pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0093254**
Facility Type	**Non-Municipal**	APS ID	**1070066**
Major / Minor	**Minor**	Authorization ID	**1407706**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Sugar Creek Rest, Inc.**	Facility Name	**Sugar Creek Rest Home**
Applicant Address	120 Lakeside Drive	Facility Address	120 Lakeside Drive
	Worthington, PA 16262-5102		Worthington, PA 16262-5102
Applicant Contact	Dee Hillberry (dhillberry@qualitylifeservices.com)	Facility Contact	Dee Hillberry (dhillberry@qualitylifeservices.com)
Applicant Phone	(724) 445-3000, ext. 2846	Facility Phone	(724) 445-3000, ext. 2846
Client ID	280	Site ID	250139
Ch 94 Load Status	Not Overloaded	Municipality	Sugarcreek Township
Connection Status	No Limitations	County	Armstrong
Date Application Received	August 22, 2022	EPA Waived?	Yes
Date Application Accepted	August 26, 2022	If No, Reason	-

Purpose of Application: Renewal of an NPDES Permit for an existing discharge of treated sanitary wastewater.

Summary of Review

Act 14 - Proof of Notification was submitted and received.

A Part II Water Quality Management permit is not required at this time.

The Permittee should be able to meet the limits of this permit, which will protect the uses of the receiving stream.

I. OTHER REQUIREMENTS:

A. Stormwater into sewers
B. Right of way
C. Solids handling
D. Public Sewerage Availability
E. Effluent Chlorine Optimization and Minimization
F. Little Assimilative Capacity

SPECIAL CONDITIONS:

II. Solids Management

There are no open violations in efacts for Client ID (280) as of 12/27/2023. *CWY 12/27/2023*

Approve	Return	Deny	Signatures	Date
X			Stephen A. McCauley Stephen A. McCauley, E.I.T. / Environmental Engineering Specialist	12/27/2023
X			Chad W. Yurisic Chad W. Yurisic, P.E. / Environmental Engineer Manager	12/27/2023

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.02
Latitude	40º 53' 40.00"	Longitude	-79º 40' 6.00"
Quad Name	-	Quad Code	-
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to the Patterson Creek (HQ-TSF)	Stream Code	UNT to 42695
NHD Com ID	123970867	RMI	0.05
Drainage Area	0.12	Yield (cfs/mi^2)	0.1 (default)
Q_{7-10} Flow (cfs)	0.012	Q_{7-10} Basis	calculated
Elevation (ft)	1322	Slope (ft/ft)	0.03179
Watershed No.	18-F	Chapter 93 Class.	HQ-TSF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	-		
Source(s) of Impairment	-		
TMDL Status	-	Name	-

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

Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Water Authority - Freeport		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2576
PWS RMI	30.0	Distance from Outfall (mi)	26.0

Sludge use and disposal description and location(s): Sludge is hauled by CWM Environmental to the AVJSA WWTP, where it is disposed of at an approved landfill.

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.

Narrative: This Fact Sheet details the determination of draft NPDES permit limits for an existing discharge of 0.02 MGD of treated sewage from a non-municipal STP in Sugarcreek Township, Armstrong County.

Existing treatment consists of: (WQM Permit no. 0377406) Comminutor with bypass bar screen, an equalization tank, aeration tanks, a clarifier, tablet chlorination with a contact tank, tablet dechlorination, and post aeration.

1. Streamflow:

Unnamed Tributary to the Patterson Creek:

Drainage Area:	0.12	sq. mi.		(from StreamStats)
Yieldrate:	0.1	cfsm		(Default)
% of stream allocated:	100%		Basis:	no nearby discharges
Q_{7-10}:	0.012	cfs		(Calculated)

2. Wasteflow:

Maximum discharge: 0.02 MGD = 0.03 cfs

Runoff flow period: 24 hours Basis: Runoff flow with flow equalization

The calculated stream flow (Q7-10) is greater than 3 times the permitted discharge flow. In accordance with the SOP, the treatment requirements in document number 391-2000-014, titled, "Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers", dated April 12, 2008, were not evaluated for this facility.

Flow will be required to be monitored as authorized under Chapter 92a.61, and as recommended in the SOP.

3. Parameters:

The following parameters were evaluated: pH, Total Suspended Solids, Fecal Coliform, Phosphorus, NH_3-N, $CBOD_5$, Dissolved Oxygen, and Disinfection.

a. pH

Between 6.0 and 9.0 at all times

Basis: Application of Chapter 93.7 technology-based limits.

The measurement frequency was previously set to 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001), which will be retained.

b. Total Suspended Solids

Limits are 30.0 mg/l as a monthly average and 60.0 as an instantaneous maximum.

Basis: The previous limits are more restrictive. Based on the eDMR data, the previous, more restrictive limits of 25.0 mg/l as a monthly average and 50.0 as an instantaneous maximum are attainable so they will be retained.

c. Fecal Coliform

05/01 - 09/30:	200/100ml	(monthly average geometric mean)
	1,000/100ml	(instantaneous maximum)

10/01 - 04/30: 2,000/100ml (monthly average geometric mean)
10,000/100ml (instantaneous maximum)

Basis: Application of Chapter 92a47 technology-based limits.

d. E. Coli

Monitoring was added for E. Coli at a frequency of 1/year.

Basis: Application of Chapter 92a.61 as recommended by the SOP for flows between 0.002 MGD and 0.05 MGD.

e. Total Phosphorus

Monitoring for Total Phosphorus will be retained with this renewal in accordance with the SOP, based on Chapter 92a.61.

f. Total Nitrogen

Monitoring for Total Nitrogen will be retained with this renewal in accordance with the SOP, based on Chapter 92a.61.

g. Ammonia-Nitrogen (NH_3-N)

Median discharge pH to be used: 7.4 Standard Units (S.U.)

Basis: Average pH value from DMR summary

Discharge temperature: 25°C (default value used in the absence of data)

Median stream pH to be used: 7.0 Standard Units (S.U.)

Basis: Default value used in the absence of data

Stream Temperature: 25˚C (default value used for HQ/TSF modeling)

Background NH_3-N concentration: 0.1 mg/l

Basis: Default value used in the absence of data

calculated summer NH_3-N limits: 2.3 mg/l (monthly average)
4.6 mg/l (instantaneous maximum)

calculated winter NH_3-N limits: 6.9 mg/l (monthly average)
13.8 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the calculated summer limits above (see Attachment 1), which are slightly more restrictive than in the previous NPDES Permit. The winter limits are calculated as three times the summer limits. Based on the eDMR data, the more restrictive limits are attainable so a compliance schedule will not be necessary.

h. $CBOD_5$

Median discharge pH to be used: 7.4 Standard Units (S.U.)

Basis: Average pH value from DMR summary

Discharge temperature: 25°C (default value used in the absence of data)

Median stream pH to be used: 7.0 Standard Units (S.U.)

Basis: Default value used in the absence of data

Stream Temperature: 25˚C (default value used for HQ/TSF modeling)

Background $CBOD_5$ concentration: 2.0 mg/l

Basis: Default value used in the absence of data

calculated $CBOD_5$ limits: 25.0 mg/l (monthly average)
50.0 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the calculated CBOD5 limits above (see Attachment 1), which are less restrictive than the previous NPDES Permit. Based on the eDMR data, the previous, more restrictive limits of 20.0 mg/l as a monthly average and 40.0 as an instantaneous maximum are attainable so they will be retained.

i. Dissolved Oxygen (DO)

The technology-based minimum of 5.0 mg/l is recommended by the WQ Model (see Attachment 1) and the SOP based on Chapter 93.7, under the authority of Chapter 92a.61. However, the previous Dissolved Oxygen minimum requirement was set as 6.0 mg/l. Based on the eDMR data, the previous, more restrictive limits are attainable so they will be retained.

The measurement frequency was previously set to 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001), which will be retained.

j. Disinfection

☐ Ultraviolet (UV) light monitoring

☒ Total Residual Chlorine (TRC): 0.06 mg/l (monthly average)
0.21 mg/l (instantaneous maximum)

Basis: The TRC limits above were calculated using the Department's TRC Calculation Spreadsheet (see Attachment 2). The limits are less restrictive than in the previous NPDES Permit. Based on the eDMR data, the previous, more restrictive limits are attainable so they will be retained.

The measurement frequency will be set to 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

4. Reasonable Potential Analysis for Receiving Stream:

A Reasonable Potential Analysis was not performed in accordance with State practices using the Department's Toxics Management Spreadsheet since no sampling other than sewage-related parameters was performed for this facility with the renewal application.

5. Reasonable Potential for Downstream Public Water Supply (PWS):

The Department's Toxics Management Spreadsheet does not calculate limits for parameters that are based on PWS criteria (TDS, Chloride, Bromide, and Sulfate). However, since no sample data was provided, mass-balance calculations were not performed.

Nearest Downstream potable water supply (PWS): Buffalo Township Municipal Water Authority - Freeport
Distance downstream from the point of discharge: 26.0 miles (approximate)

Result: No limits are necessary as significant dilution is available

6. Anti-Backsliding:

Since all the permit limits in this renewal are the same or more restrictive than the previous NPDES Permit, anti-backsliding is not applicable.

7. Attachment List:

Attachment 1 - WQ Modeling Printouts
Attachment 2 - TRC_Calc Spreadsheet

(The Attachments above can be found at the end of this document)

Compliance History

DMR Data for Outfall 001 (from November 1, 2022 to October 31, 2023)

Parameter	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22
Flow (MGD) Average Monthly	0.020	0.00264	0.020	0.0200	0.01854	0.01621	0.01593	0.01583	0.01589	0.0154	0.01534	0.01528
Flow (MGD) Daily Maximum	0.02702	0.02126	0.02345	0.06865	0.02151	0.01977	0.02736	0.01892	0.02354	0.023	0.02221	0.01566
pH (S.U.) Minimum	7.1	7.1	7.3	6.8	7.1	7.2	7.2	7.2	7.2	7.2	7.3	7.1
pH (S.U.) Maximum	7.6	7.8	8.2	7.8	8.2	7.6	7.7	7.7	7.8	8.0	7.8	7.8
DO (mg/L) Minimum	6.4	6.9	6.5	6.8	6.4	6.3	6.3	6.1	6.1	6.1	6.0	6.0
TRC (mg/L) Average Monthly	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.02	0.02
TRC (mg/L) Instantaneous Maximum	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.12	0.03	0.03	0.03	0.03
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.0	< 3.0	< 3.7	< 3.0	4.4	6.5	< 3.7	< 3.0	< 3.0	< 3.0	< 3.0
CBOD5 (mg/L) Instantaneous Maximum	< 3.0	< 3.0	< 3.0	4.4	< 3.0	5.5	7.8	4.4	< 3.0	3.0	< 3.0	< 3.0
TSS (mg/L) Average Monthly	7.0	< 5.0	9.0	< 4.0	< 3.0	< 3.0	< 3.0	< 3.0	4.0	4.0	< 3.0	3.5
TSS (mg/L) Instantaneous Maximum	10.0	6.0	9.0	5.0	< 3.0	< 3.0	3.0	< 3.0	5.0	4.0	3.0	4.0
Fecal Coliform (No./100 ml) Geometric Mean	< 1.0	< 1.0	90.0	< 1.0	< 1.0	< 1.0	< 146	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Fecal Coliform (No./100 ml) Maximum	< 1.0	< 1.0	462	< 1.0	< 1.0	< 1.0	291	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Nitrogen (mg/L) Daily Maximum											4.04	
Ammonia (mg/L) Average Monthly	2.77	4.17	0.97	0.27	1.62	6.61	< 1.7	0.81	< 0.21	0.20	0.20	0.14
Ammonia (mg/L) Instantaneous Maximum	5.07	5.13	1.73	0.33	2.5	7.97	3.3	1.50	0.32	0.26	0.29	0.49
Total Phosphorus (mg/L) Daily Maximum											0.48	

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	2/month	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	6.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.04	XXX	0.13	1/day	Grab
CBOD5	XXX	XXX	XXX	20.0	XXX	40.0	2/month	Grab
TSS	XXX	XXX	XXX	25.0	XXX	50.0	2/month	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
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	6.9	XXX	13.8	2/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.3	XXX	4.6	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Compliance Sampling Location: at Outfall 001, after disinfection.

Flow is monitor only based on Chapter 92a.61. The limits for pH and Dissolved Oxygen are technology-based on Chapter 93.7. The Total Residual Chlorine (TRC) limits are water quality-based on Chapter 93.7. The limits for $CBOD_5$, Total Suspended Solids, and Fecal Coliforms are technology-based on Chapter 92a.47. Monitoring for E. Coli, Total Nitrogen, and Total Phosphorus is based on Chapter 92a.61. The limits for Ammonia-Nitrogen are water quality-based on Chapter 93.7.

Attachment 1

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
18F	42695	PATTERSON 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)
1.400	Sugar Creek	PA0093254	0.020	CBOD5	25		
				NH3-N	2.33	4.66	
				Dissolved Oxygen			5

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
18F	42695	PATTERSON CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.400	0.020	21.397	7.247
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1.961	0.327	5.998	0.067
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
18.57	1.365	1.68	0.779
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.710	29.021	Owens	5
Reach Travel Time (days)			
1.277			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.128	15.42	1.52	7.48
0.255	12.81	1.38	7.54
0.383	10.63	1.24	7.54
0.511	8.83	1.13	7.54
0.638	7.33	1.02	7.54
0.766	6.09	0.92	7.54
0.894	5.06	0.84	7.54
1.022	4.20	0.76	7.54
1.149	3.49	0.69	7.54
1.277	2.90	0.62	7.54

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
18F	42695	PATTERSON CREEK	**1.400**	1322.00	0.12	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
Sugar Creek	PA0093254	0.0200	0.0000	0.0000	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	7.54	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
18F	42695	PATTERSON CREEK	**0.000**	1087.00	1.51	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	0.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
18F	42695	PATTERSON CREEK

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												
1.400	0.01	0.00	0.01	.0309	0.03179	.327	1.96	6	0.07	1.277	21.40	7.25
Q1-10 Flow												
1.400	0.01	0.00	0.01	.0309	0.03179	NA	NA	NA	0.06	1.355	20.99	7.29
Q30-10 Flow												
1.400	0.02	0.00	0.02	.0309	0.03179	NA	NA	NA	0.07	1.210	21.73	7.22

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
18F	42695	PATTERSON 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
1.400	Sugar Creek	11.41	14.24	11.41	14.24	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
1.400	Sugar Creek	1.52	2.33	1.52	2.33	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)		
1.40	Sugar Creek	25	25	2.33	2.33	5	5	0	0

Attachment 2

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

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

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.143	1.3.2.iii	WLA cfc = 0.132
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.053	5.1d	LTA_cfc = 0.077

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.065	AFC
		INST MAX LIMIT (mg/l) = 0.214	

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)**