pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0093131**
Facility Type	**Non-Municipal**	APS ID	**1068772**
Major / Minor	**Minor**	Authorization ID	**1405475**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Prebula Family Ventures, LLC**	Facility Name	**Slippery Rock Golf Club & Event Center**
Applicant Address	160 Ralston Road Slippery Rock, PA 16057-3528	Facility Address	160 Ralston Road Slippery Rock, PA 16057-3528
Applicant Contact	Eric Prebula (eric@prebulafamilyagency.com)	Facility Contact	Marvin McAfoose, STP Operator (mcafoose92@hotmail.com)
Applicant Phone	(323) 371-4401	Facility Phone	(724) 699-4070
Client ID	355448	Site ID	264296
Ch 94 Load Status	Not Overloaded	Municipality	Slippery Rock Township
Connection Status	No Limitations	County	Butler
Date Application Received	July 29, 2022	EPA Waived?	Yes
Date Application Accepted	August 5, 2022	If No, Reason	-

Purpose of Application: Renewal of an existing NPDES permit for an existing discharge of treated Sewage.

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

SPECIAL CONDITIONS:

II. Solids Management

There are no open violations in efacts for Client ID (355448) as of 4/5/2024.

Approve	Deny	Signatures	Date
X		Stephen A. McCauley Stephen A. McCauley, E.I.T. / Environmental Engineering Specialist	4/5/2024
X		 *(Vacant)* / Environmental Engineer Manager	Okay to Draft JCD 4/8/2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.011
Latitude	41º 02' 14.60"	Longitude	-80º 01' 3.50"
Quad Name	-	Quad Code	-
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to the Slippery Rock Creek (CWF)	Stream Code	34441
NHD Com ID	126221981	RMI	0.284
Drainage Area	1.95	Yield (cfs/mi^2)	0.119
Q_{7-10} Flow (cfs)	0.23	Q_{7-10} Basis	calculated
Elevation (ft)	1150	Slope (ft/ft)	0.00335
Watershed No.	20-C	Chapter 93 Class.	CWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired*		
Cause(s) of Impairment	Siltation		
Source(s) of Impairment	Site Clearance (Land Development or Redevelopment)		
TMDL Status	-	Name	-

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

Nearest Downstream Public Water Supply Intake	Pennsylvania American Water Company - Ellwood City		
PWS Waters	Beaver River	Flow at Intake (cfs)	292.5
PWS RMI	13.0	Distance from Outfall (mi)	40.0

* - The receiving stream is impaired by siltation. Since this discharge utilizes a holding pond, it is not likely to be adding to the impairment. In addition, since total suspended solids limits are in place, so no further monitoring or limits are necessary.

Sludge use and disposal description and location(s): Sludge 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 0.011 MGD of treated sewage from a non-municipal STP in Slippery Rock Township, Butler County.

Existing treatment permitted under WQM Permit no. 366S007 consists of:

A comminutor w/ bypass bar screen, extended aeration tank, final settling tank, tablet chlorine disinfection with a contact tank, and a holding pond.

1. Streamflow:

Slippery Rock Creek at Wurtemberg, PA - Streamgage No. 03106500 (1971-2008):

Drainage Area:	398	sq. mi.	(from StreamStats)
Q_{7-10}:	47.5	cfs	(from StreamStats)
Yieldrate:	0.119	cfsm	(calculated)

Slippery Rock Creek at Outfall 001:

Yieldrate:	0.119	cfsm	(calculated above)
Drainage Area:	1.95	sq. mi.	(from StreamStats)
% of stream allocated:	100%	Basis:	no nearby discharges
Q_{7-10}:	0.23	cfs	(Calculated)

2. Wasteflow:

Maximum discharge: 0.011 MGD = 0.017 cfs

Runoff flow period: 24 hours Basis: Runoff flow for this facility

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: Application of Chapter 92a47 technology-based limits.

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

Total Phosphorus and Total Nitrogen monitoring was not included in the previous permit since the facility was only open during the summer months, the average operating flow was less than 1,000 GPD, and the Slippery Rock Creek was not nutrient enriched.

However, since ownership of this facility was transferred on May 7, 2021, eDMR data shows that flow is reported all year long, and the average flow reported since the transfer is 2,620 gallons.

Monitoring for Total Phosphorus will be added with this renewal in accordance with the SOP, based on Chapter 92a.61. Since the stream is not impaired for nutrients, quarterly monitoring will be used.

f. Total Nitrogen

Monitoring for Total Nitrogen will be added 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:	6.4	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 CWF 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: 25.0 mg/l (monthly average)
50.0 mg/l (instantaneous maximum)

calculated winter NH_3-N limits: 25.0 mg/l (monthly average)
50.0 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the calculated summer limits above (see Attachment 1), which are less restrictive than in the previous NPDES Permit. The winter limits are calculated as three times the summer limits, but since the technology-based limits would govern, they will be used. Based on the eDMR data, the previous, more restrictive, limits are attainable so they will be retained.

h. $CBOD_5$

Median discharge pH to be used: 6.4 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 CWF 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. Per the SOP, the previous seasonal limits for CBOD5 will be changed to year round.

i. Dissolved Oxygen (DO)

The technology-based minimum of 4.0 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. The limits are the same as in the previous NPDES Permit and 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): 0.5 mg/l (monthly average)
1.6 mg/l (instantaneous maximum)

Basis: The TRC limits above were calculated using the Department's TRC Calculation Spreadsheet (see Attachment 2). The limits are the same as in the previous NPDES Permit and 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): Pennsylvania American Water Company - Ellwood City
Distance downstream from the point of discharge: 40.0 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 March 1, 2023 to February 29, 2024)

Parameter	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23
Flow (MGD) Average Monthly	0.001	0.001	0.001	0.001	0.005	0.005	0.005	0.003	0.003	0.003	0.003	0.003
pH (S.U.) Instantaneous Minimum	6.0	6.0	5.6	6.0	6.3	6.17	6.46	6.0	6.8	6.5	6.5	6.0
pH (S.U.) Instantaneous Maximum	8.9	8.7	7.0	7.1	6.64	6.41	6.65	6.89	7.4	6.9	7.6	6.8
DO (mg/L) Instantaneous Minimum	4.04	3.14	2.05	4.1	4.01	5.28	4.01	4.01	4.01	5.01	4.06	4.52
TRC (mg/L) Average Monthly	0.5	0.2	0.5	0.4	0.1	0.1	0.1	0.02	0.02	0.02	0.03	0.1
TRC (mg/L) Instantaneous Maximum	1.34	0.5	0.9	0.9	0.46	0.24	0.29	0.05	0.04	0.03	0.06	0.3
CBOD5 (mg/L) Average Monthly	7	< 3	< 5	< 2	< 2	7	19	7	< 10	< 2	< 4	14
TSS (mg/L) Average Monthly	< 5	< 7	11	< 5	< 5	< 8	< 5	10	17	< 16	< 5	< 8
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	< 1	1	< 4	< 1	< 28	< 1	< 10	< 1	< 1	< 26
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 1	< 1	< 1	2	< 5	< 1	770	< 1	1120	1	< 1	687
Ammonia (mg/L) Average Monthly	4	6	< 7	< 4	< 2	0.785	1	< 3	< 10	4	< 3	< 1

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	XXX	XXX	XXX	XXX	XXX	1/week	Estimate
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	20.0	XXX	40	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30.0	XXX	60	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	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	12.0	XXX	24	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	4.0	XXX	8	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite

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 technology-based on Chapter 92a.47. 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
20C	34441	Trib 34441 to Slippery Rock 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)
0.284	Slippery Golf	PA0093131	0.011	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34441	Trib 34441 to Slippery Rock Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.284	0.011	20.342	6.919
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
7.527	0.411	18.319	0.081
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.57	0.656	1.71	0.719
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.953	20.968	Owens	6
Reach Travel Time (days)			
0.216			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.022	3.52	1.68	8.19
0.043	3.47	1.66	8.19
0.065	3.42	1.63	8.19
0.086	3.37	1.61	8.19
0.108	3.32	1.58	8.19
0.129	3.28	1.56	8.19
0.151	3.23	1.53	8.19
0.172	3.18	1.51	8.19
0.194	3.14	1.49	8.19
0.216	3.09	1.46	8.19

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	6		

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
20C	34441	Trib 34441 to Slippery Rock Creek	**0.284**	1150.00	1.95	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	0.119	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Slippery Golf	PA0093131	0.0110	0.0000	0.0000	0.000	25.00	6.40

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	25.00	0.00	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
20C	34441	Trib 34441 to Slippery Rock Creek	**0.000**	1145.00	1.98	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	0.119	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20C	34441	Trib 34441 to Slippery Rock 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												
0.284	0.23	0.00	0.23	.017	0.00333	.411	7.53	18.32	0.08	0.216	20.34	6.92
Q1-10 Flow												
0.284	0.15	0.00	0.15	.017	0.00333	NA	NA	NA	0.06	0.271	20.51	6.88
Q30-10 Flow												
0.284	0.32	0.00	0.32	.017	0.00333	NA	NA	NA	0.09	0.183	20.26	6.94

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20C	34441	Trib 34441 to Slippery Rock 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
0.284	Slippery Golf	17.64	50	17.64	50	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
0.284	Slippery Golf	1.9	25	1.9	25	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)		
0.28	Slippery Golf	25	25	25	25	4	4	0	0

Attachment 2

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.232	= Q stream (cfs)	0.5	= CV Daily
0.011	= 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 = 4.368	1.3.2.iii	WLA cfc = 4.251
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 1.628	5.1d	LTA_cfc = 2.471

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX 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)**