listed threatened species, and is known to also contain other threatened and endangered mussel species. The Temple Grove Campgound outfall pipe is a direct discharge to the Shenango River within the critical habitat area. Therefore, potential impacts to endangered mussel species were evaluated.

The USFWS has indicated in comment letters and email correspondence on other NPDES Permits, that to protect threatened and endangered mussel species, wastewater discharges containing ammonia-nitrogen (NH3-N), chloride (Cl-), dissolved nickel, dissolved zinc, and total copper where mussels or their habitat exist, can be no more than 1.9 mg/l, 78 mg/l, 7.3 ug/l, 13.18 ug/l, and 10 ug/l respectively. Therefore, the Department has considered all of these parameters in this evaluation.

Ammonia (NH3-N):

Monitoring for ammonia was placed in the last permit renewal. A 12-month review of eDMR sample results from September 2022 to August 2023 indicates an average discharge concentration of <2.26 mg/l. Based on these sample results, the attached Mussel Impact Evaluation Sheet indicates an area of impact of less than one square meter. The Mussel Impact Evaluation Sheet is included as Attachment 3.

Chloride and Dissolved Nickel:

Although sample results for Chloride and Dissolved Nickel were not collected as part of the NPDES renewal application, it was determined during the last permit renewal these parameters are not parameters of concern for this facility. The average Chloride concentration based on sample results submitted with the last permit renewal was 19.6 mg/l and the maximum concentration was 21.0 mg/L. The previous permit fact sheet also indicated that Dissolved Nickel concentrations are expected to be below detection limits based on studies at a similar facility.

There have been no known changes to the characteristics of the waste stream since the last renewal and Chloride and Dissolved Nickel are not expected to adversely affect threatened or endangered mussel species in the Shenango River. Therefore, no monitoring will be included with the renewed permit. A copy of the "Threatened and Endangered Mussel Species Concerns and Considerations" section from the previous Fact Sheet is included as Attachment 4 for reference.

Dissolved Zinc and Total Copper:

Dissolved Zinc and Total Copper are parameters of interest the USFWS has added since the last permit renewal cycle. As there are no sampling results available for this or similar size/type facilities, monitoring at a frequency of 1 per year has been added to the renewed permit to collect data for consideration in future permit cycles. 11/20/2023 CWY

Proposed Effluent Limitations and Monitoring Requirements

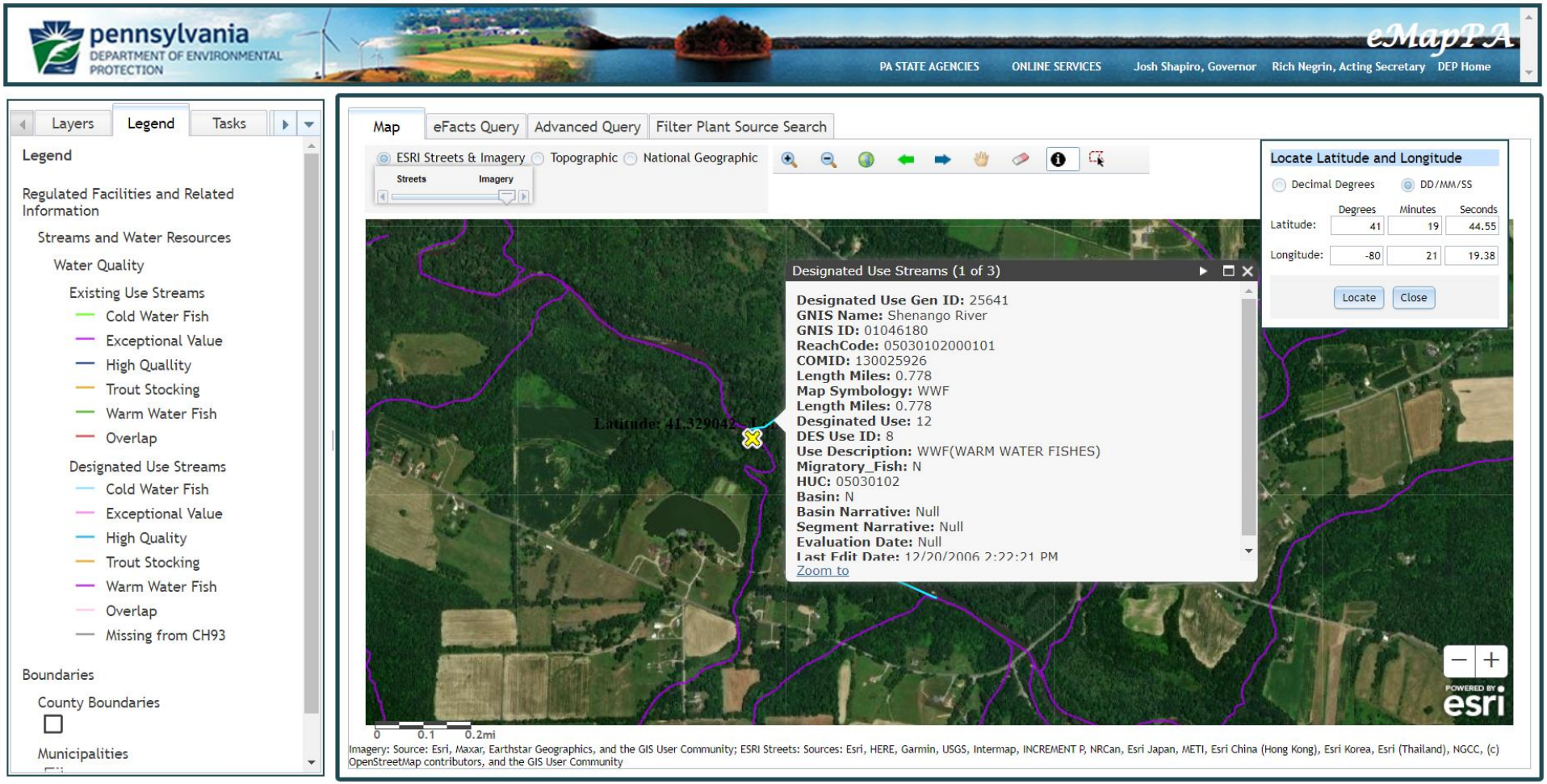
The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants).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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Daily when discharging	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	Daily when discharging	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	Daily when discharging	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30.0	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	Report	2/month	Grab
Ammonia Oct 1 - Apr 30	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Ammonia May 1 - Sep 30	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	Report	2/month	Grab
Dissolved Zinc	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Total Copper	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001, after disinfection.
Other Comments: None.

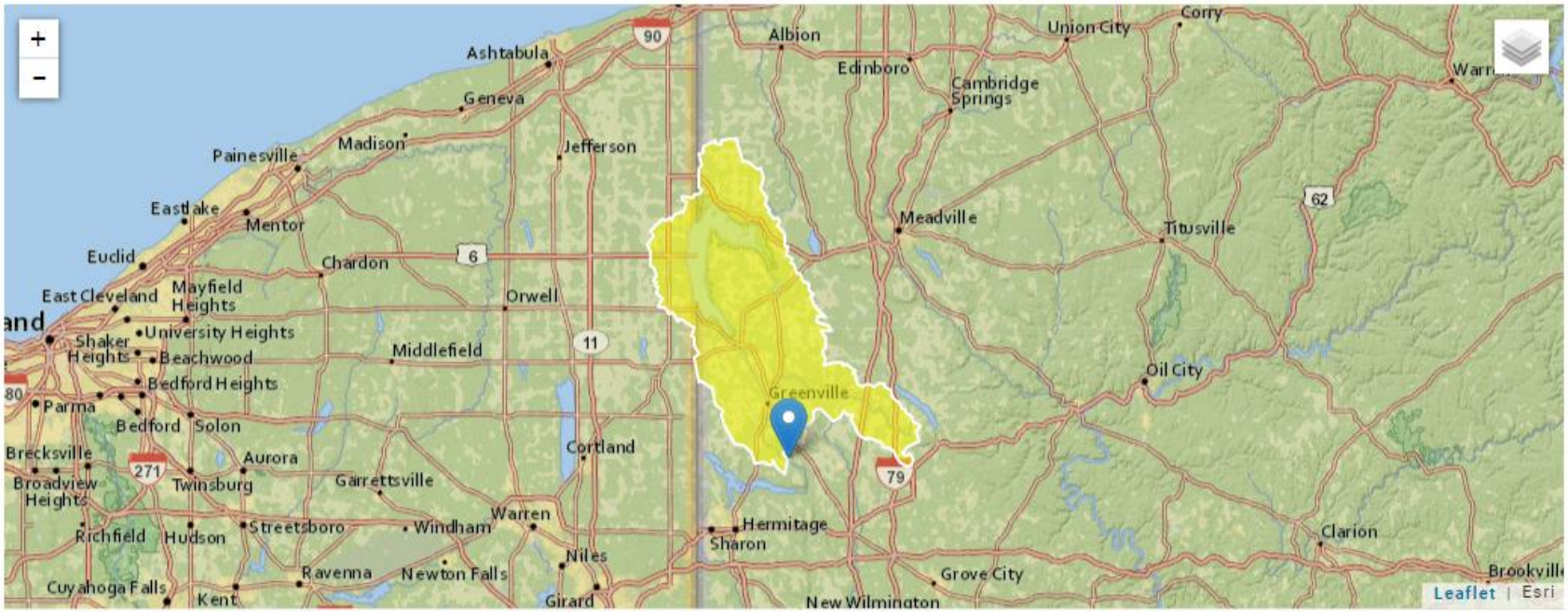
Outfall Location - eMap with Aerial Imagery



Drainage Area Location – StreamStats with Aerial Imagery

StreamStats Report

Region ID:	PA
Workspace ID:	PA20231004183805723000
Clicked Point (Latitude, Longitude):	41.32932, -80.35519
Time:	2023-10-04 14:38:37 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	343	square miles

Attachment 1

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20A	35482	SHENANGO RIVER

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)
49.000	Temple Grove	PA0100676	0.010	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

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	5		

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
20A	35482	SHENANGO RIVER	**49.000**	905.00	343.00	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	0.160	0.00	0.00	0.000	0.000	0.0	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
Temple Grove	PA0100676	0.0100	0.0000	0.0000	0.000	25.00	7.50

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	7.54	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
20A	35482	SHENANGO RIVER	**47.500**	901.00	352.00	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	0.160	0.00	0.00	0.000	0.000	0.0	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
Temple Grove	PA0100676	0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	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
20A	35482	SHENANGO RIVER

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												
49.000	54.88	0.00	54.88	.0155	0.00051	1.01	119.95	118.75	0.45	0.202	25.00	7.00
Q1-10 Flow												
49.000	35.12	0.00	35.12	.0155	0.00051	NA	NA	NA	0.35	0.260	25.00	7.00
Q30-10 Flow												
49.000	74.64	0.00	74.64	.0155	0.00051	NA	NA	NA	0.54	0.170	25.00	7.00

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20A	35482	SHENANGO RIVER

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
49.000	Temple Grove	6.76	50	6.76	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
49.000	Temple Grove	1.34	25	1.34	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
49.00	Temple Grove	25	25	25	25	4	4	0	0

Attachment 2

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

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

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 1131.675	1.3.2.iii	WLA cfc = 1103.287
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 421.689	5.1d	LTA_cfc = 641.399

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

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...** **...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...** **...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**

Attachment 3

11/20/2023

Outfall 001

Facility:	Temple Grove Campground
Permit Number:	PA0100676 Effective: Expiration:
Outfall No:	001
Location:	Delaware Township, Mercer County
Discharge to:	Shenango River
Site Specific Mussel Survey Completed:	

Discharge and Stream Characteristics			Comments
Q_S	Stream Flow	35 MGD / 54.88 cfs	
Q_D	Discharge Flow	0.01 MGD / 0.01547 cfs	
$C_{S(Cl^-)}$	Instream chloride Concentration	14.55 mg/L	
$C_{E(Cl^-)}$	Discharge chloride (existing)	19.2 mg/L	
$C_{P(Cl^-)}$	Discharge chloride (proposed)	19.2 mg/L	
$C_{S(Ni)}$	Instream nickel Concentration	µg/L	
$C_{E(Ni)}$	Discharge nickel (existing)	µg/L	
$C_{P(Ni)}$	Discharge nickel (proposed)	µg/L	
$C_{S(Zn)}$	Instream zinc Concentration	µg/L	
$C_{E(Zn)}$	Discharge zinc (existing)	µg/L	
$Zn_{P(Zn)}$	Discharge zinc (proposed)	µg/L	
$C_{S(Cu)}$	Instream copper Concentration	µg/L	
$C_{E(Cu)}$	Discharge copper (existing)	µg/L	
$Zn_{P(Cu)}$	Discharge copper (proposed)	µg/L	
$C_{S(NH3-N)}$	Instream NH^3-N	0.1 mg/L	
$C_{E(NH3-N)}$	Discharge NH^3-N (existing)	2.27 mg/L	
$C_{P(NH3-N)}$	Discharge NH^3-N (proposed)	2.27 mg/L	
pH_S	Instream pH	7.4 S.U.	
T_S	Instream Temp.	25 °C	Default value for a WWF
$C_{C(NH3-N)}$	Ammonia criteria	1.095 mg/L	From ammonia criteria comparison spreadsheet -using instream pH and Temp
$C_{C(Cl^-)}$	Chloride criteria	78 mg/L	USFWS criteria
$C_{C(Ni)}$	Nickel criteria	7.3 µg/L	USFWS criteria
$C_{C(Zn)}$	Zinc criteria	13.18 µg/L	USFWS criteria
$C_{C(Cu)}$	Copper criteria	10 µg/L	USFWS criteria
W_S	Stream width	25.9 meters	Google Earth (Approximate)

Ammonia Criteria Calculations:

	pH_S	7.4	S.U.	*(Default value is 7.0)*
	T_S	25	°C	*(Default value is 20° for a CWF and 25° for a WWF)*

Acute Criteria

	METHOD and UNITS	CRITERIA	Comments	
	Old CMC (mg TAN/L) =	4.661		
	EPA 2013 CMC (mg TAN/L) =	7.048	Oncorhynchus present	* formula on pg. 41 (plateaus at 15.7 C)
		7.048	Oncorhynchus absent	* formula on pg. 42 (plateaus at 10.2 C)

Chronic Criteria

	METHOD and UNITS	CRITERIA	COMMENTS
	Old CMC (mg TAN/L) =	1.064	
$C_{C(NH3-N)}$	EPA 2013 CMC (mg TAN/L) =	1.095	* formula on pg. 46 (plateaus at 7 C)

Endangered Mussel Species Impact Area Calculations:

Existing Area of Impact

☑ N/A - No Site Specific Mussel Survey Completed for this Discharger

Approximate Area of Impact Determined from Survey =	N/A m^2	(Enter N/A if no site specific survey has been completed)
Existing Mussel Density within Area of Impact =		
Rabbitsfoot *(Quadrula cylindrical)*	per m^2	
Northern Riffleshell *(Epioblasma torulosa rangiana)*	per m^2	
Rayed Bean *(Villosa fabalis)*	per m^2	
Clubshell *(Pleurobema clava)*	per m^2	
Sheepnose *(Plethobasus cyphyus)*	per m^2	
Snuffbox *(Epioblasma triquetra)*	per m^2	
TOTAL	0 per m^2	

Method 1 - Utilizing Site Specific Mussel Survey Information

☑ N/A - No Site Specific Mussel Survey Completed for this Discharger

This method utilizes a simple comparison of the size of the existing area of impact as determined from a site specific mussel survey and the chlorides in the existing discharge compared to the chlorides in the proposed discharge after the facility upgrades treatment technologies. This method is only applicable to where the stream impairment is caused by TDS and/or chlorides as the plume has been delineated through conductivity measurements.

A.	Area of Impact Determined from Survey:	N/A	m^2
B.	Chlorides in Existing Discharge:	19	mg/L
C.	Chlorides in Proposed Discharge after Treatment Facility Upgrades:	19.2	mg/L
D.	Approximate Area of Impact after Treatment Facility Upgrades:	N/A	m^2

A/B = D/C Therefore, D = (A*C)/B

11/20/2023

Outfall 001

Facility:	Temple Grove Campground		
Permit Number:	PA0100676	Effective:	Expiration:
Outfall No:	001		
Location:	Delaware Township, Mercer County		
Discharge to:	Shenango River		
Site Specific Mussel Survey Completed:			

Endangered Mussel Species Impact Area Calculations: (continued...)

Method 2 - Mass Balance Relationship of Loading and Assimilative Capacity of Stream

Chloride (Cl^-)	$L_{S(Cl^-)}$ = Available Chloride Loading in Stream = $C_{C(Cl^-)} - C_{S(Cl^-)} \times Q_S$(MGD) X 8.34 =	18,521 lbs/Day
	$L_{D\text{-}MAX(Cl^-)}$ = Current Maximium Discharge Chloride Loading exceeding criteria = $\{C_{E(CL^-)} - C_{E(CL^-)}\} \times Q_D$(MGD) X 8.34 =	-5 lbs/Day
	$\%_{E(Cl^-)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Cl^-)} / L_{S(Cl^-)}$ =	0% of Stream Capacity
	$L_{D(Cl^-)}$ = Proposed Discharge Cl^- Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Cl^-)} - C_{P(Cl^-)}\} \times Q_D$(MGD) X 8.34 =	-4.90392 lbs/Day
	$\%_{P(Cl^-)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Cl^-)} / L_{S(Cl^-)}$ =	-0.03% of Stream Capacity
	Proposed Area of Impact due to Chloride * = $(\%_{P(Cl^-)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Nickel(Ni)	$L_{S(Ni)}$ = Available Nickel Loading in Stream = $C_{C(Ni)} - C_{S(Ni)} \times Q_S$(MGD) X 8.34 =	2,131 lbs/Day
	$L_{D\text{-}MAX(Ni)}$ = Current Maximium Discharge Nickel Loading exceeding criteria = $\{C_{E(Ni)} - C_{E(Ni)}\} \times Q_D$(MGD) X 8.34 =	-1 lbs/Day
	$\%_{E(Ni)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Ni)} / L_{S(Ni)}$ =	0% of Stream Capacity
	$L_{D(Ni)}$ = Proposed Discharge Ni Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Ni)} - C_{P(Ni)}\} \times Q_D$(MGD) X 8.34 =	-0.60882 lbs/Day
	$\%_{P(Ni)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Ni)} / L_{S(Ni)}$ =	-0.03% of Stream Capacity
	Proposed Area of Impact due to Nickel * = $(\%_{P(Ni)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Zinc (Zn)	$L_{S(Zn)}$ = Available Zinc Loading in Stream = $C_{C(Zn)} - C_{S(Zn)} \times Q_S$(MGD) X 8.34 =	3,847 lbs/Day
	$L_{D\text{-}MAX(Zn)}$ = Current Maximium Discharge Zinc Loading exceeding criteria = $\{C_{E(Zn)} - C_{E(Zn)}\} \times Q_D$(MGD) X 8.34 =	-1 lbs/Day
	$\%_{E(Zn)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Zn)} / L_{S(Zn)}$ =	0% of Stream Capacity
	$L_{D(Zn)}$ = Proposed Discharge Zn Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Zn)} - C_{PZn)}\} \times Q_D$(MGD) X 8.34 =	-1.099212 lbs/Day
	$\%_{P(Zn)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Zn)} / L_{S(Zn)}$ =	-0.03% of Stream Capacity
	Proposed Area of Impact due to Zinc * = $(\%_{P(Zn)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Copper (Cu)	$L_{S(Cu)}$ = Available Copper Loading in Stream = $C_{C(Cu)} - C_{S(Cu)} \times Q_S$(MGD) X 8.34 =	2,919 lbs/Day
	$L_{D\text{-}MAX(Cu)}$ = Current Maximium Discharge Copper Loading exceeding criteria = $\{C_{E(Cu)} - C_{E(Cu)}\} \times Q_D$(MGD) X 8.34 =	-1 lbs/Day
	$\%_{E(Cu)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Cu)} / L_{S(Cu)}$ =	0% of Stream Capacity
	$L_{D(Cu)}$ = Proposed Discharge Cu Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Cu)} - C_{PCu)}\} \times Q_D$(MGD) X 8.34 =	-0.834 lbs/Day
	$\%_{P(Cu)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Cu)} / L_{S(Cu)}$ =	-0.03% of Stream Capacity
	Proposed Area of Impact due to Copper* = $(\%_{P(Cu)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Ammonia-Nitrogen (NH3-N)	$L_{S(NH3\text{-}N)}$ = Available NH3-N Loading in Stream = $C_{C(NH3\text{-}N)} - C_{S(NH3\text{-}N)} \times Q_S$(MGD) X 8.34 =	290 lbs/Day
	$L_{D\text{-}MAX(NH3\text{-}N)}$ = Current Maximium Discharge NH3-N Loading = $C_{E(NH3\text{-}N)} \times Q_D$(MGD) X 8.34 =	0 lbs/Day
	$\%_{E(NH3\text{-}N)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(NH3\text{-}N)} / L_{S(NH3\text{-}N)}$ =	0% of Stream Capacity
	$L_{D(NH3\text{-}N)}$ = Proposed Discharge NH3-N Loading after Treatment Facility Upgrades = $C_{P(NH3\text{-}N)} - C_{C(NH3\text{-}N)} \times Q_D$(MGD) X 8.34 =	0 lbs/Day
	$\%_{P(NH3\text{-}N)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(NH3\text{-}N)} / L_{S(NH3\text{-}N)}$ =	0.00% of Stream Capacity
	Proposed Area of Impact due to NH3-N * = $(\%_{P(NH3\text{-}N)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2

11/20/2023

Outfall 001

Facility:	Temple Grove Campground		
Permit Number:	PA0100676	Effective:	Expiration:
Outfall No:	001		
Location:	Delaware Township, Mercer County		
Discharge to:	Shenango River		
Site Specific Mussel Survey Completed:			

Endangered Mussel Species Impact Area Calculations: (continued...)

Method 3 - Mass Balance Relationship of Stream Flow, Proposed Effluent Quality, and Mussel Protection Criteria

Chloride (Cl^-)	$Q_{A(Cl^-)}C_{S(Cl^-)} + Q_DC_{P(Cl^-)} = Q_TC_{C(Cl^-)}$	
	$Q_{A(Cl^-)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Cl^-)}C_{S(Cl^-)} + Q_DC_{P(Cl^-)} = (Q_D+Q_S)C_{C(Cl^-)}$	
	SOLVING FOR $Q_{A(Cl^-)} = [(Q_DC_{P(Cl^-)} / C_{C(Cl^-)}) - Q_D)] / (1 - C_{S(Cl^-)}/C_{C(Cl^-)})$ =	-0.0143363 cfs
	$\%_{P(Cl^-)}$ = Percent of Stream Width Required to Assimilate Chlorides to Criteria Concentration = $Q_{A(Cl^-)} / Q_S$ (cfs) =	-0.0261%
	$W_{I(Cl^-)}$ = Proposed Width of Stream required to Assimilate Chlorides to Criteria Concentration = W_S X $\%_{P(Cl^-)}$	-0.006766 meters
	Proposed Area of Impact due to Chloride * = $(W_{I(Cl^-)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Nickel (Ni)	$Q_{A(Ni)}C_{S(Ni)} + Q_DC_{P(Ni)} = Q_TC_{C(Ni)}$	
	$Q_{A(Ni)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Ni)}C_{S(Ni)} + Q_DC_{P(Ni)} = (Q_D+Q_S)C_{C(Ni)}$	
	SOLVING FOR $Q_{A(Ni)} = [(Q_DC_{P(Ni)} / C_{C(Ni)}) - Q_D)] / (1 - C_{S(Ni)}/C_{C(Ni)})$ =	-0.01547 cfs
	$\%_{P(Cl^-)}$ = Percent of Stream Width Required to Assimilate Nickel to Criteria Concentration = $Q_{A(Ni)} / Q_S$ (cfs) =	-0.0282%
	$W_{I(Ni)}$ = Proposed Width of Stream required to Assimilate Nickel to Criteria Concentration = W_S X $\%_{P(Ni)}$	-0.007301 meters
	Proposed Area of Impact due to Nickel * = $(W_{I(Ni)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Zinc (Zn)	$Q_{A(Zn)}C_{S(Zn)} + Q_DC_{P(Zn)} = Q_TC_{C(Zn)}$	
	$Q_{A(Zn)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Zn)}C_{S(Zn)} + Q_DC_{P(Zn)} = (Q_D+Q_S)C_{C(Zn)}$	
	SOLVING FOR $Q_{A(Zn)} = [(Q_DC_{PZn)} / C_{C(Zn)}) - Q_D)] / (1 - C_{S(Zn)}/C_{C(Zn)})$ =	-0.01547 cfs
	$\%_{P(Cl^-)}$ = Percent of Stream Width Required to Assimilate Zinc to Criteria Concentration = $Q_{A(Zn)} / Q_S$ (cfs) =	-0.0282%
	$W_{I(Zn)}$ = Proposed Width of Stream required to Assimilate Zinc to Criteria Concentration = W_S X $\%_{PZn)}$	-0.007301 meters
	Proposed Area of Impact due to Zinc * = $(W_{I(Zn)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Copper (Cu)	$Q_{A(Cu)}C_{S(Cu)} + Q_DC_{P(Cu)} = Q_TC_{C(Cu)}$	
	$Q_{A(Cu)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Cu)}C_{S(Cu)} + Q_DC_{P(Cu)} = (Q_D+Q_S)C_{C(Cu)}$	
	SOLVING FOR $Q_{A(Cu)} = [(Q_DC_{PCu)} / C_{C(Cu)}) - Q_D)] / (1 - C_{S(Cu)}/C_{C(Cu)})$ =	-0.01547 cfs
	$\%_{P(Cu)}$ = Percent of Stream Width Required to Assimilate Copper to Criteria Concentration = $Q_{A(Cu)} / Q_S$ (cfs) =	-0.0282%
	$W_{I(Cu)}$ = Proposed Width of Stream required to Assimilate Copper to Criteria Concentration = W_S X $\%_{PCu)}$	-0.007301 meters
	Proposed Area of Impact due to Copper * = $(W_{I(Cu)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Ammonia-Nitrogen (NH3-N)	$Q_{A(NH3\text{-}N)}C_{S(NH3\text{-}N)} + Q_DC_{P(NH3\text{-}N)} = Q_TC_{C(NH3\text{-}N)}$	
	$Q_{A(NH3\text{-}N)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(NH3\text{-}N)}C_{S(NH3\text{-}N)} + Q_DC_{P(NH3\text{-}N)} = (Q_D+Q_S)C_{C(NH3\text{-}N)}$	
	SOLVING FOR $Q_{A(NH3\text{-}N)} = [(Q_DC_{P(NH3\text{-}N)} / C_{C(NH3\text{-}N)}) - Q_D)] / (1 - C_{S(NH3\text{-}N)}/C_{C(NH3\text{-}N)})$ =	0.018269 cfs
	$\%_{P(NH3\text{-}N)}$ = Percent of Stream Width Required to Assimilate NH3-N to Criteria Concentration = $Q_{A(NH3\text{-}N)} / Q_S$ (cfs) =	0.0333%
	$W_{I(NH3\text{-}N)}$ = Proposed Width of Stream required to Assimilate NH3-N to Criteria Concentration = W_S X $\%_{P(NH3\text{-}N)}$	0.008622 meters
	Proposed Area of Impact due to NH3-N * = $(W_{I(NH3\text{-}N)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2

Attachment 4

Threatened and Endangered Mussel Species Concerns and Considerations (From Previous Permit)

The main segment of the Shenango River from Porter Road near Greenville, Pennsylvania, downstream to the point of inundation by Shenango River Lake near Big Bend, Mercer County, Pennsylvania was designated by the United States Fish and Wildlife Services (USFWS) as "Critical Habitat" for the rabbitsfoot mussel, a federally listed threatened species, and is known to also contain other threatened and endangered mussel species. The Temple Grove Campgound outfall pipe is a direct discharge to the Shenango River within the critical habitat area. Therefore, potential impacts to endangered mussel species were evaluated.

The USFWS has indicated in comment letters on other NPDES permits that in order to protect threatened and endangered mussel species, wastewater discharges containing ammonia-nitrogen (NH_3-N), chloride (Cl^-) and nickel, where mussels or their habitat exist, can be no more than 1.9 mg/l, 78 mg/l and 7.3 ug/l, respectively.

This existing 10,000 gallon per day (0.01 MGD) discharge is from a campground sewage treatment facility consisting of wastewater treatment lagoons with phosphorus control and chlorine disinfection. The subject NPDES permit did not include monitoring requirements for pollutants such as ammonia-nitrogen, chloride and nickel. Therefore, during the initial draft permit comment period in December 2015, the applicant was requested to provide sampling data for ammonia-nitrogen and chloride. At the time of the draft permit, the USFWS had not made the Department aware that nickel was a parameter of concern related to the protection of threatened and endangered mussel species. As requested, the applicant provided ammonia-nitrogen and chloride sampling results as summarized in the following table. Additionally, the Department conducted a site visit on June 28, 2016 to review the discharge location and conduct effluent sampling for ammonia-nitrogen. The sampling results from the June 28, 2016 site visit are also summarized in the following table.

Sampling Data for USFWS Parameters of Concern			
Sampling Date	Ammonia-Nitrogen (NH_3-N) (mg/L)	Chloride (mg/L)	Comments
1/5/2015	**2.3**	-	Sampling point at STP, after disinfection
1/7/2015	**6.3**	-	Sampling point at STP, after disinfection
2/2/2015	**3.5**	-	Sampling point at STP, after disinfection
2/4/2015	**4.3**	-	Sampling point at STP, after disinfection
3/3/2015	**3.25**	-	Sampling point at STP, after disinfection
3/4/2015	**4.35**	-	Sampling point at STP, after disinfection
4/7/2015	< 0.2	-	Sampling point at STP, after disinfection
4/8/2015	< 0.2	-	Sampling point at STP, after disinfection
5/6/2015	< 0.2	-	Sampling point at STP, after disinfection
8/4/2015	**6.5**	-	Sampling point at STP, after disinfection
9/22/2015	**5.8**	-	Sampling point at STP, after disinfection
10/6/2015	**7.4**	-	Sampling point at STP, after disinfection
10/7/2015	**6.1**	-	Sampling point at STP, after disinfection
11/3/2015	**6.1**	-	Sampling point at STP, after disinfection
11/4/2015	**7.8**	-	Sampling point at STP, after disinfection
12/1/2015	**7.0**	-	Sampling point at STP, after disinfection
12/2/2015	**5.2**	-	Sampling point at STP, after disinfection
1/20/2016	-	21.0	Sampling point at STP, after disinfection
1/27/2016	-	19.0	Sampling point at STP, after disinfection
2/2/2016	-	17.5	Sampling point at STP, after disinfection
6/28/2016	0.10	-	Sampling point at STP, after disinfection (Pa. DEP Sample)
6/28/2016	0.09	-	Sample taken at Outfall Pipe (Pa. DEP Sample)

Based on these sampling results, the Department evaluated the ammonia-nitrogen concentrations that exceed the criteria of 1.9 mg/l and any potential impacts that this may have to threatened and endangered mussel species in the Shenango River. To that end, DEP compared the effluent quality at Temple Grove to a similar facility, Camp Nazareth.

Camp Nazareth (PA0103942) Sampling Study

A sampling study was completed in 2017 at a similar minor sewage facility, American Carpatho-Russian Orthodox Greek Catholic Diocese of the U.S.A. - Camp Nazareth (PA0103942) located in Delaware Township, Mercer County, Pennsylvania. At the time of the study, Camp Nazareth was a 5,000 gallon per day discharge with a proposal to be expanded to 8,500 gallons per day and discharges directly to the Shenango River. Although the treatment technology was different for Camp Nazareth (septic tanks, sand filters, with chlorine disinfection), the general sewage make-up should be similar and the facilities are generally similar in flow size. The Camp Nazareth sampling study was completed on two different dates (June 5, 2017 and August 15, 2017).

The sampling study completed on June 5, 2017 by the Department at Camp Nazareth consisted of DEP staff collecting a sample of the discharge effluent and a sample in the river, where the effluent contacts and mixes with the stream. The effluent sampling was taken at the end of the outfall pipe and the results for ammonia-nitrogen (NH_3-N) was 4.17 mg/l, chloride (Cl^-) was 308.7 mg/l, and nickel was <4.0µg/l (non-detect). The sample taken at the point which the treated effluent entered the stream had an ammonia-nitrogen (NH_3-N) concentration of 0.19 mg/l, a chloride (Cl^-) concentration of 28.7 mg/l, and a nickel concentration of <4.0µg/l (non-detect). A summary table is provided on the following page.

The sampling study completed on August 15, 2017 by the Department at Camp Nazareth consisted of DEP staff collecting a sample of the discharge effluent and 4 in-stream locations including sample in the river, where the effluent contacts and mixes with the stream and an upstream location (background conditions), downstream "nearfield" location and a downstream "farfield" location. The effluent sampling was taken at the end of the outfall pipe and the results for ammonia-nitrogen (NH_3-N) was 33.99 mg/l, chloride (Cl^-) was 335.0 mg/l, and nickel was 6.590 µg/l (non-detect). The sample taken at the point which the treated effluent entered the stream had an ammonia-nitrogen (NH_3-N) concentration of 1.42 mg/l, a chloride (Cl^-) concentration of 29.4 mg/l, and a nickel concentration of <4.0µg/l (non-detect). The sample taken at a point in the river upstream of the outfall pipe for the purpose of providing background stream conditions had an ammonia-nitrogen (NH_3-N) concentration of 0.03 mg/l, a chloride (Cl^-) concentration of 12.4 mg/l, and a nickel concentration of <4.0µg/l (non-detect). The sample taken at the "nearfield" point (approximately 5' to 10') downstream of the outfall pipe and in the expected flow path of the effluent mixing zone had an ammonia-nitrogen (NH_3-N) concentration of 0.03 mg/l, a chloride (Cl^-) concentration of 12.7 mg/l, and a nickel concentration of <4.0µg/l (non-detect). A summary table is provided on the following page. The sample taken at the "farfield" point (approximately 20' to 30') downstream of the outfall pipe and in the expected flow path of the effluent mixing zone had an ammonia-nitrogen (NH_3-N) concentration of 0.03 mg/l, a chloride (Cl^-) concentration of 11.5 mg/l, and a nickel concentration of <4.0µg/l (non-detect). A summary table is provided on the following pages.

Based on the Camp Nazareth sampling study, the existing discharge from Camp Nazareth is not believed to be having any adverse effects on threatened or endangered mussel species in the Shenango River considering the effluent quality from the existing wastewater treatment facility when compared to the pollutant concentrations specified by the USFWS. Additionally, the proposed expanded discharge from the camp is not expected to adversely affect threatened or endangered mussel species in the Shenango River considering the sampling data of the existing discharge, the size of the proposed discharge expansion, and the available instantaneous assimilative capacity of the Shenango River. Sampling location photographs and additional information can be found in the Fact Sheet for the Camp Nazareth NPDES permit (Issued September 26, 2017, Effective October 1, 2017).

A summary of the Camp Nazareth (PA0103942) existing discharge sampling is as follows:

9/19/2017

American Carpatho-Russian Orthodox Greek Catholic Diocese of the U.S.A.
Camp Nazareth
NPDES Permit No. PA0103942 / WQM Permit No. 4377401

Facility Address:	339 Pew Road, Mercer, PA 16137-9802			
Municipality / County:	Delaware Township, Mercer County			
Discharge Location:	Direct Discharge to the Shenango River			
Coordinates:	41° 18' 25.95", -80° 19' 21.2"			
Treatment Type (EXISTING):	Existing: Septic Tanks, Open Bed Sand Filters, and Chorination Disinfection			
Treatment Type (PROPOSED):	Proposed: Septic Tanks, Open Bed Sand Filters, Chorination Disinfection, and Dechlorination			
DATE SAMPLE(S) COLLECTED	6/5/2017		8/15/2017	
EFFLUENT SAMPLING RESULTS*	Sample ID: 3641 005			
Ammonia-Nitrogen (NH_3-N)	4.17	mg/L	33.99	mg/L
Chloride (Cl^-)	308.7	mg/L	335	mg/L
Nickel	<4.0	µg/L	6.59	µg/L
MIXING ZONE SAMPLING RESULTS	Sample ID: 3641 006			
Ammonia-Nitrogen (NH_3-N)	0.19	mg/L	1.42	mg/L
Chloride (Cl^-)	28.7	mg/L	29.4	mg/L
Nickel	<4.0	µg/L	<4.0	µg/L
UPSTREAM (STREAM BACKGROUND) RESULTS				
Ammonia-Nitrogen (NH_3-N)	-	-	0.03	mg/L
Chloride (Cl^-)	-	-	12.4	mg/L
Nickel	-	-	<4.0	µg/L
DOWNSTREAM (APPROX 5 to 10' DOWNSTREAM OF DISCHARGE				
Ammonia-Nitrogen (NH_3-N)	-	-	0.03	mg/L
Chloride (Cl^-)	-	-	12.7	mg/L
Nickel	-	-	<4.0	µg/L
DOWNSTREAM (APPROX 20' to 30' DOWNSTREAM OF DISCHARGE				
Ammonia-Nitrogen (NH_3-N)	-	-	0.03	mg/L
Chloride (Cl^-)	-	-	11.5	mg/L
Nickel	-	-	<4.0	µg/L

* Sampled at outfall pipe discharge (Not at the complaince sampling point located a the treatment plant)

Temple Grove Campground (PA0100676) Conclusions

Although nickel was not sampled at Temple Grove Campground, it would be expected that the nickel concentrations found in the Camp Nazareth effluent (non-detect at <4.0 mg/l) would be representative of the concentrations at the Temple Grove Campground discharge.

Considering the ammonia-nitrogen and chloride sampling data of the existing discharge, the size of the discharge, stream conditions at the outfall pipe, the available instantaneous assimilative capacity of the Shenango River and the sampling study completed at a similar facility, Camp Nazareth (PA0103942), Temple Grove Campground is not expected to adversely affect threatened or endangered mussel species in the Shenango River.

Temple Grove Campground (PA0100676) Outfall Photographs (Photos taken by DEP on June 28, 2016)

PHOTO #1
Temple Grove Campground (PA0103942) Outfall #001
Looking South at Outfall Pipe

PHOTO #2
Temple Grove Campground (PA0103942) Outfall #001
Looking East (Outfall Pipe Discharges on Right / Shenango River on Left)

PHOTO #3
Temple Grove Campground (PA0103942) Outfall #001
Looking South (Outfall Pipe Discharges on Bottom (Behind) / Shenango River on Top)