pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0093157**
Facility Type	**Non-Municipal**	APS ID	**1018896**
Major / Minor	**Minor**	Authorization ID	**1318926**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Moraine Camplands Association Inc.**	Facility Name	**Moraine Camplands**
Applicant Address	281 Staff Road	Facility Address	281 Staff Road
	Slippery Rock, PA 16057-5327		Slippery Rock, PA 16057-5327
Applicant Contact	Jonathan Bluedorn	Facility Contact	Jonathon Bluedorn
Applicant Phone	(724) 794-6242	Facility Phone	(724) 794-6242
Applicant E Mail	Bluedorn3@yahoo.com	Facility E Mail	
Client ID	37526	Site ID	270128
Municipality	Brady Township	County	Butler
Ch 94 Load Status	Not Overloaded	Connection Status	No Limitations
Application Received	June 3, 2020	EPA Waived?	Yes
Application Accepted	July 2, 2021	If No, Reason	

Purpose of Application NPDES discharge permit renewal/

Summary of Review

No violations on file.

Sludge use and disposal description and location(s): 0.57-dry tons hauled to the New Castle STP.

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	December 8, 2021
X		Justin C. Dickey Justin C. Dickey, P.E. Environmental Engineer Manager	December 9, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.05
Latitude DP	41° 0’ 4.20”	Longitude DP	-80° 0’ 9.00”
Latitude NHD	41º 0' 3.81"	Longitude NHD	-80º 0' 8.16"
Quad Name	Slippery Rock	Quad Code	1005
Wastewater:	Treated campground domestic wastes		

Receiving Waters	Unnamed Tributary to Big Run	Stream Code	34431
NHD Com ID	126222104	RMI	0.31
Drainage Area	0.91	Yield (cfs/mi^2)	Intermittent stream
Q_{7-10} Flow (cfs)	0	Q_{7-10} Basis	Muddy Creek at Isle
Elevation (ft)	1282.73	Slope (ft/ft)	0.02
Watershed No.	20-C	Chapter 93 Class.	CWF
Existing Use	statewide	Existing Use Qualifier	none
Exceptions to Use	none	Exceptions to Criteria	none
Comments	Big Run 34427 RMI 2.37 Drainage 3.77 sq mi Elevation 1225.98 feet		

Low Flow: Muddy Creek at Isle 03106200 0.4 cfs 29.3 square mile yield 0.014 cfs/square mile2

Assessment Status	Impaired		
Cause(s) of Impairment	Siltation, Metals		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	**pending**	Name	

Background/Ambient Data		Data Source
pH (SU)	7.0	default
Temperature (°C)	20	default
Hardness (mg/L)		
Other:	7.1	Discharge pH median 1987-1993

Nearest Downstream Public Water Supply Intake	Pa American Water		
PWS Waters	Connoquenessing Creek	Flow at Intake (cfs)	NA
PWS RMI	0.01	Distance from Outfall (mi)	34.5

Changes Since Last Permit Issuance: Water intake shifted from mouth of Slippery Rock to mouth of Connoquenessing.

Other Comments:
Formerly the downstream water supply evaluated was the Slippery Rock Creek at the Salvation Army Camp Allegheny. This water supply is no longer used

Treatment Facility Summary				
Treatment Facility Name: Moraine Camplands				
WQM Permit No.	**Issuance Date**			
1074405	**3/15/1974**			
1074405 A1	3/25/2011			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Ammonia Reduction	Septic Tank Sand Filter	Hypochlorite	0.05
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.05	100	Not Overloaded	Aerobic Digestion	Offsite

Changes Since Last Permit Issuance: none

WQM 1074405
Comminution, flow splitting, parallel aeration tanks with clarifiers, sand filtration, disinfection and aerated sludge holding. This permit is as modified below with all special conditions superseded.

WQM 107445 A1, November 20, 2010 application date, revised on February 17, 2011 and issued on March 25, 2011 for: Chemical feed installation, air lift pump replacement, aeration coarse bubble diffuser replacement with fine bubble diffusers, and old plate settler conversion to aerated sludge holding.

		Ave MGD	Ave PPD		
Annual Average Design		**0.05**			
Hydraulic Design Capacity		**0.005-**			
Organic Design Capacity			**100**		
Annual Average	**2017**	**0.0250**			
	2018	**0.0235**			
	2019	**0.0240**			
Peak Monthly Mean	**June**	**0.0680**			
pH				**6.3**	**7.5**
TRC				**0.06**	
F coliform				**22**	
CBOD5				**2**	
TSS				**6**	
Amm				**0.25**	
N				**8.20**	
P				**0.89**	

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	0.017	0.022	0.094	0.0172	0.021	0.008	0.012	0.018	0.021	0.021	0.011	0.023
pH (S.U.) Minimum	8.10	7.80	7.6	7.7	7.1	7.1	6.7	6.6	6.60	6.60	7.10	6.8
pH (S.U.) Maximum	8.40	8.30	8.9	8.8	8.4	7.8	7.8	7.3	7.40	7.40	7.50	7.8
DO (mg/L) Daily Minimum	6.90	7.08	7.4	8.0	5.40	5.95	5.1	**3.40**	**3.50**	**3.40**	**3.14**	**3.0**
TRC (mg/L) Average Monthly	0.23	0.03	**0.7**	0.5	0.40	0.40	0.30	0.27	0.20	0.14	0.40	0.24
CBOD5 (mg/L) Average Monthly	6.50	6.25	2.0	5.0	5.60	3.75	6.45	4.45	6.55	8.35	5.75	3.95
TSS (mg/L) Average Monthly	1.0	1.0	1.0	1.0	3.50	3.50	4.50	3.50	7.0	7.0	6.0	1.0
Fecal Coliform (CFU/100 ml) Geometric Mean	1.0	1.0	1.0	1.0	3.0	1.0	1.73	3.87	3.31	12.0	3.31	2.82
Total Nitrogen (mg/L) Average Monthly	5.23	1.83	3.03	2.98	2.90	9.52	22.6	23.45	31.5	37.0	14.3	13.0
Ammonia (mg/L) Average Monthly	0.30	0.30	0.30	0.30	0.30	1.78	0.30	0.90	3.0	1.07	1.30	0.17
Total Phosphorus (mg/L) Average Monthly	0.565	0.40	0.51	0.46	0.635	1.73	2.54	2.08	2.65	2.30	1.80	0.98

Median pH 7.5 SU Summer pH median 6.95 SU

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

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TRC	02/28/21	Avg Mo	0.7	mg/L	0.5	mg/L

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .05
Latitude 41º 0' 4.20" **Longitude** -80º 0' 9.00"
Wastewater Description: 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

Comments: *Monitoring was added for E. Coli at a frequency of 1/year. The basis for this monitoring is the application of Chapter 92a.61 as recommended by the SOP for flows between 0.002 MGD and 0.05 MGD.* JCD

Water Quality-Based Limitations

CBOD5, TSS, P, TRC, DO, and pH were evaluated.

Secondary treatment with ammonia reduction is recommended. No TRC requirements are necessary in the primary dry receiving waters to protect aquatic life.

Previously the discharge was considered remote and not a nuisance. The receiving waters were classified as a dry steam and evaluated for dissolved oxygen. The resulting stream quality was then evaluated at the first point of use on Big Run. Modelling recommended a 3.0-mg/L minimum daily dissolved oxygen limit and a 3.5-mg/L summer ammonia limit. As the facility was achieving a 3.0-mg/L summer ammonia limit, the existing 3.0-mg/L summer limit was retained (no backsliding).

The current ammonia criteria does not change the ammonia requirements and anti-backsliding allows the 3.0-mg/L summer ammonia limitation to be retained.

Retention of the existing 3.0-mg/L minimum daily dissolved oxygen limitation is recommended based on remote operationand septic tank/sand filter treatment without aeration. The cold-water fish criteria is not appropriate as the receiving stream is a dry channel with no flowing water.

Three WQM 7.0 runs were done. A two-node run less the fish criteria and with a 5.0-mg/L in stream dissolved oxygen level relaxed the ammonia requirements to 4.03-mg/L and recommended a 5.0-mg/L minimum daily dissolved oxygen. A second run without fish criteria and with a 3.0-mg/L in stream dissolved oxygen level recommended 2.98-mg/L ammonia and 3.0-mg/L minimum daily dissolved oxygen. A two-stage run with 3.0-mg/L dry stream and 5.0-mg/L perennial stream dissolved oxygen recommended a 3.08-mg/L perennial stream ammonia and 3.0-mg/L dry stream dissolved oxygen limitations.

Best Professional Judgment (BPJ) Limitations

Comments: No change in the DO requirements is proposed as no aeration facilities are present.

Anti-Backsliding

The revised criteria relaxed the ammonia requirements. As the facility is achieving compliance with the existing limitations no change is proposed.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (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	3.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50.0	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30.0	XXX	60.0	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	XXX	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	9.0	XXX	18.0	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.

E. Coli monitoring added per the SOP. JCD

Discharger	Moraine Camplands STP	Monday, November 29, 2021
Site	Moraine Camplands	Revised Wednesday, December 8, 2021
Municipality	Brady Township	
County	Butler	
NPDES Permit	PA0093157	
0.5		

TRC EVALUATION

Input appropriate values in B4:B8 and E4:E7

0.0515	**= Q stream (cfs)**	**0.5**	**= CV Daily**
0.0500	**= Q discharge (MGD)**	**0.5**	**= CV Hourly**
30	**= no. samples**	**1**	**= AFC_Partial Mix Factor**
0.4	**= Chlorine Demand of Stream**	**1**	**= CFC_Partial Mix Factor**
0	**= Chlorine Demand of Discharge**	**15**	**= AFC_Criteria Compliance Time (min)**
	= BAT/BPJ Value	**720**	**= CFC_Criteria Compliance Time (min)**
0	**= % Factor of Safety (FOS)**		**=Decay Coefficient (K)**

Source	Reference	ΔFC Calculations	Reference	CFC Calculations
TRC	**1.3.2.iii**	WLA afc = 0.298	**1.3.2.iii**	WLA cfc = 0.284
PENTOXSD TRG	**5.1a**	LTAMULT afc = 0.373	**5.1c**	LTAMULT cfc = 0.581
PENTOXSD TRG	**5.1b**	LTA_afc= 0.111	**5.1d**	LTA_cfc = 0.165

Source	Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231
PENTOXSD TRG	5.1g	LIMIT (mg/l) = 0.137 AFC
		X LIMIT (mg/l) = 0.447

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			2	1	2		
Stream	Flow	Conditions			intermittent	perennial		
Stream	Code				34431	34427		
	Function							
Samples					30	30		
reach	outfall		RMI		0.31	2.37		
	Reach End		RMI		0	0		
reach			feet		1636.8	12513.6		
drainage			sq miles		0.91	3.77		
TRC	limitation	average	mg/L		0.049	0.137		
		maximum	mg/L		0.129	0.447		
elevation		modelled	feet		1282.73	1225.98		
elevation		modelled	feet		1225.98	1182.43		
slope		modelled	foot/foot		0.035	0.003		
low flow			cfs/sq mi		0.014	0.014		
discharge			mgd		0.0500	0.0500		
Runoff	Period		hours		24.000	24.000		

Intermittent stream discharge. TRC reviwed at outfall and estimated perennial streaam conditions. Stream chlorine is expected to naturally abated prior to reaching perennial flow conditions.

stream	flow		cfs	0.01242	0.05147
stream	flow		MGD	0.008029	0.033264
stream	flow	total	MGD	0.058029	0.083264
stream	chlorine	demand	mg/L	0.4	0.4
discharge	discharge	demand	mg/L		
stream	Total Stream/Waste		ratio	1.2	1.7

permitted	TRC	mean	BAT	0.5	0.5
permitted	TRC	maximum	BAT	1.6	1.6

Input Data WQM 7.0

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
34431	Trib 34431 to Big Run	**3.080**	1282.73	0.91	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	0.014	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 (ºC)	Disc pH
Moraine Camp	PA0093157A	0.0500	0.0500	0.0500	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	0.10	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
34431	Trib 34431 to Big Run	**2.770**	1225.98	3.77	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	0.014	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 (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
34431	Trib 34431 to Big Run	**0.000**	1182.43	293.56	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	0.014	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 (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
20C	34431	Trib 34431 to Big Run

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (ºC)	Analysis pH
Q7-10 Flow												
3.080	0.01	0.00	0.01	.0773	0.03467	.353	3.9	11.03	0.07	0.289	24.29	7.00
2.770	0.05	0.00	0.05	.0773	0.00298	.377	7.19	19.05	0.05	3.529	22.97	7.00
Q1-10 Flow												
3.080	0.01	0.00	0.01	.0773	0.03467	NA	NA	NA	0.06	0.298	24.52	7.00
2.770	0.03	0.00	0.03	.0773	0.00298	NA	NA	NA	0.04	3.855	23.48	7.00
Q30-10 Flow												
3.080	0.02	0.00	0.02	.0773	0.03467	NA	NA	NA	0.07	0.282	24.08	7.00
2.770	0.07	0.00	0.07	.0773	0.00298	NA	NA	NA	0.05	3.269	22.59	7.00

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
20C	34431	Trib 34431 to Big Run

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
3.080	Moraine Camp	NA	50	11.52	24.25	2	51
2.770		NA	NA	12.56	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
3.080	Moraine Camp	NA	25	1.45	4.03	2	84
2.770		NA	NA	1.6	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)		
3.08	Moraine Camp	25	25	4.03	4.03	5	5	0	0
2.77		NA	NA	NA	NA	NA	NA	NA	NA

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34431	Trib 34431 to Big Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
3.080	0.050	24.293	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
3.897	0.353	11.034	0.065
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
21.75	1.474	3.48	0.974
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.459	26.510	Owens	NA
Reach Travel Time (days)			
0.289			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.029	20.65	3.38	5.62
0.058	19.60	3.29	5.76
0.087	18.61	3.19	5.89
0.116	17.66	3.10	6.01
0.145	16.77	3.02	6.12
0.174	15.92	2.93	6.23
0.203	15.11	2.85	6.33
0.232	14.35	2.77	6.43
0.261	13.62	2.70	6.52
0.289	12.93	2.62	6.61

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
2.770	0.050	22.972	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
7.189	0.377	19.052	0.048
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
9.57	0.387	1.81	0.880
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.114	18.467	Owens	5
Reach Travel Time (days)			
3.529			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.353	8.18	1.32	8.07
0.706	7.00	0.97	8.20
1.059	5.98	0.71	8.24
1.411	5.12	0.52	8.24
1.764	4.37	0.38	8.24
2.117	3.74	0.28	8.24
2.470	3.20	0.21	8.24
2.823	2.74	0.15	8.24
3.176	2.34	0.11	8.24
3.529	2.00	0.08	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34431	Trib 34431 to Big Run

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
3.080	Moraine Camp	PA0093157A	0.050	CBOD5	25		
				NH3-N	4.03	8.06	
				Dissolved Oxygen			5

Input Data WQM 7.0

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
34431	Trib 34431 to Big Run	**3.080**	1282.73	0.91	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	0.014	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 (ºC)	Disc pH
Moraine Camp	PA0093157A	0.0500	0.0500	0.0500	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	0.10	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
34431	Trib 34431 to Big Run	**2.770**	1225.98	3.77	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	0.014	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 (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
20C	34431	Trib 34431 to Big Run

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (ºC)	Analysis pH
Q7-10 Flow												
3.080	0.01	0.00	0.01	.0773	0.03467	.353	3.9	11.03	0.07	0.289	24.29	7.00
Q1-10 Flow												
3.080	0.01	0.00	0.00	.0773	0.03467	NA	NA	NA	0.00	0.000	0.00	0.00
Q30-10 Flow												
3.080	0.02	0.00	0.00	.0773	0.03467	NA	NA	NA	0.00	0.000	0.00	0.00

WQM 7.0 Modeling Specifications

Parameters	D.O.	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	95.00%	Use Balanced Technology	☑
D.O. Goal	3		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20C	34431	Trib 34431 to Big Run

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
3.08	Moraine Camp	25	25	25	25	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34431	Trib 34431 to Big Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
3.080	0.050	24.293	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
3.897	0.353	11.034	0.065
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
21.75	1.474	21.48	0.974
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
3.741	26.510	Owens	NA
Reach Travel Time (days)			
0.289			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.029	20.65	20.88	3.23
0.058	19.60	20.30	3.10
0.087	18.61	19.74	3.15
0.116	17.66	19.19	3.27
0.145	16.77	18.65	3.43
0.174	15.92	18.14	3.60
0.203	15.11	17.63	3.76
0.232	14.35	17.14	3.93
0.261	13.62	16.66	4.09
0.289	12.93	16.20	4.25

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34431	Trib 34431 to Big Run

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
3.080	Moraine Camp	PA0093157A	0.050	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

Input Data WQM 7.0

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
34431	Trib 34431 to Big Run	**2.770**	1225.98	3.77	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	0.014	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 (ºC)	Disc pH
Morain	PA	0.0500	0.0500	0.0500	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	12.93	2.00	0.00	1.50
Dissolved Oxygen	4.25	8.24	0.00	0.00
NH3-N	162.00	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
34431	Trib 34431 to Big Run	**0.000**	1182.43	293.56	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	0.014	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 (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
20C	34431	Trib 34431 to Big Run

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (ºC)	Analysis pH
Q7-10 Flow												
2.770	0.05	0.00	0.05	.0773	0.00298	.377	7.19	19.05	0.05	3.529	22.97	7.00
Q1-10 Flow												
2.770	0.03	0.00	0.03	.0773	0.00298	NA	NA	NA	0.04	3.855	23.48	7.00
Q30-10 Flow												
2.770	0.07	0.00	0.07	.0773	0.00298	NA	NA	NA	0.05	3.269	22.59	7.00

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
20C	34431	Trib 34431 to Big Run

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.770	Morain	12.56	18.05	12.56	18.05	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
2.770	Morain	1.6	3.08	1.6	3.08	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)		
2.77	Morain	12.93	12.93	3.08	3.08	4.25	4.25	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream_Name
20C	34431	Trib 34431 to Big Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
2.770	0.050	22.972	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
7.189	0.377	19.052	0.048
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
8.50	0.358	1.83	0.880
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.870	18.467	Owens	5
Reach Travel Time (days)			
3.529			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.353	7.35	1.34	8.12
0.706	6.36	0.98	8.24
1.059	5.51	0.72	8.24
1.411	4.76	0.53	8.24
1.764	4.12	0.39	8.24
2.117	3.57	0.28	8.24
2.470	3.09	0.21	8.24
2.823	2.67	0.15	8.24
3.176	2.31	0.11	8.24
3.529	2.00	0.08	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34431	Trib 34431 to Big Run

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
2.770	Morain	PA	0.050	CBOD5	12.93		
				NH3-N	3.08	6.16	
				Dissolved Oxygen			4.25

Input Data WQM 7.0

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
34431	Trib 34431 to Big Run	**3.080**	1282.73	0.91	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	0.014	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.50	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
Moraine Camp	PA0093157A	0.0500	0.0500	0.0500	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	3.00	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
34431	Trib 34431 to Big Run	**2.770**	1225.98	3.77	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	0.014	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.5(	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
34431	Trib 34431 to Big Run	**0.000**	1182.43	293.56	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	0.014	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.5(	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
20C	34431	Trib 34431 to Big Run

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (ºC)	Analysis pH
Q7-10 Flow												
3.080	0.01	0.00	0.01	.0773	0.03467	.353	3.9	11.03	0.07	0.289	24.29	7.50
2.770	0.05	0.00	0.05	.0773	0.00298	.377	7.19	19.05	0.05	3.529	22.97	7.50
Q1-10 Flow												
3.080	0.01	0.00	0.01	.0773	0.03467	NA	NA	NA	0.06	0.298	24.52	7.50
2.770	0.03	0.00	0.03	.0773	0.00298	NA	NA	NA	0.04	3.855	23.48	7.50
Q30-10 Flow												
3.080	0.02	0.00	0.02	.0773	0.03467	NA	NA	NA	0.07	0.282	24.08	7.50
2.770	0.07	0.00	0.07	.0773	0.00298	NA	NA	NA	0.05	3.269	22.59	7.50

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	3		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20C	34431	Trib 34431 to Big Run

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
3.080	Moraine Camp	NA	50	6.35	13.36	2	73
2.770		NA	NA	6.92	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
3.080	Moraine Camp	NA	25	1.07	2.98	2	88
2.770		NA	NA	1.18	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)		
3.08	Moraine Camp	25	25	2.98	2.98	3	3	0	0
2.77		NA	NA	NA	NA	NA	NA	NA	NA

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34431	Trib 34431 to Big Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
3.080	0.050	24.293	7.500
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
3.897	0.353	11.034	0.065
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
21.75	1.474	2.57	0.974
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
3.741	26.510	Owens	NA
Reach Travel Time (days)			
0.289			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.029	20.65	2.50	4.90
0.058	19.60	2.43	5.51
0.087	18.61	2.36	5.85
0.116	17.66	2.30	6.06
0.145	16.77	2.23	6.22
0.174	15.92	2.17	6.35
0.203	15.11	2.11	6.45
0.232	14.35	2.05	6.55
0.261	13.62	1.99	6.64
0.289	12.93	1.94	6.73

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
2.770	0.050	22.972	7.500
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
7.189	0.377	19.052	0.048
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
9.57	0.387	1.33	0.880
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.196	18.467	Owens	3
Reach Travel Time (days)			
3.529			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.353	8.18	0.98	8.15
0.706	7.00	0.72	8.24
1.059	5.98	0.52	8.24
1.411	5.12	0.38	8.24
1.764	4.37	0.28	8.24
2.117	3.74	0.21	8.24
2.470	3.20	0.15	8.24
2.823	2.74	0.11	8.24
3.176	2.34	0.08	8.24
3.529	2.00	0.06	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34431	Trib 34431 to Big Run

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
3.080	Moraine Camp	PA0093157A	0.050	CBOD5	25		
				NH3-N	2.98	5.96	
				Dissolved Oxygen			3