pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0031313**
Facility Type	**Non-Municipal**	APS ID	**1024395**
Major / Minor	**Minor**	Authorization ID	**1328996**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Intermediate Unit 1**	Facility Name	**Colonial Elementary School**
Applicant Address	1 Intermediate Unit Drive	Facility Address	6353 National Pike
	Coal Center, PA 15423-1000		Grindstone, PA 15442-1114
Applicant Contact	Richard Staley	Facility Contact	Richard Staley
Applicant Phone	(724) 938-3241	Facility Phone	(724) 938-3241
Client ID	227656	Site ID	242082
Ch 94 Load Status	Not Overloaded	Municipality	Redstone Township
Connection Status		County	Fayette
Date Application Received	September 30, 2020	EPA Waived?	Yes
Date Application Accepted	May 3, 2021	If No, Reason	

Purpose of Application: NPDES permit renewal for a minor treatment facility.

Summary of Review

This application is for a renewal of an NPDES permit, for an existing Minor discharge of treated sewage from a Non-Municipal STP.

Act 14 – Proof of Notification was submitted and received.

There is one open violation for subject client ID (227656) for an NPDES permit Part A effluent violation on 2/26/2021.

There has been no change to the discharge or the receiving stream since the last permit issuance.

A part 2 WQM permit is not required at this time.

Treatment consist of (WQM Permit No. 463S48): The existing treatment process consists of comminution, flow equalization, extended aeration, clarification, and chlorination. The treated sewage then discharges to Unnamed Tributary 39947 to Colvin Run (WWF) through outfall 001.

Sludge use and disposal description and location(s): Septage must be pumped and hauled off-site by a septage hauler for land application under a general permit authorized by DEP or disposal at an STP.

The EPA waiver is in effect.

Approve	Deny	Signatures	Date
X		Jon Bucha Jonathan F. Bucha / Civil Engineer General	May 20, 2021
X		Justin C. Dickey Justin C. Dickey, P.E. / Environmental Engineer Manager	May 25, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.0105
Latitude	39º 59' 32"	Longitude	-79º 50' 19"
Quad Name	New Salem	Quad Code	1907
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Colvin Run (WWF)	Stream Code	39947
NHD Com ID	99412006	RMI	1.8
Drainage Area	0.125 mi^2 (Pollution Report)	Yield (cfs/mi^2)	0.8
Q_{7-10} Flow (cfs)	0.1	Q_{7-10} Basis	Default
Elevation (ft)	1170 (Google Earth)	Slope (ft/ft)	-
Watershed No.	19-C	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	Final	Name	Redstone Creek Watershed

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

Nearest Downstream Public Water Supply Intake	PA American Water Company		
PWS Waters	Monongahela River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Changes Since Last Permit Issuance: No Changes.

Other Comments: This treatment system is capable of meeting effluent limits.

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.

Treatment Facility Summary

Treatment Facility Name: Colonial Elementary School

WQM Permit No.	Issuance Date
463S48	8/12/1963

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia Reduction	Extended Aeration	Chlorine With Dechlorination	

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0105		Not Overloaded	Dewatering	Other WWTP

Compliance History

DMR Data for Outfall 001 (from April 1, 2020 to March 31, 2021)

Parameter	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20
Flow (MGD) Average Monthly	0.00004	0.00010	0.00015		0.00006	0.00012						
pH (S.U.) Minimum	7.8	6.0	6.7		6.0	6.9						
pH (S.U.) Maximum	8.9	7.2	7.2		7.5	7.7						
DO (mg/L) Minimum	12.0	11.6	11.9		9.0	6.0						
TRC (mg/L) Average Monthly	< 0.02	< 0.02	< 0.02		< 0.02	< 0.02						
TRC (mg/L) Instantaneous Maximum	0.02	0.02	0.22		0.02	0.02						
CBOD5 (mg/L) Average Monthly	2.4	2.5	2.0		2.1	2.7						
CBOD5 (mg/L) Instantaneous Maximum	2.8	2.5	2.0		2.1	3.1						
TSS (mg/L) Average Monthly	5.0	5.5	5.5		5.0	5.0						
TSS (mg/L) Instantaneous Maximum	5.0	6.0	6.0		5.0	5.0						
Fecal Coliform (CFU/100 ml) Geometric Mean	3	5	49		1	1						
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	7	6	58		2	1						
Total Nitrogen (mg/L) Daily Maximum				36.8								
Ammonia (mg/L) Average Monthly	0.3	0.8	1.1		0.6	2.6						

Ammonia (mg/L) Instantaneous Maximum	0.3	1.2	1.7		0.6	4.8						
Total Phosphorus (mg/L) Daily Maximum				1.0								

Compliance History	
Summary of DMRs:	Review of the past 3 years of DMR reports indicates one effluent violation for minimum pH. No other effluent violations were indicated on the DMRs.
Summary of Inspections:	An inspection occurred on 2/15/2018, where the plant was determined to be in good operating condition. Jan – Apr 2017 TRC violations were due to incorrect meter readings and are not an ongoing issue.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .0105
Latitude 39º 59' 32.00" **Longitude** -79º 50' 19.00"
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	IMAX	-	92a.61(11)(12)

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (Attachment C):

Parameter	Limit (mg/l)	SBC	Model
Ammonia Nitrogen (May 1 – October 31)	3.0	Average Monthly	WQM 7.0
Ammonia Nitrogen (November 1 – April 30)	9.0	Average Monthly	WQM 7.0
Dissolved Oxygen	4.0	Average Monthly	WQM 7.0
Total Residual Chlorine	0.127	Average Monthly	TRC Calc Spreadsheet
Total Residual Chlorine	0.397	Instantaneous Maximum	TRC Calc Spreadsheet

Comments: The winter seasonal ammonia nitrogen limit of 9.0 mg/L is based upon 3 times the summer seasonal limit, which is based upon the Department's Implementation Guidance of Section 93.7 Ammonia Criteria. Based on the facilities eDMR data, this treatment system should be able to meet the more stringent TRC limits and no compliance schedule should be necessary.

Best Professional Judgment (BPJ) Limitations

Comments: Total Nitrogen and Total Phosphorus monitoring will remain at the 1/year sampling frequency on the current permit renewal, based on the Department's SOP for Establishing Effluent Limitations for Individual Sewage Permits. Monitoring for D.O., pH, and TRC will remain at 5/week.

Anti-Backsliding

Anti-backsliding is not applicable since the permit limits are not being relaxed.

Proposed Effluent Limitations and Monitoring Requirements

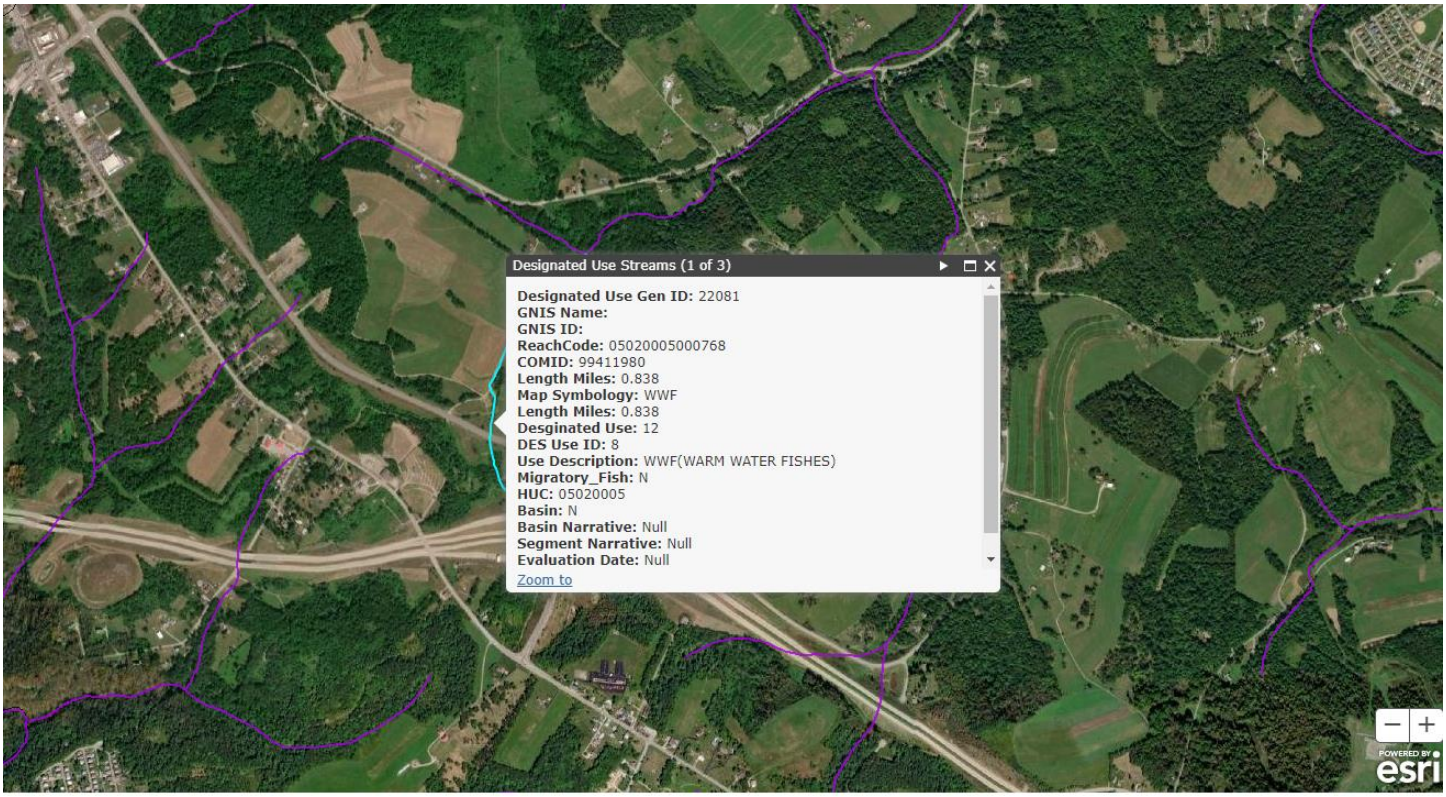
The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). 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	2/month	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	XXX	9.0	5/week	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	5/week	Grab
TRC	XXX	XXX	XXX	0.12	XXX	0.39	5/week	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
TSS	XXX	XXX	XXX	30.0	XXX	60.0	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	9.0	XXX	18.0	2/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	3.0	XXX	6.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

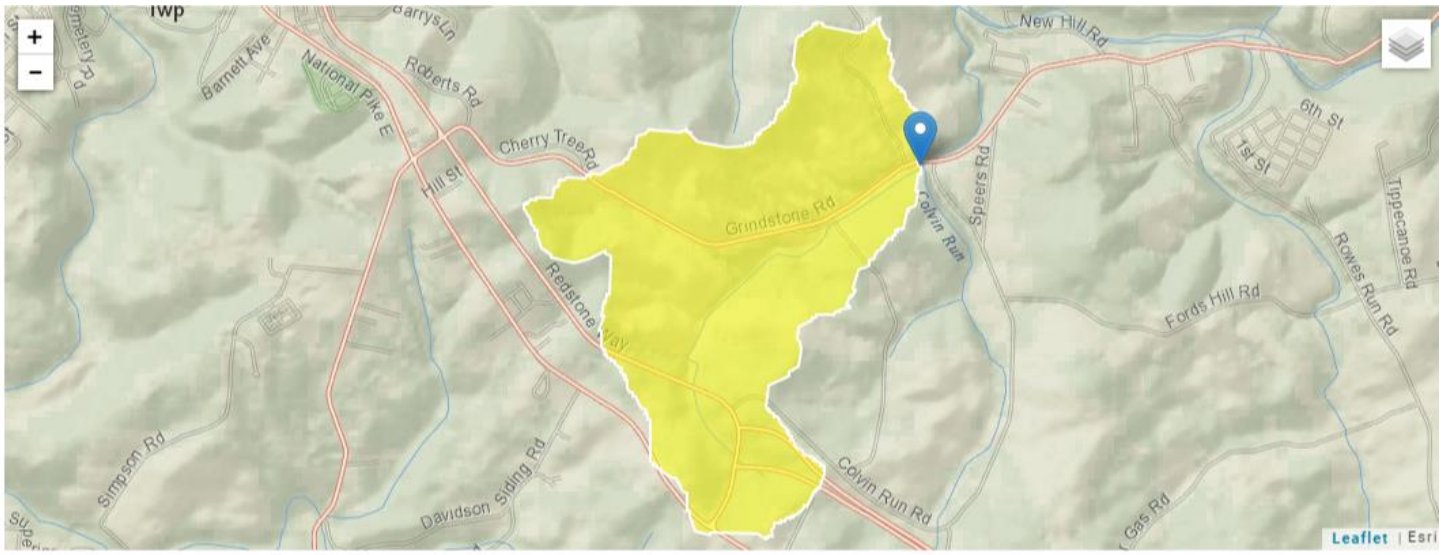
Compliance Sampling Location: Outfall 001 after disinfection.

ATTACHMENT A
eMAP – Stream Designation



ATTACHMENT B

StreamStats REPORT – RMI 0.001 On Unnamed Trib 39947



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.12	square miles
ELEV	Mean Basin Elevation	1076	feet

ATTACHMENT C
WQM 7.0 MODEL OUTPUT FILE

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19C	39947	Trib 39947 to Colvin 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)
1.800	Unnamed Trib	PA0031313	0.000	CBOD5	25		
				NH3-N	3.26	6.52	
				Dissolved Oxygen			4

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19C	39947	Trib 39947 to Colvin Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.800	0.011	22.174	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1.802	0.302	5.962	0.053
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
15.00	0.875	1.84	0.828
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.845	29.100	Owens	5
Reach Travel Time (days)			
2.084			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.208	12.26	1.55	7.92
0.417	10.02	1.31	7.92
0.625	8.19	1.10	7.92
0.834	6.70	0.92	7.92
1.042	5.48	0.78	7.92
1.251	4.48	0.66	7.92
1.459	3.66	0.55	7.92
1.667	2.99	0.46	7.92
1.876	2.45	0.39	7.92
2.084	2.00	0.33	7.92

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
19C	39947	Trib 39947 to Colvin Run	**1.800**	1170.00	0.13	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	0.100	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
Unnamed Trib	PA0031313	0.0000	0.0000	0.0105	0.000	20.00	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	4.00	8.24	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
19C	39947	Trib 39947 to Colvin Run	**0.001**	887.00	1.12	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	0.100	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
		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
19C	39947	Trib 39947 to Colvin Run

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
1.800	0.01	0.00	0.01	.0162	0.02979	.302	1.8	5.96	0.05	2.084	22.17	7.00
Q1-10 Flow												
1.800	0.01	0.00	0.01	.0162	0.02979	NA	NA	NA	0.05	2.293	21.65	7.00
Q30-10 Flow												
1.800	0.02	0.00	0.02	.0162	0.02979	NA	NA	NA	0.06	1.921	22.56	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	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19C	39947	Trib 39947 to Colvin 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
1.800	Unnamed Trib	8.58	12.81	8.58	12.81	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
1.800	Unnamed Trib	1.59	3.26	1.59	3.26	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)		
1.80	Unnamed Trib	25	25	3.26	3.26	4	4	0	0

ATTACHMENT D
TRC SPREADSHEET

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0125	= Q stream (cfs)	0.5	= CV Daily
0.0105	= Q discharge (MGD)	0.5	= CV Hourly
20	= 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)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.264	1.3.2.iii	WLA cfc = 0.250
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.099	5.1d	LTA_cfc = 0.146

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.288	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.127	AFC
		INST MAX LIMIT (mg/l) = 0.397	

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)