pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0101478**
Facility Type	**Non-Municipal**	APS ID	**1047220**
Major / Minor	**Minor**	Authorization ID	**1368615**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**SNPJ**	Facility Name	**SNPJ Recreation Center**
Applicant Address	270 Martin Road	Facility Address	270 Martin Road
	Enon Valley, PA 16120-4614		Enon Valley, PA 16120-4614
Applicant Contact		Facility Contact	
Title		Title	Director
Applicant Phone	(724) 336-5180	Facility Phone	(724) 336-5180
Applicant E Mail	djones@snpjrec.com	Facility E Mail	snpj@snpjrec.com
Client ID	74911	Site ID	259369
Municipality	North Beaver Township	County	Lawrence
Ch 94 Load Status	Not Overloaded	Connection Status	No Limitations
Date Application Received	September 1, 2021	EPA Waived?	Yes
Date Application Accepted	September 14, 2021	If No, Reason	

Purpose of Application: NPDES treated sanitary sewage discharge permit renewal

Summary of Review

Proposed is a renewal of an NPDES permit for the discharge of treated sewage. The facility has reported six effluent violations: one for TRC, three for ammonia, one for CBOD5 and one for fecal coliform between September 2021 and July 2022. Two open effluent violations are dated December 18, 2020 and April 29, 2022.

A compliance agreement is pending with Operations and Monitoring to resolve the noncompliance. Only permit drafting is proposed. Permit issuance should be withheld until the noncompliance is abated and an agreement with the permittee is reached. (CO&A executed December 22, 2022 CWY)

SNPJ is a borough within North Beaver Township largely consisting of the SNPJ Recreation Center established after initial permitting in 1977. As the SNPJ Recreation Center is a non-municipal enterprise monthly influent monitoring is not proposed.

The parent organization is the National Slovene Benefit Society located in Chicago (national organization). The Pennsylvania DoS registered S.N.P.J. address is Imperial, Pa. SNPJ is an acronym for the Slovenian *Slovenska Narodna Podporna Jednota that translates to* National Slovene Benefit Society. The Slovenian name is no longer in general use. The site is a borough formed in 1977 with a 2010 U.S. census population of 19 and 60 cabins. The site name and applicant is the SNPJ Recreation Center located in the Borough of SNPJ. The borough is a separate organization with an elected mayor. The sewage facility is operated under contract by J & R Plant Operations.

Approve	Deny	Signatures	Date
X		William H. Mentzer William H. Mentzer, P.E. Environmental Engineering Specialist	October 4, 2022
X		vacant Environmental Engineer Manager	Okay to Draft JCD 10/17/2022

Summary of Review

The WQM permit design is for a first stage treatment facility rated at 0.040-MGD and 85-PPD based on a weekend population of 1000 people, 12-hour operating day, and no overnight accommodations. For the rest of the week the design population would be 200 people. Based on a summer week the estimated annual average flow is less than 0.01714-MGD.

At the time of design, a second stage was anticipated for 1969 with 3 to 5000 people weekend population and a 300 to 500 base population. NPDES permits for 1982, 1995, and 2005 were evaluated at 0.040-MGD with the 1995 and 2005 permits issued with a 0.014-MGD flow. In 2000 the NPDES permit was renewed at 0.014-MGD. Since 2011 the sewage treatment facility has been rated at 0.040-MGD. Normally half the sewage treatment facility is operated as an activated sludge facility with the idle half used for sludge storage. Whenever sludge is removed the treatment functions alternate.

WQM permit 364-S-42 was issued on April 26, 1965 and predated the current high-quality cold-water fishery classification and allowing the receiving waters to be evaluate as a cold-water fishery.

Sludge use and disposal description and location(s): Sludge is generally stored on site for over a year prior to removal. This may be defined as waste disposal through a default Waste Management definition.

Upstream of the sewage discharge is the Slovene Camp Dam and reservoir (Dam number 80-37-055 with a 1.18-square mile drainage. There are no known conservation release requirements,

The regional hydrogeologist previously cited USGS Station 03109300 at Darlington and North Fork Little Beaver Creek RMI 13.66 for a 0.027-cfs/square-mile low flow yield based on 2.4-cfs per 88.7-square miles for the receiving waters.

Timothy P. Jergel has replaced David Jones as Recreation Center director. The recreation Center treasurer is Sur Krispinsky (skrispinsky@snpjrec.com and the facility operator is Jeff Wisneski.

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)	.04
Latitude DP	40º 55' 40.80"	Longitude DP	-80º 29' 54.20"
Latitude NHD	40º 55' 39.00"	Longitude NHD	-80º 29' 53.75"
Quad Name	Bessemer	Quad Code	1102
Wastewater Description:	Recreational camp operation		

Receiving Waters	Unnamed Tributary to Sugar Creek	Stream Code	33436
NHD Com ID	99674882	RMI	01.75
Drainage Area	1.36	Yield (cfs/mi^2)	0.02742
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	Hydrogeologist
Elevation (ft)	080.10	Slope (ft/ft)	0.00045
Watershed No.	20-B	Chapter 93 Class.	HQ-CWF
Existing Use	**statewide**	Existing Use Qualifier	none
Exceptions to Use	none	Exceptions to Criteria	none
Comments	The NHD discharge is 0.07 mile above an unnamed tributary.		

Assessment Status	Impaired		
Cause(s) of Impairment	METALS and NUTRIENTS		
Source(s) of Impairment	ACID MINE DRAINAGE and AGRICULTURE		
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)	7.0	From the 1995 WQPR
Temperature (°C)	20	default
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake		State of Ohio	
PWS Waters	North Fork Little Beaver Creek	Flow at Intake (cfs)	NA
PWS RMI	7.85	Distance from Outfall (mi)	26

Changes Since Last Permit Issuance: none

Other Comments: The Ohio Pennsylvania border is at North Fork Little Beaver RMI 7.85 which is reported on eMap as RMI 0.

Treatment Facility Summary				
Treatment Facility Name: SNPJ Recreation Center				
WQM Permit No.	**Issuance Date**			
364-S-42	26 April 1965			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Ammonia Reduction	Activated Sludge	Hypochlorite	0.0171
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.04	85	Not Overloaded		Other WWTP

Changes Since Last Permit Issuance: None

Other Comments: Treatment is: comminution, two parallel aeration tanks/settlers ad chlorination. Normally only half the facility is used as designed. The idled half is used for sludge storage. Typically, sludge is stored for over a year prior to disposal and thereby could be considered a disposal facility by Waste Management.

The facility design did not provide for sludge treatment and disposal, but the idle aeration tank is operated as an aerated sludge holding tank.

	Mon	Year	Flow	BOD5							
					Min	Mean	Max	Min	Mean	Max	
			MGD	PPD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Annual Average Design			**0.00750**								
Hydraulic Design Capacity			**0.04000**								
Organic Design Capacity				**85**							
Annual Average Flow		**2018**	**0.11013**								
		2019	**0.00747**								
		2020	**0.00416**								
Previous Year Highest Monthly Average	**Feb**	**2020**	**0.00590**								
pH								**7.0**		**7.4**	
TRC								**0.12**	**0.14/0.22**	**0.17**	
Fecal Coliform										**< 1**	
CBOD5								**3.98**	**20**		
TSS								**8.55**	**30**		
Ammonia								**<0.5**	**3.0**		
Nitrogen										**7.36**	
Phosphorus										**0.542**	

No problems are indicated,

Chemical use hypochlorite for disinfection

Compliance History

DMR Data for Outfall 001 (from April 1, 2021 to March 31, 2022)

Parameter	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21
Flow (MGD) Average Monthly	0.0031	0.0028	0.0025	0.0025	0.0027	0.0018	0.0032	0.003	0.0052	0.0055	0.0064	0.0031
pH (S.U.) Minimum	7.4	7.1	7.2	6.8	7.0	7.1	7.2	7.0	6.9	7.2	7.1	7.3
pH (S.U.) Maximum	8.1	7.4	7.4	7.8	7.3	7.4	7.6	7.5	7.4	7.4	7.4	7.6
DO (mg/L) Minimum	9.7	9.1	8.6	9.2	8.13	8.5	6.91	7.08	5.53	5.2	7.06	8.01
TRC (mg/L) Average Monthly	0.11	0.12	0.086	0.09	0.11	0.12	0.09	0.09	0.07	0.11	0.11	0.10
TRC (mg/L) Instantaneous Maximum	0.19	0.29	0.18	0.14	0.18	0.18	0.13	0.18	0.10	0.17	0.16	0.17
CBOD5 (mg/L) Average Monthly	< 2	< 2	< 2	4.24	7.07	9.12	6.14	7.13	7.56	11.13	5.12	5.7
TSS (mg/L) Average Monthly	< 5	< 5.0	< 5.0	< 5	< 10	14.4	10.9	12	8.6	12.8	11	7
Fecal Coliform (#/100 ml) Geometric Mean	< 1	< 3	< 1	< 10	< 25	< 3	7	< 2	27	2	4	3
Fecal Coliform (#100 ml) Instantaneous Maximum	< 1	12	< 1	104	618	8	11	4	74	5	8	8
Total Nitrogen (mg/L) Average Monthly	2.1	2.26	7.79	2.57	**461.61**	12.87	19.2	15	18.39	< 17.7	4.54	5.18
Ammonia (mg/L) Average Monthly	< 0.5	< 0.59	< 1.0	< 0.5	< 0.95	**9.82**	**10.89**	< 2.12	2.82	**< 5.74**	1.56	< 1.73
Total Phosphorus (mg/L) Average Monthly	0.159	0.139	0.224	0.507	1.55	4.59	2.65	1.54	2.082	2.55	0.639	0.384

TRC maximum exceedance in February 2022

DMR Data for Outfall 001 (from September 1, 2021 to August 31, 2022)

Parameter	AUG-22	JUL-22	JUN-22	MAY-22	APR-22					
Flow (MGD) Average Monthly	0.0034	0.0036	0.0029	0.0027	0.0039					
pH (S.U.) Minimum	7.4	7.1	7.2	7.3	7.1					
pH (S.U.) Maximum	7.8	7.9	7.7	7.7	7.7					
DO (mg/L) Minimum	5.3	5.6	7.1	7.6	7.9					
TRC (mg/L) Average Monthly	0.14	0.12	0.12	0.13	0.13					
TRC (mg/L) Instantaneous Maximum	0.19	0.16	0.18	0.19	0.17					
CBOD5 (mg/L) Average Monthly	6.18	**73.17**	**40.7**	< 3.47	3.41					
TSS (mg/L) Average Monthly	16	**30.6**	< 8.3	< 5	< 5.1					
Fecal Coliform (#./100 ml) Geometric Mean	< 36	< 35	< 104	< 2	< 1					
Fecal Coliform (#100 ml) Instantaneous Maximum	**2200**	**1230**	**10800**	5	< 1					
Total Nitrogen (mg/L) Average Monthly	11.8	39.79	8.71	5.04	1.89					
Ammonia (mg/L) Average Monthly	**5.38**	**26.39**	13.3	2.31	< 0.64					
Total Phosphorus (mg/L) Average Monthly	1.28	4.92	2.09	0.441	0.17					

High maximum fecal coliforms in June, July and August
Marginal TSS in September
High summer ammonia in
June, September and October
High CBOD5 in June and July
Summer and annual discharge pH is 7.4-SU.

Compliance History

Effluent Violations for Outfall 001, from: October 1, 2021 To: August 31, 2022

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TRC	02/28/22	IMAX	0.29	mg/L	.22	mg/L
CBOD5	06/30/22	Avg Mo	40.7	mg/L	20	mg/L
CBOD5	07/31/22	Avg Mo	73.17	mg/L	20	mg/L
TSS	07/31/22	Avg Mo	30.6	mg/L	30	mg/L
Fecal Coliform	08/31/22	IMAX	2200	No./100 ml	1000	No./100 ml
Fecal Coliform	06/30/22	IMAX	10800	No./100 ml	1000	No./100 ml
Fecal Coliform	07/31/22	IMAX	1230	No./100 ml	1000	No./100 ml
Ammonia	10/31/21	Avg Mo	9.82	mg/L	3.0	mg/L
Ammonia	08/31/22	Avg Mo	5.38	mg/L	3.0	mg/L
Ammonia	06/30/22	Avg Mo	13.3	mg/L	3.0	mg/L
Ammonia	07/31/22	Avg Mo	26.39	mg/L	3.0	mg/L
Ammonia	09/30/21	Avg Mo	10.89	mg/L	3.0	mg/L
Ammonia	06/30/21	Avg Mo	< 5.74	mg/L	3.0	mg/L

The violations are significant enough so that back sling generally will not provide compliance.
.13 violations listed for TRC, CBOD5, TSS, Fecal coliform and ammonia.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .04
Latitude 40º 55' 40.80" **Longitude** -80º 29' 54.20"
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)
DO	4.0-mg/L	Daily Minimum		BPJ
E Coli	Monitor			BPJ

Comments:
E Coli is a new pollutant.
DO is DOSAG limited
Winter and summer CBOD5 requirements have been retained from previous reviews,

Water Quality-Based Limitations

A Sewage Program "Reasonable Potential Analysis" determined CBOD5, ammonia. DO and TRC were candidates for limitations:

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

Parameter		Limit (mg/l)						SBC	Model		
		Existing			Proposed						
Name	Period	Minimum	Mean	Maximum	Minimum	Mean	Maximum		Minimum	Mean	Maximum
CBOD5	Summer		20.0	40.0		20.0	40.0			25.0	50.0
	Winter		25.0	50.0		25.0	50.0			25,0	50.040.0
Ammonia	Summer		3.0	6,9		3.0	6.0			3.06	6.14
	Winter		4.5	9.0		4.5	9.0			9.18	12.42
DO		5.0			5.0				5.0		
TRC			0.14	0.22		0.14	0.22			0.148	0.484

Comments:

Retention of the existing requirements is recommended as the facility is generally in compliance with its effluent requirements.

Best Professional Judgment (BPJ) Limitations

Comments: Applies to a 4.0-mg/L DO daily minimum. DOSAG recommends a 5,0-mg/L daily minimum

Anti-Backsliding

Not proposed for the TRC instantaneous maximum as the sole violation was for 0.29-mg/L in February 2022. All other values were below the 0.220-mg/L current daily maximum. Also the current maximum is based on a 1.57 multiplier.

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)	Report	XXX	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.14	XXX	0.22	1/day	Grab
CBOD5 Nov 1 - Apr 30	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
CBOD5 May 1 - Oct 31	XXX	XXX	XXX	20	XXX	40	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
E. Coli	XXX	XXX	XXX	XXX	XXX	Report	1/year	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
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	4.5	XXX	9.0	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	3.0	XXX	6.0	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/month	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
20B	33436	Trib 33436 to Sugar Creek	**1.750**	1076.16	1.36	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	0.027	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
SNPJ	PA010478	0.0400	0.0400	0.0400	0.000	20.00	7.40

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	25.00	0.10	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
20B	33436	Trib 33436 to Sugar Creek	**0.000**	1007.93	7.63	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	0.027	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 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20B	33436	Trib 33436 to Sugar Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.750	0.040	20.000	7.206
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
5.102	0.349	14.627	0.055
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
16.42	1.092	1.96	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.209	21.929	Owens	6
Reach Travel Time (days)			
1.929			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.193	13.30	1.72	7.83
0.386	10.78	1.50	8.09
0.579	8.73	1.31	8.24
0.772	7.07	1.14	8.24
0.964	5.73	1.00	8.24
1.157	4.64	0.87	8.24
1.350	3.76	0.76	8.24
1.543	3.05	0.67	8.24
1.736	2.47	0.58	8.24
1.929	2.00	0.51	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20B	33436	Trib 33436 to Sugar 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)
1.750	SNPJ	PA010478	0.040	CBOD5	25		
				NH3-N	3.07	6.14	
				Dissolved Oxygen			5

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	95.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20B	33436	Trib 33436 to Sugar 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
1.750	SNPJ	12.96	17.86	12.96	17.86	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
1.750	SNPJ	1.74	3.07	1.74	3.07	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
1.75	SNPJ	25	25	3.07	3.07	5	5	0	0

1A	B	C	D	E	F	G	H	I	J	K	L	M
	Discharger		SNPJ Recreation Center						Monday, July 25, 2022			
	Site		SNPJ Recreation Center STP					Revised	Wednesday, August 24, 2022			
	Municipality		North Beaver Township									
	County		Lawrence									
	NPDES Permit		PA0101478									
	0.5											
2	**TRC EVALUATION**											
3	Input appropriate values in B4:B8 and E4:E7											
4	0.0368		**= Q stream (cfs)**			**0.5**	**= CV Daily**					
5	0.0250		**= 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			**= BAT/BPJ Value**			**720**	**= CFC_Criteria Compliance Time (min)**					
	0		**= % Factor of Safety (FOS)**				**=Decay Coefficient (K)**					
10	Source		Reference	AFC Calculations			Reference		CFC Calculations			
11	TRC		**1.3.2.iii**	WLA afc = 0.323			**1.3.2.iii**		WLA cfc = 0.307			
12	PENTOXSD TRG		**5.1a**	LTAMULT afc = 0.373			**5.1c**		LTAMULT cfc = 0.581			
13	PENTOXSD TRG		**5.1b**	LTA_afc= 0.120			**5.1d**		LTA_cfc = 0.178			
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) = 0.148			AFC			
18						INST MAX LIMIT (mg/l) = 0.484						

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)**	

(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Yc*Qs*0.011)/(1.547*Qd)....
....*EXP(-K*CFC_tc/1440)))+Xd+(CFC_Yc*Qs*Xs/1.547*Qd))*(1-FOS/100)

	Chlorine Required			=	perennial	Chlorine Demand	+ Chlorine Residual
Stream	Reach/Node			1	1		
Stream	Flow	Conditions			perennial		
Stream	Code				33436		
	Function						
Samples					30		
reach	outfall		RMI		1.75		
	Reach End		RMI		0		
reach			feet		9240		
drainage			sq miles		1.36		
TRC	limitation	average	mg/L		0.148		
		maximum	mg/L		0.484		
elevation		modelled	feet		1076.16		
elevation		modelled	feet		1007.93		
slope		modelled	foot/foot		0.007		
low flow			cfs/sq mi		0.027		
discharge			mgd		0.0250		
Runoff	Period		hours		24.000		

The existing requirements are 0.14-mg/L monthly average and 0.22-mgL daily maximum.

stream	flow		cfs	0.03680
stream	flow		MGD	0.023783
stream	flow	total	MGD	0.048783
stream	chlorine	demand	mg/L	0.3
discharge	discharge	demand	mg/L	
stream	Total Stream/Waste		ratio	2.0

BAT	TRC	mean	BAT	0.5
BAT	TRC	maximum	BAT	1.6

	2017	2017	2011	2022	2022	Stream Stats
Discharge (MGD)	0.04	0.04	0.04	0.04	0.04	

Stream Cl Demand (ng/L)		0.3			0.3	
Discharge Cl Demand (mg/L)		0			0	
Effluent TRC (mg.L)		0.14	0.15		0.148	
Effluent Max TRC (mg/L)		0.22	0.30		0.484	
Effluent CBOD5 (mg/L)	25		25	25		
Effluent Ammonia (mg/L)	3.49		3.0	3.0		
Effluent Am Max (mg/L)	6.98		4.5	6.1		
Efflunt DO (mg/L)	5.0		5.0	5.0		
Receiving Waters				Site		
Stream Code						
Discharge RMI				0.04		
Elevation (feet)				1080.10		
Slope (ft/ft)				0.00045		
Drainage (Sq Mi)				0.003		
Yield (cfs/sq-mi)	0.027	0.027	0.l27	0.027		
Discharge pH	7.1					
Tributary pH	7.0					
Secondary Waters	Sugar Creek	Sugar Creek	un-named Tributary	un-named Tributary		
Stream Code	33433	3433	33436	33436		
Stream Flow (cfs)	0.043	0.04	0.04			
RMI	1.515		1.77	1.75		
Elevation (feet)	1104.00		1059.99	1076.16		
Slope (ft/ft)	0.01	0/01	0.0265	0.00728		
Drainage (Sq Mi)	1.56	1.46	1.459	1.3		1.36
Stream Name	Sugar Creek	Sugar Creek	Sugar Creek	Sugar Creek		
Stream Code	33433	3343	33433	33433		
Stream RMI	1.315		1.3517	1.35		
Stream Reach (feet)	6890	8000	7137	7128		
Elevation (feet)	1104.00			1007.93		
Slope (foot/foot)	0.01			0.00301		
Drainage (Sq Mi)	2.86		7.84	7.84		7.63
Stream Name	Sugar Creek			Honey Creek		
Stream Code	33433			33434		
Stream RMI	0.01`			3.62		
Elevation (feet)	1025.00			980.99		
Slope (foot/foot)				0.00014		
Drainage (Sq Mi)						53.0
Stream Name				North Fork Little Beaver Creek		
Stream Code				33323		
Stream RMI				26.59		
Elevation (feet)				957.36		
Slope (foot/foot)				0.00132		
Drainage (Sq Mi)						
Ohio Border RMI				7.85		
Elevation				827.02		
Slope				0.00132		
Drainage (Sq Mi)				105.76		106.0
Stream Name				Little Beaver Creek		Little Beaver Creek
Stream Code				33296		
Stream RMI						7.86
Elevation (feet)				723.55		
Slope (foot/foot)				0.00045		
Drainage (Sq Mi)						
Stream Name			Ohio River	Ohio River	Ohio River	Ohio River
Stream Code			32317	32317		
Stream RMI			941.22	941.22		
Elevation (feet)			676.42	676.42		
Slope (foot/foot)			0.43914	0.43914		
Drainage (Sq Mi)			23504.19	23504.19		
DO Goal (mg/L)	6.0					
Water Intake	Ohio		Ohio	Ohio		Ohio
Water intake RMI				0		0
Water Intake Distance (mi)	10		25.96	26.0		
Water Intake Drainage (sq mi)			105.766	105.76		106