pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0032468**
Facility Type	**Non-Municipal**	APS ID	**1038026**
Major / Minor	**Minor**	Authorization ID	**1353328**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**PA DCNR**	Facility Name	**Cook Forest State Park**
Applicant Address	PO Box 120 113 River Road	Facility Address	Park Road
	Cooksburg, PA 16217-0120		Cooksburg, PA 16217-0120
Applicant Contact	Ryan Borcz, Park Manager	Facility Contact	Ryan Borcz, Park Manager
Applicant Phone	(814) 744-8407	Facility Phone	(814) 744-8407
Applicant E Mail	cookforestsp@pa.gov	Facility E Mail	cookforestsp@pa.gov
Client ID	52524	Site ID	264209
Municipality	Barnett Township	County	Forest
Ch 94 Load Status	Not Overloaded	Connection Status	No Limitations
SIC Code	4952		9512
SIC Description	Trans. & Utilities - Sewerage Systems		Pub Admin-Land, Mineral, Wildlife Cons
Application Received	April 8, 2021	EPA Waived?	No
Application Accepted	June 9, 2021	If No, Reason	DEP Discretion

Application Purpose: NPDES renewal

Summary of Review

This is an activated sludge treatment facility without dedicated sludge holding or treatment facilities. Except for the new parameter, E Coli, the permit requirements are from the existing permit and allow reduced winter monitoring as proposed by DCNR. Low DO and pH reported.

The discharge is to the upper reach of the Lower Clarion River TMDL. TMDL background data was taken downstream at the Route 36 bridge. As the Clarion River above the Route 36 bridge is attaining all uses no water-quality based requirements to achieve the TMDL requirements should be necessary. The TMDL incorporation is necessary to accurately assess background conditions.

Sludge use and disposal description and location(s): 35.9 dry tons hauled of site by Buerk's Septic.

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		William H. Mentzer William H. Mentzer, P.E. Environmental Engineering Specialist	January 4, 2022
X		Justin C. Dickey Justin C. Dickey, P.E. Environmental Engineer Manager	January 6, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.079
Latitude DP	41º 19' 54.50"	Longitude DP	-79º 12' 27.10"
Latitude NHD	41º 19' 53.23"	Longitude NHD	-79º 12' 28.23"
Quad Name	Cooksburg	Quad Code	0812
Wastewater:	Treated campground domestic wastes		
Receiving Waters	Clarion River	Stream Code	49224
NHD Com ID	102668457	RMI	49.28
Drainage Area	806.6	Yield (cfs/mi^2)	0.119
Q7-10 Flow (cfs)	87.1	Q7-10 Basis	Clarion River
Elevation (ft)	1145.49	Slope (ft/ft)	0.0009
Watershed No.	17-B	Chapter 93 Class.	CWF
Existing Use	statewide	Existing Use Qualifier	none
Use Exceptions	none	Exceptions to Criteria	none
Comments	The NHD outfall is 1.02 miles above an unnamed Clarion River tributary		

Low Flow	Clarion River	USGS St	03029500	RMI	48.33	
	Low Flow (cfs)	96	Drainage (sq mi)	806.644	Yield (cfs/sq mi)	0.119
	Period	1940-96	Elevation (ft)	1141.15	Slope (ft/ft)	0.00111
Comments	The Clarion River is regulated through the East Branch Dam as of 1952 and upstream paper mill water use.					

Assessment Status	Attaining Use(s)		
Impairment Cause	Mine drainage		
Impairment Source	Abandoned mines		
TMDL Status	Final	Name	Lower Clarion River Watershed
Comments	This segment of the Lower Clarion River TMDL is attaining its uses and serves as the TMDL background and starting point.		

Impoundment	Piney Dam	Retention (d)	8.57	RMI 26.15

Background/Ambient Data		Data Source
pH (SU)	7.2	TMDL
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake: Pa American Clarion District

PWS Waters	Clarion River	Flow at Intake (cfs)	NA
PWS RMI	33.47	Distance from Outfall (mi)	16.37

Changes Since Last Permit Issuance: none
Other Comments: none

Treatment Facility Summary				
Treatment Facility Name: Cook Forest State Park				
WQM Permit No.	**Issuance Date**			
2769401	January 1, 1970			
2769401 A-1	Nov 2016			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Activated Sludge	Sodium Hypochlorite	0.079
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.079	83	Not Overloaded	None	Other WWTP

Changes Since Permit Issuance: Amendment A1 is for influent control and disinfection replacement.

Other Comments:

The original treatment: comminution, extended aeration, and disinfection without a sludge production estimate or any sludge treatment and liquid sodium hypochlorite disinfection. The original permit was issued to the Bureau of State Parks which was then part of the Department of Forests and Waters. In 1975 the permit was transferred to DER.

The application is dated September 30, 1969, notarized on October 2, 1969, and received on October 6, 1969. The permit was issued to Forest and Waters on January 1, 1970 and transferred to DEP on September 18, 1974. Any further transfer is optional as the owner operator is the Commonwealth of Pennsylvania.

The application addresses two flow based 0.0745 and 0.079-MGD designs. The modules generally support the 0.0745-MGD design, but the chemical data tabulation supports a 0.079-MGD design. Also there is two campground populations at 1000 and 1100 people. The design organic load is 255-ppd with a 1100 campground population. During the application review a peak holiday weekend basis was proposed but never required. Aeration design has changed significantly since this facility was designed and built but the facility still should perform adequately.

Design is for an activated sludge facility using extended aeration. Treatment is comminution including a bar screen bypass, wet well/dry well pump station with two 140-gpm pumps (0.2016-MGD pumps), parallel aeration tanks followed by dedicated clarifiers and common liquid sodium hypochlorite disinfection.

The design inorganic load is 83-PPD based 6900 people at 0.012-ppcd. The waste description used a 150-mg/L concentration with a 0.079-MGD design flow. Similarly, the organic load is 255-PPD based 6900 people at 0.037-ppcd. The waste description does not specify a concentration and refers to the design report.

The applicant is the	Ryan Borcz. Cook Forest park manager
Telephone	814-744-8407
Fax	814-744-8253
E Mail	cookforest@pa.gov
The application is	Daniel A. Kauffman, Senior Civil EngineerWestern Engineering Ofiice Bureau of Facility Design and Construction195 Park Road Prospect, Pa 16052-9387
Telephone	724 865-2131 ext 851
Fax	724-865-9075
E Mail	daakauffma@pa.gov

Compliance History

DMR Data for Outfall 001 (from May 1, 2020 to April 30, 2021)

Parameter	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	*OCT-20*	*SEP-20*	*AUG-20*	JUL-20	JUN-20	MAY-20
Flow (MGD) Average Monthly	0.019	0.027	0.010	0.018	**13714**	**11300**	*0.010*	*0.0125*	*0.0153*	0.0173	0.0188	0.0232
Flow (MGD) Daily Maximum	0.077	0.047	0.013	0.032	**48800**	**58000**	*0.015*	*0.0218*	*0.0203*	0.0257	0.0287	0.053
pH (S.U.) Minimum	7.13	6.99	6.75	6.70	7.0	7.39	***5.7***	***5.5***	***5.5***	**5.8**	6.0	6.5
pH (S.U.) Instant Maximum	7.60	7.48	8.80	7.40	8.8	7.5	*7.03*	*6.9*	*6.7*	6.9	6.9	7.0
DO (mg/L) Minimum	5.24	9.20	11.57	10.14	9.27	8.2	***3.42***	***3.65***	***3.02***	**3.63**	**3.38**	**2.7**
TRC (mg/L) Average Monthly	0.36	0.37	0.44	0.37	0.4	0.4	*0.20*	*0.1*	*0.1*	0.1	0.2	0.2
CBOD5 (mg/L) Average Monthly	2.30	0.30	0.75	1.65	1.7	0.14	*1.8*	*2*	*3.0*	2	3.0	21
TSS (mg/L) Average Monthly	6.5	4	6	4.0	6	0.63	*11.5*	*8*	*9*	6	5.0	9
F Coliform (#/100 ml) Geometric Mean	9	9	< 10	9	4.5	209.76	*104*	*60*	*58*	122	13	245
Total Nitrogen (mg/L) Average Monthly	3.32	1.31	1.75	1.43	2.6	0.48	*40.08*	*50.22*	*52.56*	51.24	28.42	17.51
Ammonia (mg/L) Average Monthly	1.85	0.09	0.16	0.22	0.05	0.16	*15.35*	*0.24*	*0.2*	0.15	4.02	14.72
Total Phosphorus (mg/L) Ave Monthly	0.158	0.122	0.17	0.065	0.37	0.033	*9.97*	*2.192*	*4.062*	2.941	0.948	0.524

Compliance History

Effluent Violations for Outfall 001, from: June 1, 2020 To: April 30, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
DO	06/30/20	Min	**3.38**	mg/L	4.0	mg/L
pH	07/31/20	Min	5.8	S.U.	6.0	S.U.
DO	07/31/20	Min	**3.63**	mg/L	4.0	mg/L
DO	08/31/20	Min	**3.02**	mg/L	4.0	mg/L
pH	08/31/20	Min	5.5	S.U.	6.0	S.U.
DO	09/30/20	Min	**3.65**	mg/L	4.0	mg/L
pH	09/30/20	Min	5.5	S.U.	6.0	S.U.
DO	10/31/20	Min	**3.42**	mg/L	4.0	mg/L
pH	10/31/20	Min	5.7	S.U.	6.0	S.U.

Summary of Inspections by Clint Stonesifer dated February 15, 2018 no problems noted.

Other Comments: Nov and Dec 2020 flow apparently entered as gpd not mgd
Short summer flow averaging 0.0150-MGD is 19.0% of design
Short summer maximum flow is 0.0257-MGD and 32.5% of design
Short summer effluent BOD5 averages 3.3 with a 21-mg/L maximum
Short summer effluent TSS averages 7.7 with a 11.5-mg/L maximum
Short summer TSS/BOD5 ratio 3.3

Low DO and pH correlate to with a high TSS/CBOD5 ratio implying a low CBOD5 load and excessive aeration which led to the NPDES permit DO and pH goals not being achieved. The permit requirements should be achievable without additional treatment.

		Influent					Effluent			
		Mean	Mean	Max	Min	Mean	Max	Min	Mean	Max
		MGD	PPD	PPD	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Design		0.079								
Hydraulic Design		0.079								
Organic Design										
Annual average	2018	0.031								
	2019	0.027								
	2020	0.019								
Peak Monthly Ave										
pH					**6.7**		**7.0**	**6.7**		**7.0**
TRC								**0.05**	**0.22**	**0.47**
BOD5			**1**	**1**	**7.4**		**7.4**	**4.2**	**5.0**	**6.5**
TSS			**1**	**1**	**8**		**8**	**8**	**10**	**12**
P			**0**	**0**	**0.309**		**0.309**	**0.592**	**0.755**	**0.952**
Ammonia			**0**	**0**	**3.09**		**0.309**	**0.09**	**4.38**	**12.96**
Coliform					**9**		**9**	**10**	**10**	**2100**
NO2NOS					**0.61**		**0.61**	**0.49**	**0.49**	**0.49**
DO								**4**	**4**	**4**

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.079
Latitude 41º 19' 54.68" **Longitude** -79º 12' 28.60"
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	Daily Minimum		BPJ
E Coli	126	Geo Mean		92a.47(a)

Comments: secondary treatment is the minimum treatment required. E coli is a new parameter for which monitoring is proposed.

Water Quality-Based Limitations

A Sewerage Program based “Reasonable Potential Analysis” determined the following parameters were candidates for limitations: Flow, BOD5 or CBOD5, TSS, nitrogen (N), phosphorus (P), ammonia-nitrogen, total residual chlorine (TRC), dissolved oxygen (DO), fecal coliform, e coli and pH.

TRC is spreadsheet evaluated. BOD5, CBOD5 and DO are evaluated with WQM 7.1.

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

Parameter		Limit (mg/l)			SBC	Model		
Parameter	Period	Minimum	Average	Maximum		Minimum	Average	Maximum
CBOD5			25	50	NAS		25	50
Ammonia	summer		25	50	NA		25	50
DO		4.0			NA	4.0		

Comments: Secondary treatment requirements are controlling. No ammonia requirements are necessary.

Best Professional Judgment (BPJ) Limitations

Comments: is the DO limitation basis.

Anti-Backsliding

Backsliding is not appropriate for violation corrections

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	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.) Oct 1 - Apr 30	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	3/week	Grab
pH (S.U.) May 1 - Sep 30	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO Oct 1 - Apr 30	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	3/week	Grab
DO May 1 - Sep 30	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC Oct 1 - Apr 30	XXX	XXX	XXX	0.5	XXX	1.6	3/week	Grab
TRC May 1 - Sep 30	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50.0	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60.0	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	2/month	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	8-Hr Composite
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	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

1A	B	C	D	E	F	G	H	I	J	K	L	M

	Discharger		Cook Forest							Saturday, May 14, 2016		
	Site		Cook Forest STP					Revised		Tuesday, January 4, 2022		
	Municipality		Barnett Township									
	County		Forest									
	NPDES Permit		PA0034268									
	0.5											
2					**TRC EVALUATION**							
3	Input appropriate values in B4:B8 and E4:E7											
4	95.9998		**= Q stream (cfs)**			**0.5**	**= CV Daily**					
5	0.0790		**= 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 = 250.597		**1.3.2.iii**			WLA cfc = 244.305		
12	PENTOXSD TRG		**5.1a**		LTAMULT afc = 0.373		**5.1c**			LTAMULT cfc = 0.581		
13	PENTOXSD TRG		**5.1b**		LTA_afc= 93.379		**5.1d**			LTA_cfc = 142.028		
14												
15	Source					Effluent Limit Calculations						
16	PENTOXSD TRG		5.1f			AML MULT = 1.231						
17	PENTOXSD TRG		5.1g			LIMIT (mg/l) = 0.500			BAT/BPJ			
18						X 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)**	

(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				49224		
	Function						
Samples					30		
reach	outfall		RMI		49.29		
	Reach End		RMI		47.75		
reach			feet		8131.2		
drainage			sq miles		806.642		
TRC	limitation	average	mg/L		0.500		
		maximum	mg/L		1.600		
elevation		modelled	feet		1145.49		
elevation		modelled	feet		1142.61		
slope		modelled	foot/foot		0.000		
low flow			cfs/sq mi		0.119		
discharge			mgd		0.0790		
Runoff	Period		hours		24.000		

No chlorine requirements indicated for the Clarion River

stream	flow		cfs	95.99976
stream	flow		MGD	62.046278
stream	flow	total	MGD	62.125278
stream	chlorine	demand	mg/L	0.3
discharge	discharge	demand	mg/L	
stream	Total Stream/Waste		ratio	786.4

permitted	TRC	mean	BAT	0.5
permitted	TRC	maximum	BAT	1.6

	B	C	D	E	F	G	H	I	J	K	L	M

Input Data WQM 7.0

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
49224	CLARION RIVER	**49.290**	1145.49	806.64	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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.077	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.20	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 (ºC)	Disc pH
Cook Forest SP	PA0034268	0.0790	0.0790	0.0790	0.000	25.00	6.60

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

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
49224	CLARION RIVER	**47.760**	1142.61	806.64	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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.077	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.20	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 (ºC)	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

Input Data WQM 7.0

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
49224	CLARION RIVER	**37.770**	1098.17	851.00	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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.077	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.20	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 (ºC)	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
17B	49224	CLARION 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 (ºC)	Analysis pH
Q7-10 Flow												
49.290	62.03	0.00	62.03	.1222	0.00036	1.108	146.05	131.82	0.38	0.243	20.01	7.20
47.760	62.03	0.00	62.03	.1222	0.00084	1.089	141.72	130.12	0.40	1.516	20.01	7.20
Q1-10 Flow												
49.290	39.70	0.00	39.70	.1222	0.00036	NA	NA	NA	0.30	0.312	20.02	7.20
47.760	39.70	0.00	39.70	.1222	0.00084	NA	NA	NA	0.31	1.945	20.02	7.20
Q30-10 Flow												
49.290	84.36	0.00	84.36	.1222	0.00036	NA	NA	NA	0.46	0.205	20.01	7.20
47.760	84.36	0.00	84.36	.1222	0.00084	NA	NA	NA	0.48	1.277	20.01	7.20

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	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
17B	49224	CLARION 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
49.290	Cook Forest SP	13.76	50	13.76	50	0	0
47.760		NA	NA	13.76	NA	NA	NA

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
49.290	Cook Forest SP	1.72	25	1.72	25	0	0
47.760		NA	NA	1.72	NA	NA	NA

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)		
49.29	Cook Forest SP	25	25	25	25	4	4	0	0
47.76		NA	NA	NA	NA	NA	NA	NA	NA

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
17B	49224	CLARION RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
49.290	0.079	20.010	7.197
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
146.055	1.108	131.820	0.384
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.05	0.030	0.15	0.701
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.235	0.639	Tsivoglou	5
Reach Travel Time (days)			
0.243			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.024	2.04	0.15	8.24
0.049	2.04	0.14	8.24
0.073	2.04	0.14	8.24
0.097	2.04	0.14	8.24
0.122	2.04	0.14	8.24
0.146	2.04	0.13	8.24
0.170	2.03	0.13	8.24
0.195	2.03	0.13	8.24
0.219	2.03	0.13	8.24
0.243	2.03	0.13	8.24

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
47.760	0.079	20.010	7.197
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
141.717	1.089	130.117	0.403
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.03	0.010	0.03	0.701
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.243	1.583	Tsivoglou	5
Reach Travel Time (days)			
1.516			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.152	2.03	0.02	8.24
0.303	2.02	0.02	8.24
0.455	2.02	0.02	8.24
0.606	2.02	0.02	8.24
0.758	2.02	0.02	8.24
0.910	2.01	0.01	8.24
1.061	2.01	0.01	8.24
1.213	2.01	0.01	8.24
1.365	2.00	0.01	8.24
1.516	2.00	0.01	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
17B	49224	CLARION 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)
49.290	Cook Forest SP	PA0034268	0.079	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4