pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0082198**
Facility Type	**Municipal**	APS ID	**2305**
Major / Minor	**Minor**	Authorization ID	**1332222**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Peters Township Board of Supervisors**	Facility Name	**Upton Village STP**
Applicant Address	5000 Steele Avenue	Facility Address	8739 Kuhn Road
	Lemasters, PA 17231-0088		Greencastle, PA 17225
Applicant Contact	Roger Price	Facility Contact	Roger Price
Applicant Phone	(717) 328-3352	Facility Phone	(717) 328-3352
Client ID	75099	Site ID	451952
Ch 94 Load Status	Projected Organic Overload	Municipality	Peters Township
Connection Status	No Exceptions Allowed	County	Franklin
Date Application Received	October 27, 2020	EPA Waived?	Yes
Date Application Accepted	November 6, 2020	If No, Reason	
Purpose of Application	NPDES Renewal.		

Summary of Review

Peters Township Board of Supervisors (Peters Township) had applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit for Upton Village Sewage Treatment Plant. The permit was last reissued on April 20, 2016 and became effective on May 1, 2016. The permit will expire on April 30, 2021. In the event the permit expires prior to issuance of this permit renewal, the terms and conditions of the permit will be administratively extended in accordance with 25 Pa Code §92a.7(b).

Based on the review, it is recommended that the permit be drafted.

Sludge use and disposal description and location(s): Sludge is hauled off site to another WWTP for ultimate treatment/disposal.

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		*Jinsu Kim* Jinsu Kim / Environmental Engineering Specialist	March 5, 2021
X		/s/ Daniel W. Martin, P.E. / Environmental Engineer Manager	March 12, 2021
X		/s/ Maria D. Bebenek, P.E. / Program Manager	March 12, 2021

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.025
Latitude	39° 49’ 12.00”	Longitude	77° 48’ 0.00”
Quad Name	Williamson	Quad Code	2023
Wastewater Description:	Treated sewage		
Receiving Waters	UNT Conococheague Creek	Stream Code	59884
NHD Com ID	49496060	RMI	0.572
Drainage Area	0.24 mi^2	Yield (cfs/mi^2)	0.11
Q_{7-10} Flow (cfs)	0.0264	Q_{7-10} Basis	USGS Gage no. 01614500
Elevation (ft)	520	Slope (ft/ft)	
Watershed No.	13-C	Chapter 93 Class.	WWF, MF
Existing Use	None	Existing Use Qualifier	None
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	N/A		
Source(s) of Impairment	N/A		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Hagerstown, MD		
PWS Waters	Potomac River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	35

Drainage Area
The discharge is to an Unnamed Tributary of Conococheague Creek at RM 0.572. A drainage area upstream of the discharge is determined to be 0.24 sq.mi. according to USGS StreamStats available at https://water.usgs.gov/osw/streamstats/pennsylvania.html.

Stream Flow
USGS StreamStats produced a Q7-10 flow of 0.00414 cfs. However, the estimated drainage area is below the minimum value required to properly calculate the low flow statistics; as a result, unknown error have occurred when calculating the Q7-10. DEP therefore determined to use the following low-flow yield method to calculate the Q7-10:

$$\text{Lowflow Yield} = Q7\text{-}10_{gage} / \text{Drainage Area}_{gage} = 55/494 = 0.11 \text{ cfs/mi}^2.$$

$Q_{30\text{-}10}$:$Q_{7\text{-}10}$ = 65.3/55 = 1.19:1; $Q_{1\text{-}10}$:$Q_{7\text{-}10}$ = 48.1/55 = 0.87:1; $Q_{7\text{-}10}$ = 0.11*0.24=0.0264 cfs

Unnamed Tributary of Conococheague Creek
25 Pa Code §93.9z classifies all unnamed tributaries of Conococheague Creek between LR28017 to PA-MD State Border as warm water fishes and support migratory fishes. No special protection waters are impacted by this discharge. The discharge is located in a stream segment listed as attaining uses. DEP’s latest integrated water quality report published n 2020 indicates that the discharge is located within a stream segment listed as attaining uses. No local TMDL has been taken into consideration during this review.

Public Water Supply Intake
The fact sheet developed for the last permit renewal indicates that the closest downstream public water supply intake from the discharge point is at Hagerstown, MD on the Potomac River. The distance from the discharge to the intake is approximately 35 miles. The discharge will not impact the intake because of the distance, additional dilution from the Potomac River, and the effluent limits.

Treatment Facility Summary				
Treatment Facility Name: Upton Village STP				
WQM Permit No.	**Issuance Date**			
2807403	05/23/2007			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Ammonia Reduction	Extended Aeration	Chlorine With Dechlorination	0.025
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.025	50	Projected Organic Overload	Aerobic Digestion	Other WWTP

Peters Township owns and operates a sanitary wastewater treatment plant located at 8739 Kuhn Road, Greencastle, PA 17225, serving the areas of Peters Township. All sewer systems are 100% separated. The treatment plant is an extended aeration activated sludge treatment plant consisting of screening, EQ tanks (2), aeration tanks (3), clarifier, chlorine contact tank, post aeration tank, dechlor chamber, and outfall structure. A lagoon is also on line as a backup treatment system. The plant is rated for 0.025 MGD as an annual average flow and hydraulic design capacity with an organic design capacity of 50 lbsBOD/day. A sludge holding tank is used to store sludge prior to being hauled off site to another WWTP for ultimate treatment and disposal. The application indicates that there is no industrial or commercial users contributing wastewater to the sewer system. Calcium hypochlorite is used for chlorination and sodium sulfite is used for dechlorination. Lime and Delta Floc are used for pH control and settling, respectively.

Compliance History	
Summary of DMRs:	A summary of 12-month DMR data is presented on the next page.
Summary of Inspections:	10/29/2017: Patrick Bowen, former DEP Water Quality Specialist, conducted a routine inspection. No violations were noted at the time of inspection.
Other Comments:	DEP's database revealed that no effluent violations have been reported since the last permit renewal. The database also indicates that there is no open violation associated with this permittee or facility.

Effluent Data

DMR Data for Outfall 001 (from February 1, 2020 to January 31, 2021)

Parameter	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20
Flow (MGD) Average Monthly	0.015	0.016	0.014	0.015	0.015	0.015	0.014	0.015	0.016	0.016	0.015	0.013
Flow (MGD) Daily Maximum	0.017	0.027	0.017	0.018	0.018	0.022	0.017	0.020	0.023	0.021	0.017	0.017
pH (S.U.) Minimum	7.5	7.6	7.4	7.7	7.7	7.8	7.2	7.2	7.7	7.8	7.6	7.4
pH (S.U.) Maximum	7.9	7.8	8.1	8.2	8.8	8.4	8.2	8.3	8.2	8.2	8.1	8.2
DO (mg/L) Minimum	11.7	9.1	8.7	8.0	7.3	6.9	7.0	6.6	6.8	9.3	10.0	11.4
TRC (mg/L) Average Monthly	< 0.02	< 0.04	< 0.04	< 0.03	< 0.03	< 0.04	< 0.05	< 0.04	< 0.02	< 0.02	< 0.04	< 0.03
TRC (mg/L) Instantaneous Maximum	0.08	0.17	0.22	0.08	0.13	0.23	0.15	0.20	0.09	0.09	0.14	0.17
CBOD5 (lbs/day) Average Monthly	0.6	1.0	< 0.4	< 0.003	< 1.1	< 0.2	< 0.2	0.5	0.5	< 0.3	1.0	0.6
CBOD5 (lbs/day) Weekly Average	0.8	1.0	0.5	0.4	0.5	< 0.2	< 0.2	0.6	0.8	0.4	2.0	0.8
CBOD5 (mg/L) Average Monthly	3.8	6.7	< 3.5	< 2.4	< 2.9	< 2.0	< 2.0	4.6	6.2	< 2.8	9.0	4.4
CBOD5 (mg/L) Weekly Average	5.0	7.0	5.0	3.0	4.0	< 2.0	2.0	6.0	8.0	4.0	21.0	6.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	29	31	18	25	25	19	28	27	25	28	41	32
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	30	32	24	25	31	27	37	31	26	30	51	32
BOD5 (mg/L) Raw Sewage Influent Average Monthly	202	213	168	187	195	204	252	252	220	242	340	253
TSS (lbs/day) Average Monthly	1.1	0.7	0.7	0.4	0.5	0.2	0.2	0.4	0.2	0.8	0.6	0.6
TSS (lbs/day) Raw Sewage Influent Average Monthly	10	12	9	15	11	7	8	9	9	9	13	12
TSS (lbs/day) Raw Sewage Influent Daily Maximum	11	12	9	17	14	8	10	10	9	9	17	12

TSS (lbs/day) Weekly Average	1.3	0.8	0.9	0.6	0.6	0.3	0.2	0.6	0.2	1.3	0.7	0.6
TSS (mg/L) Average Monthly	7.8	4.8	5.5	3.3	3.8	3.0	1.8	4.0	3.5	6.5	5.2	4.8
TSS (mg/L) Raw Sewage Influent Average Monthly	66	79	82	109	87	79	74	85	77	74	108	93
TSS (mg/L) Weekly Average	9.0	6.0	6.0	5.0	5.0	4.0	2.0	6.0	5.0	0.10	7.0	5.0
Fecal Coliform (CFU/100 ml) Geometric Mean	115	389	11	49	78	85	117	95	42	60	462	> 39
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	292	398	20	75	79	96	174	452	292	182	< 500	> 500
Nitrate-Nitrite (mg/L) Average Monthly	37.3	< 0.2	49.3	51	< 0.2	52.2	47.3	36.8	38.7	41.2	44	34.5
Nitrate-Nitrite (lbs) Total Monthly	168	< 0.9	184	0.8	< 0.8	< 0.6	166	< 2	< 0.4	143	< 0.2	125
Total Nitrogen (mg/L) Average Monthly	< 40.1	48.1	< 53	< 53	< 55	< 54	< 49.7	< 39.2	41.2	42.6	46.1	37
Total Nitrogen (lbs) Total Monthly	< 181	217	< 196	< 219	< 212	< 148	< 174	< 128	94	< 149	161	132
Total Nitrogen (lbs) Total Annual					< 1877							
Ammonia (lbs/day) Average Monthly	< 0.07	< 0.07	< 0.1	< 0.07	< 0.06	< 0.04	< 0.06	< 0.05	< 0.04	< 0.06	< 0.07	< 0.06
Ammonia (mg/L) Average Monthly	< 0.5	< 0.5	< 0.81	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.6	< 0.5
Ammonia (lbs) Total Monthly	< 2.3	< 2.3	< 3.2	< 2.1	< 1.9	< 1.4	< 1.7	< 1.6	< 1.1	< 1.8	< 2.2	< 1.8
Ammonia (lbs) Total Annual					< 21.3							
TKN (mg/L) Average Monthly	2.18	2.1	1.79	1.48	< 1.63	< 1.0	< 1.46	< 1.32	< 1.84	< 1.0	1.23	1.75
TKN (lbs) Total Monthly	10	9.0	7.0	6	< 7.0	< 3.0	< 5	< 4	< 5.0	< 4	4.0	6.0
Total Phosphorus (mg/L) Average Monthly	0.33	0.34	0.168	0.203	0.23	0.122	0.321	0.399	0.408	0.2	0.5	0.266
Total Phosphorus (lbs) Total Monthly	1.0	2.0	0.6	0.8	0.9	0.3	1	1	0.9	0.07	2.0	1.0
Total Phosphorus (lbs) Total Annual					10.9							

Existing Effluent Limits and Monitoring Requirements

The table below summarizes effluent limitations and monitoring requirements specified in the current NPDES permit renewal.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
BOD_5 (mg/l) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Comp
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.1	XXX	0.36	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	5.2	8.3	XXX	25.0	40.0	50	2/month	8-Hr Composite
Total Suspended Solids	6.3	9.4	XXX	30.0	45.0	60	2/month	8-Hr Composite
Total Suspended Solids (mg/l) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr comp
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	1.5	XXX	XXX	7.5	XXX	15	2/month	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	0.5	XXX	XXX	2.5	XXX	5	2/month	8-Hr Composite
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite

Development of Effluent Limitations and Monitoring Requirements

Outfall No. 001 **Design Flow (MGD)** .025
Latitude 39º 49' 12.00" **Longitude** -77º 48' 0.00"
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)

Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen (DO)
WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's guidance no. 391-2000-007 provides the technical methods contained in WQM 7.0 for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. The model was utilized and the model output indicated that existing TBEL of 25 mg/L for CBOD5 and the existing WQBEL of 2.5 mg/L for NH-3N are still appropriate. No changes are therefore recommended.

Total Residual Chlorine
Since calcium hypochlorite is used for disinfection, Total Residual Chlorine (TRC) effluent levels must be regulated in accordance with 25 Pa Code §92a.48(b). DEP's TRC_CALC worksheet is utilized and indicates that existing limits of 0.1 mg/L (average monthly) and 0.36 mg/L (IMAX) are still protective of water quality.

Toxics
DEP's NPDES permit application for minor sewages less than 0.1 MGD) requires samples of heavy metals including Total Copper, Total Lead, and Total Zinc only when the facility receives industrial or commercial contributions. As mentioned before the facility does not receive such contributions. Therefore, no toxic pollutants are determined to be pollutants of concern for this facility.

Best Professional Judgment (BPJ) Limitations

Dissolved Oxygen
A minimum of 5.0 mg/L for DO is an existing effluent limit and will remain unchanged in the draft permit as recommended by DEP's SOP. This requirement has also been assigned to other major sewage facilities in the region. 5.0 mg/L is taken directly from 25 Pa. Code § 93.7(a) and it is also determined to be appropriate according to water quality modeling.

Total Phosphorus & Total Nitrogen
DEP's SOP no. BPNPSM-PMT-033 recommends monitoring requirements for Total Phosphorus and Total Nitrogen for all sewage facilities. Therefore, the existing requirement to monitor for Total Phosphorus and Total Nitrogen remain

unchanged. Given the size of this facility, the fact that the facility has not had significant violations over the past 5 years and the receiving stream is not impaired for nutrients, it is recommended that the monthly monitoring be reduced to quarterly monitoring.

Additional Considerations

Flow Monitoring
The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii).

Influent BOD & TSS Monitoring
As a result of negotiation with EPA, the existing influent monitoring reporting requirement for TSS and BOD5 will be maintained in the draft permit. This requirement has been consistently assigned to all municipal wastewater treatment facilities.

Chesapeake Bay TMDL
DEP's Phase II Watershed Implementation Plan (WIP) categorizes this facility as a phase 5 non-significant sewage facility that has a design flow less than 0.2 MGD but greater than 0.002 MGD. the WIP recommends monitoring and reporting for Total Nitrogen and Total Phosphorus throughout the permit term at a frequency no less than annually. As mentioned above, monitoring of these pollutants will be written in the permit as recommended by DEP's SOP. Therefore, no additional requirements will be necessary.

Total Dissolved Solids (TDS)
TDS and its associated solids including Bromide, Chloride, and Sulfate have become statewide pollutants of concern. The requirement to monitor these pollutants must be considered under the criteria specified in 25 Pa. Code § 95.10 and the following January 23, 2014 DEP Central Office Directive:

> *For point source discharges and upon issuance or reissuance of an individual NPDES permit:*
>
> *-Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.*

No TDS sample is available as the facility does not meet the flow threshold.

Monitoring Frequency and Sample Type
Unless otherwise specified throughout this fact sheet, existing monitoring frequencies and sample types will remain unchanged in the permit.

Mass Loading Limitations
All effluent mass loading limits will be based on the formula: design flow x concentration limit x conversion factor of 8.34.

Antibacksliding
All effluent limitations and monitoring requirements have been developed as stringent as the requirements specified in the existing permit.

Class A Wild Trout Streams
The receiving stream is not a Class A Wild Trout stream; therefore no Class A Wild Trout Fishery is impacted by this discharge.

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	Weekly Average	Instant. Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.1	XXX	0.36	1/day	Grab
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Comp
CBOD5	5.2	8.3	XXX	25.0	40.0	50	2/month	8-Hr Composite
TSS	6.3	9.4	XXX	30.0	45.0	60	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr comp
Fecal Coliform Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Ammonia Nov 1 - Apr 30	1.5	XXX	XXX	7.5	XXX	15	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	0.5	XXX	XXX	2.5	XXX	5	2/month	8-Hr Composite
Total Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	Calculation
TKN	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite
Nitrate-Nitrite	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instant. Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Phosphorus	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

Attachments

1. StreamStats

StreamStats Report

Region ID: PA
Workspace ID: PA20210305133742456000
Clicked Point (Latitude, Longitude): 39.82012, -77.79968
Time: 2021-03-05 08:37:58 -0500

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.24	square miles
PRECIP	Mean Annual Precipitation	39	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	3.35	miles per square mile
ROCKDEP	Depth to rock	5	feet
CARBON	Percentage of area of carbonate rock	6.91	percent

Low-Flow Statistics Parameters[Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.24	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	3.35	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	5	feet	3.32	5.65
CARBON	Percent Carbonate	6.91	percent	0	99

Low-Flow Statistics Disclaimers[Low Flow Region 2]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report[Low Flow Region 2]

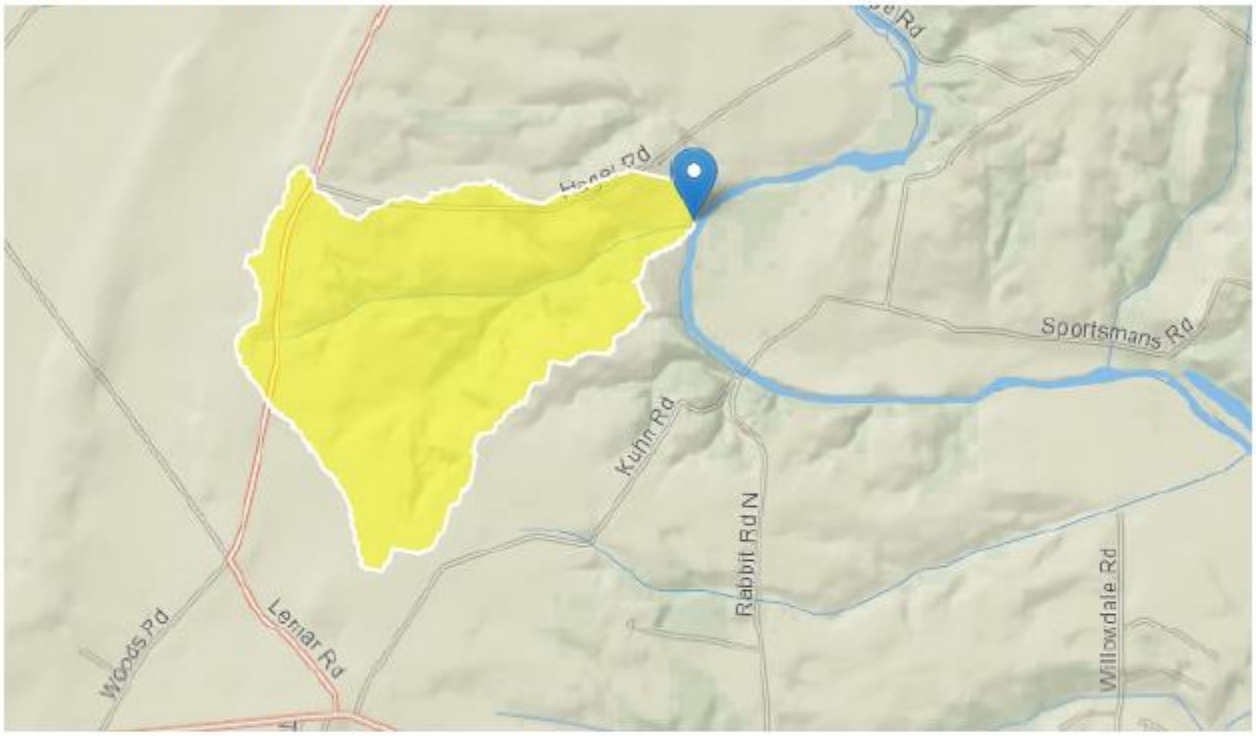
Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0104	ft^3/s
30 Day 2 Year Low Flow	0.0149	ft^3/s
7 Day 10 Year Low Flow	0.00414	ft^3/s
30 Day 10 Year Low Flow	0.00577	ft^3/s
90 Day 10 Year Low Flow	0.00963	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

StreamStats Report

Region ID: PA
Workspace ID: PA20210305141440044000
Clicked Point (Latitude, Longitude): 39.82334, -77.79084
Time: 2021-03-05 09:14:55 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.64	square miles
PRECIP	Mean Annual Precipitation		inches
STRDEN	Stream Density -- total length of streams divided by drainage area	3.6	miles per square mile
ROCKDEP	Depth to rock		feet
CARBON	Percentage of area of carbonate rock		percent

Low-Flow Statistics Parameters[Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.64	square miles	4.93	1280
PRECIP	Mean Annual Precipitation		inches	35	50.4
STRDEN	Stream Density	3.6	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock		feet	3.32	5.65
CARBON	Percent Carbonate		percent	0	99

Low-Flow Statistics Flow Report[Low Flow Region 2]

Statistic	Value	Unit

Low-Flow Statistics Citations

Application Version: 4.4.0

2. WQM Modeling

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
	13C	59884	Trib 59884 to Conococheague Creek	0.572	520.00	0.24	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	0.110	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
Upton STP	PA0082198	0.0250	0.0250	0.0250	0.000	20.00	7.90

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	5.00	8.24	0.00	0.00
NH3-N	2.50	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
13C	59884	Trib 59884 to Conococheague Creek	0.000	464.00	0.64	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.110	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 D.O.Simulation

SWP Basin	Stream Code	Stream Name
13C	59884	Trib 59884 to Conococheague Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.572	0.025	22.028	7.318
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
2.784	0.337	8.267	0.069
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
15.67	1.383	1.49	0.818
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.316	28.559	Owens	5
Reach Travel Time (days)			
0.503			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.050	14.52	1.43	7.17
0.101	13.45	1.37	7.45
0.151	12.46	1.31	7.59
0.201	11.54	1.26	7.68
0.252	10.69	1.21	7.76
0.302	9.91	1.16	7.83
0.352	9.18	1.11	7.90
0.403	8.50	1.07	7.94
0.453	7.88	1.03	7.94
0.503	7.30	0.98	7.94

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
13C	59884	Trib 59884 to Conococheague 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												
0.572	0.03	0.00	0.03	.0387	0.01854	.337	2.78	8.27	0.07	0.503	22.03	7.32
Q1-10 Flow												
0.572	0.02	0.00	0.02	.0387	0.01854	NA	NA	NA	0.07	0.519	21.86	7.35
Q30-10 Flow												
0.572	0.03	0.00	0.03	.0387	0.01854	NA	NA	NA	0.07	0.483	22.24	7.29

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	0.87	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.19	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
13C	59884	Trib 59884 to Conococheague 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
0.572	Upton STP	6.2	5	6.2	5	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
0.572	Upton STP	1.38	2.5	1.38	2.5	0	0

Dissolved Oxygen Allocations

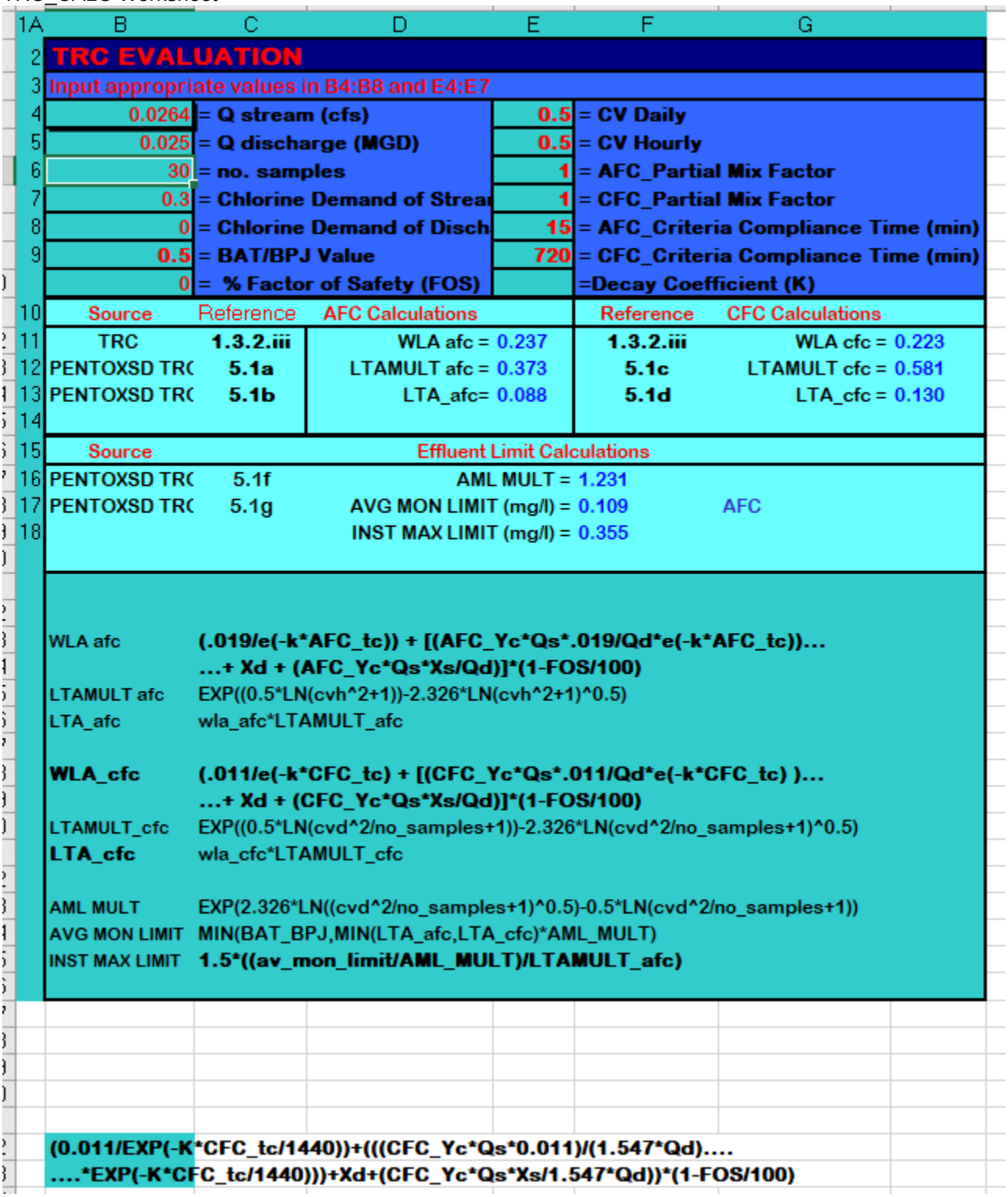
RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
0.57	Upton STP	25	25	2.5	2.5	5	5	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
13C	59884	Trib 59884 to Conococheague 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)
0.572	Upton STP	PA0082198	0.025	CBOD5	25		
				NH3-N	2.5	5	
				Dissolved Oxygen			5

3. TRC_CALC Worksheet



TRC EVALUATION

Input appropriate values in B4:B8 and E4:E7

0.0264	= Q stream (cfs)	0.5	= CV Daily
0.025	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Strea	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Disch	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 = 0.237	1.3.2.iii	WLA cfc = 0.223
PENTOXSD TRC	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRC	5.1b	LTA_afc= 0.088	5.1d	LTA_cfc = 0.130

Source		Effluent Limit Calculations	
PENTOXSD TRC	5.1f	AML MULT = 1.231	
PENTOXSD TRC	5.1g	AVG MON LIMIT (mg/l) = 0.109	AFC
		INST MAX LIMIT (mg/l) = 0.355	

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)