pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0113298**
Facility Type	**Municipal**	APS ID	**1107109**
Major / Minor	**Minor**	Authorization ID	**1472564**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Elkland Borough Authority, Tioga County**	Facility Name	**Elkland Borough STP**
Applicant Address	105 Parkhurst Street Elkland, PA 16920-1109	Facility Address	115 Ellison Road Elkland, PA 16920
Applicant Contact	June Woodard, Chairperson	Facility Contact	Michael Arnold, Operator
Applicant Phone	(814) 258-7322	Facility Phone	(570) 418-2107
Client ID	43173	Site ID	589901
Ch 94 Load Status	Existing Hydraulic Overload	Municipality	Elkland Borough
Connection Status	No Exceptions Allowed	County	Tioga
Date Application Received	February 8, 2024	EPA Waived?	No
Date Application Accepted	February 15, 2024	If No, Reason	Significant CB Discharge

Purpose of Application: Renewal of a NPDES Permit

Summary of Review

The subject facility is a POTW serving Elkland Borough in Tioga County. A map of the discharge location is attached.

Sludge use and disposal description and location(s): The facility's sludge is sent to other facilities for further processing. Per the application 12.3 dry tons were removed in the past year.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Approve	Deny	Signatures	Date
✓		Keith C. Allison Keith C. Allison / Project Manager	October 31, 2024
✓		N. W. H. Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	November 14, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.55
Latitude	41º 59' 30.33"	Longitude	-77º 17' 47.27"
Quad Name	Tioga, PA	Quad Code	0328
Wastewater Description:	Sewage Effluent		
Receiving Waters	Cowanesque River (WWF)	Stream Code	30995
NHD Com ID	57349685	RMI	12.77
Drainage Area	234.47	Yield (cfs/mi^2)	0.01
Q_{7-10} Flow (cfs)	3.11	Q_{7-10} Basis	USGS Gage 01518862, Cowanesque River @ Lawrenceville, PA
Elevation (ft)	1120	Slope (ft/ft)	0.005
Watershed No.	4-A	Chapter 93 Class.	WWF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Unimpaired		
Nearest Downstream Public Water Supply Intake	Nelson Township Municipal Authority		
PWS Waters	Cowanesque River	Flow at Intake (cfs)	3.31
PWS RMI	10.48	Distance from Outfall (mi)	2.29

Changes Since Last Permit Issuance: The above stream and drainage characteristics are generally unchanged from previous reviews.

Other Comments: No downstream water supply is expected to be affected by the discharge with the limitations and monitoring proposed.

Treatment Facility Summary

Treatment Facility Name: Elkland Borough Authority

WQM Permit No.	Issuance Date	Coverage:
5974401	11/19/73	Sanitary sewer Elkland industrial park.
5973406	12/5/73	River crossing.
5975402	5/1/75	Raise influent limit to 0.46 MGD from 0.27 MGD.
5975404	5/22/75	Pump station force main (River Street).
5976702	9/8/76	Gravity lines.
5977404	4/13/77	Sewer system modifications.
5986402	4/21/87 Amendment 10/13/21	Lagoon system / effluent pump station & force main. (Contains quarterly monitoring for wells GZ1-GZ6)
5987403	8/31/88	2" Force main and 6" gravity sanitary sewer lines.
5997403	10/31/97	Complete mix lagoon aeration system and solids removal system.
5901404	1/25/02	Hydraulic re-rate of max. monthly flow from 0.55 MGD to 0.7 MGD. Installation of overflow pipe from lagoon #1 to lagoon #3 for storage purposes.
WQG02590601	9/30/06	Pattison Ave. gravity sewers and pump station.
WQG02590602	10/9/06	Forest Dr. and East River St. pump station.
5906403	2/20/07	BNR process with lagoons, clarifiers, filters, and chlorine contact tank.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Aerated Lagoon	Hypochlorite	0.55

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.7	600	Existing Hydraulic Overload	Sludge Lagoon	Other WWTP

Changes Since Last Permit Issuance: Amendment to WQM 5986402 to amend groundwater monitoring requirements.

Other Comments: The treatment facilities consist of influent pump station, grinder, auger, two aeration basins, two secondary clarifiers, pump station, up flow sand filters, chemical addition, chlorination, a sludge digester lagoon, and a storage lagoon.

Industrial Users

The facility does not have any significant industrial users. One industrial user is identified in the application:

- Westlake Royal Building Products (0.01 MGD)

Hauled-In-Waste

Per the application, the facility has not received any hauled-in wastes over the past three years and the Authority does not anticipate receiving any over the next permit term.

Compliance History

DMR Data for Outfall 001 (from September 1, 2023 to August 31, 2024)

Parameter	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23
Flow (MGD) Average Monthly	0.339	0.242	0.309	0.465	0.801	0.549	0.597	0.807	0.510	0.326	0.36	0.467
Flow (MGD) Daily Maximum	0.761	0.417	0.432	0.595	1.200	0.722	0.964	1.307	0.780	0.426	0.444	0.6
pH (S.U.) Daily Minimum	6.7	7.0	6.8	6.9	6.8	6.7	6.9	6.7	6.8	7.1	6.3	6.7
pH (S.U.) Instantaneous Maximum	7.7	7.5	7.3	7.3	7.3	7.4	7.5	7.1	7.8	7.9	7.6	7.9
DO (mg/L) Daily Minimum	6.0	5.5	5.6	7.1	7.2	8.9	9.1	8.8	8.4	7.8	7.2	5.4
TRC (mg/L) Average Monthly	0.26	0.22	0.17	0.26	0.34	0.32	0.58	0.35	0.26	0.41	0.34	0.45
TRC (mg/L) Instantaneous Maximum	0.69	0.45	0.38	0.46	0.52	0.53	0.79	0.60	0.50	0.51	0.49	0.79
CBOD5 (lbs/day) Average Monthly	23	11	< 14	19	< 21	< 19	< 19	< 29	25	< 14	< 9	< 376
CBOD5 (lbs/day) Weekly Average	30	15	24	27	29	< 26	28	48	44	18	< 9	< 14
CBOD5 (mg/L) Average Monthly	8.4	5.0	< 5.5	5.3	< 3.8	< 4.2	< 3.9	< 5.0	5.3	< 5.1	< 3.0	< 3.0
CBOD5 (mg/L) Weekly Average	10.0	7.0	9.0	8.0	5.0	5.0	5.0	8.0	7.0	6.0	< 3.0	< 3.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	158	148	219	277	317	208	444	254	397	256	193	566
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	289	261	511	416	435	287	1099	446	754	440	274	769
BOD5 (mg/L) Raw Sewage Influent Average Monthly	68	63	88	70	58	45	95	49	97	84	68	132
TSS (lbs/day) Average Monthly	26	< 12	10	< 18	27	22	< 23	< 61	75	37	< 17	11

TSS (lbs/day) Raw Sewage Influent Average Monthly	74	95	89	155	152	110	108	77	326	206	183	306
TSS (lbs/day) Raw Sewage Influent Daily Maximum	204	302	309	248	283	211	185	151	561	406	335	528
TSS (lbs/day) Weekly Average	41	20	11	26	50	32	38	121	130	78	31	16
TSS (mg/L) Average Monthly	9.0	< 6.0	4.0	< 5.0	5.0	5.0	< 5.0	< 12.0	17.0	13.0	< 6.0	3.0
TSS (mg/L) Raw Sewage Influent Average Monthly	36	36	33	40	27	24	25	16	75	72	66	73
TSS (mg/L) Weekly Average	12.0	11.0	5.0	9.0	7.0	7.0	6.0	20.0	28.0	24.0	10.0	4.0
Fecal Coliform (No./100 ml) Geometric Mean	2420	2420	1440	1766	2263	869	37	526	2303	75	46	24
Fecal Coliform (No./100 ml) Instantaneous Maximum	2420	2420	2419.6	2420	2419.6	2419.6	866	2420	2419.6	488	291	159
Nitrate-Nitrite (mg/L) Average Monthly	< 2.464	< 2.906	< 4.698	5.603	6.298	8.094	5.313	< 1.2511	7.16	5.68	12.93	11.203
Nitrate-Nitrite (lbs) Total Monthly	< 202	< 219	< 342	620	1128	1136	752	1542	1053	440	36	1250
Total Nitrogen (mg/L) Average Monthly	< 11.292	< 20	< 10.238	13.536	9.39	9.829	10.718	< 10.09	< 9.82	< 13.742	< 13.43	< 11.766
Total Nitrogen (lbs) Effluent Net Total Monthly	< 909	< 635	< 762	1513	1695	1381	1486	< 1784	< 1450	< 1084	< 1175	< 1314
Total Nitrogen (lbs) Total Monthly	< 909	< 635	< 762	49	1695	1381	1486	< 1784	< 1450	< 1084	< 1175	< 1314
Ammonia (lbs/day) Average Monthly	14.0	10.0	10.0	22	< 8	6	19	< 2	< 8	16	< 0.6	< 0.7
Ammonia (lbs/day) Weekly Average	18.0	10.0	18.0	31.0	8.0	11.0	21.0	9.0	15.0	25.0	0.6	1.0
Ammonia (mg/L) Average Monthly	5.6	4.5	3.9	6.0	< 1.6	1.4	4.2	< 0.2	< 1.6	5.9	< 0.2	< 0.2
Ammonia (mg/L) Weekly Average	7.1	5.4	5.8	8.2	2.0	2.6	5.3	1.0	3.4	10.0	0.2	0.3
Ammonia (lbs) Total Monthly	442	297	299	682	< 235	197	553	< 48	< 235	477	< 19	< 20
TKN (mg/L) Average Monthly	8.828	6.209	5.54	7.931	3.09	< 1.736	5.405	< 1.25	< 2.66	< 8.062	< 0.5	< 0.6

TKN (lbs) Total Monthly	707	416	421	893	567	< 245	733	< 242	< 397	< 644	< 44	< 64
Total Phosphorus (lbs/day) Average Monthly	3.95	3.10	4.82	5.22	7.26	6.33	4.16	4.02	6.19	4.28	4.72	6.88
Total Phosphorus (mg/L) Average Monthly	1.5	1.4	1.9	1.5	1.1	1.4	0.9	0.7	1.3	1.6	1.7	1.9
Total Phosphorus (lbs) Effluent Net Total Monthly	122.36	94.92	144.57	161.95	217.83	196.15	120.62	124.77	191.99	128.40	146.46	206.26
Total Phosphorus (lbs) Total Monthly	122.36	94.92	144.57	161.95	217.83	196.15	120.62	124.77	191.99	128.40	146.46	206.26

Compliance History

Effluent Violations for Outfall 001, from: September 1, 2023 To: August 31, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TRC	02/29/24	Avg Mo	0.58	mg/L	.44	mg/L
TRC	09/30/23	Avg Mo	0.45	mg/L	.44	mg/L
CBOD5	09/30/23	Avg Mo	< 376	lbs/day	43	lbs/day
Total Phosphorus	09/30/23	Total Annual	< 1359	lbs	1285	lbs
Fecal Coliform	08/31/24	Geo Mean	2420	No./100 ml	200	No./100 ml
Fecal Coliform	06/30/24	Geo Mean	1440	No./100 ml	200	No./100 ml
Fecal Coliform	05/31/24	Geo Mean	1766	No./100 ml	200	No./100 ml
Fecal Coliform	04/30/24	Geo Mean	2263	No./100 ml	2000	No./100 ml
Fecal Coliform	07/31/24	Geo Mean	2420	No./100 ml	200	No./100 ml
Fecal Coliform	12/31/23	Geo Mean	2303	No./100 ml	2000	No./100 ml
Fecal Coliform	06/30/24	IMAX	2419.6	No./100 ml	1000	No./100 ml
Fecal Coliform	07/31/24	IMAX	2420	No./100 ml	1000	No./100 ml

Fecal Coliform	05/31/24	IMAX	2420	No./100 ml	1000	No./100 ml
Fecal Coliform	08/31/24	IMAX	2420	No./100 ml	1000	No./100 ml
Ammonia	08/31/24	Avg Mo	14.0	lbs/day	13.0	lbs/day
Ammonia	07/31/24	Avg Mo	4.5	mg/L	2.9	mg/L
Ammonia	08/31/24	Avg Mo	5.6	mg/L	2.9	mg/L
Ammonia	06/30/24	Avg Mo	3.9	mg/L	2.9	mg/L
Ammonia	06/30/24	Wkly Avg	5.8	mg/L	4.4	mg/L
Ammonia	08/31/24	Wkly Avg	7.1	mg/L	4.4	mg/L
Ammonia	07/31/24	Wkly Avg	5.4	mg/L	4.4	mg/L

Compliance History	
Summary of Inspections:	The facility has been inspected approximately annually by the Department over the past permit term. The most recent inspection was on August 21, 2024. This inspection noted eDMR effluent violations and also a violation for the level of sludge in the lagoons being exceeded. An inspection on February 16, 2024 was an administrative inspection for discussing Elkland's COA and Corrective Action Plan. An inspection on January 11, 2024 for follow up to a pump failure identified violations for failure to operate and maintain facilities and failure to timely notify the Department.
Other Comments:	A query in WMS found an open violation in eFACTS from Water Planning and Conservation for Elkland Borough Authority of reporting for all water withdrawals and usage. Recent Chapter 94 reports have identified an organic overload at the facility.

Existing Limitations and Monitoring Requirements								
Parameter	**Effluent Limitations**						**Monitoring Requirements**	
	Mass Units (lbs/day) (1)		**Concentrations (mg/L)**				**Minimum (2) 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	Metered
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.44	XXX	1.45	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - May 31	110	180	XXX	25.0	40.0	50	1/week	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) Jun 1 - Oct 31	43	60	XXX	9.5	14.0	19	1/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids	135	205	XXX	30.0	45.0	50	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ammonia-Nitrogen Nov 1 - May 31	39	59.0	XXX	8.7	13.0	17	2/week	24-Hr Composite
Ammonia-Nitrogen Jun 1 - Oct 31	13.0	20.0	XXX	2.9	4.4	5.8	2/week	24-Hr Composite
Total Phosphorus	9.17	XXX	XXX	2.0	XXX	4	2/week	24-Hr Composite

Existing Effluent Limitations and Monitoring Requirements – Chesapeake Bay								
Parameter	**Effluent Limitations**						**Monitoring Requirements**	
	Mass Units (lbs/day) (1)		**Concentrations (mg/L)**				**Minimum (2) Measurement Frequency**	**Required Sample Type**
	Monthly	**Annual**	**Monthly**	**Monthly Average**	**Maximum**	**Instant. Maximum**		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Net Total Nitrogen	Report	10277	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	1285	XXX	XXX	XXX	XXX	1/month	Calculation

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.55
Latitude 41º 59' 30.24" **Longitude** -77º 17' 47.23"
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)

Comments: The above limitations are applicable and are included in the existing permit except for more restrictive water quality-based limits for CBOD and TRC as explained below.

Water Quality-Based Limitations

DO, CBOD5 and NH3-N

The WQM7.0 model allows the Department to evaluate point source discharges of dissolved oxygen (DO), carbonaceous BOD ($CBOD_5$), and ammonia-nitrogen (NH_3-N) into free-flowing streams and rivers. To accomplish this, the model simulates two basic processes: the mixing and degradation of NH_3-N in the stream and the mixing and consumption of DO in the stream due to the degradation of $CBOD_5$ and NH_3-N. The facility has existing water quality-based limits for $CBOD_5$ and NH_3-N as listed on the prior page.

WQM7.0 modeling was performed for the discharge to the Cowanesque River (see Attachment B) and showed that no limitations are necessary for these parameters beyond the existing limits.

Total Residual Chlorine

The Department uses a modeling spreadsheet to analyze the toxicity of a discharge's TRC in a receiving stream, accounting for available dilution. The attached results of the TRC spreadsheet (see Attachment C) show that the existing water quality-based limit of 0.44 mg/l is adequate to protect the receiving stream.

Chesapeake Bay/Nutrient Requirements

A portion of the Chesapeake Bay and many of its tidal tributaries have been listed as impaired under Section 303(d) of the Water Pollution Control Act, 33 U.S.C. §1313(d). Total Nitrogen and Total Phosphorus cap loads have been established for significant dischargers in Pennsylvania in order to reduce the total nutrient load to the Bay and meet State of Maryland Water Quality Standards. The Elkland Borough Authority facility is considered a Phase 3, Significant Chesapeake Bay discharger. Nutrient cap loads have previously been established for this facility pursuant to the Phase III Watershed Implementation Plan.

The discharge's cap loadings as well as the actual Total Nitrogen and Total Phosphorus loadings for the past two cycle years are listed in the table below. There is a violation for the 2022-2023 TP Load.

Nutrient	Total Nitrogen (lbs)	Total Phosphorus (lbs)
Nutrient Cap Loads for PA0113298	10,277	1,285
10/1/21 – 9/30/22 Net Loadings	<10,086	1,040
10/1/21 – 9/30/22 Credits Purchased	3,722	0
10/1/21 – 9/30/22 Total Mass Load	<13,808	1,040
10/1/22 – 9/30/23 Net Loadings	<10,277	<1,359
10/1/22 – 9/30/23 Credits Purchased	3,742	310
10/1/22 – 9/30/23 Total Mass Load	<14,019	<1,669

Water Quality Toxics Management

No "Reasonable Potential Analysis" was performed to determine additional parameters with the reasonable potential to violate water quality standards.

Best Professional Judgment (BPJ) Limitations

Comments: No additional BPJ limitations are necessary at this time beyond the technology and water quality-based limitations noted above.

Anti-Backsliding

No proposed limitations have been made less stringent consistent with the Anti-degradation requirements of The Clean Water Act and 40 CFR 122.44(I).

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	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.44	XXX	1.45	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - May 31	110	180	XXX	25.0	40.0	50	1/week	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) Jun 1 - Oct 31	43	60	XXX	9.5	14.0	19	1/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids	135	205	XXX	30.0	45.0	50	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ammonia-Nitrogen Nov 1 - May 31	39	59.0	XXX	8.7	13.0	17	2/week	24-Hr Composite

Outfall 001 , Continued (from 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	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia-Nitrogen Jun 1 - Oct 31	13.0	20.0	XXX	2.9	4.4	5.8	2/week	24-Hr Composite
Total Phosphorus	9.17	XXX	XXX	2.0	XXX	4	2/week	24-Hr Composite

Compliance Sampling Location: Outfall 001

Other Comments: No changes are proposed for the discharge monitoring requirements at this time.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

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

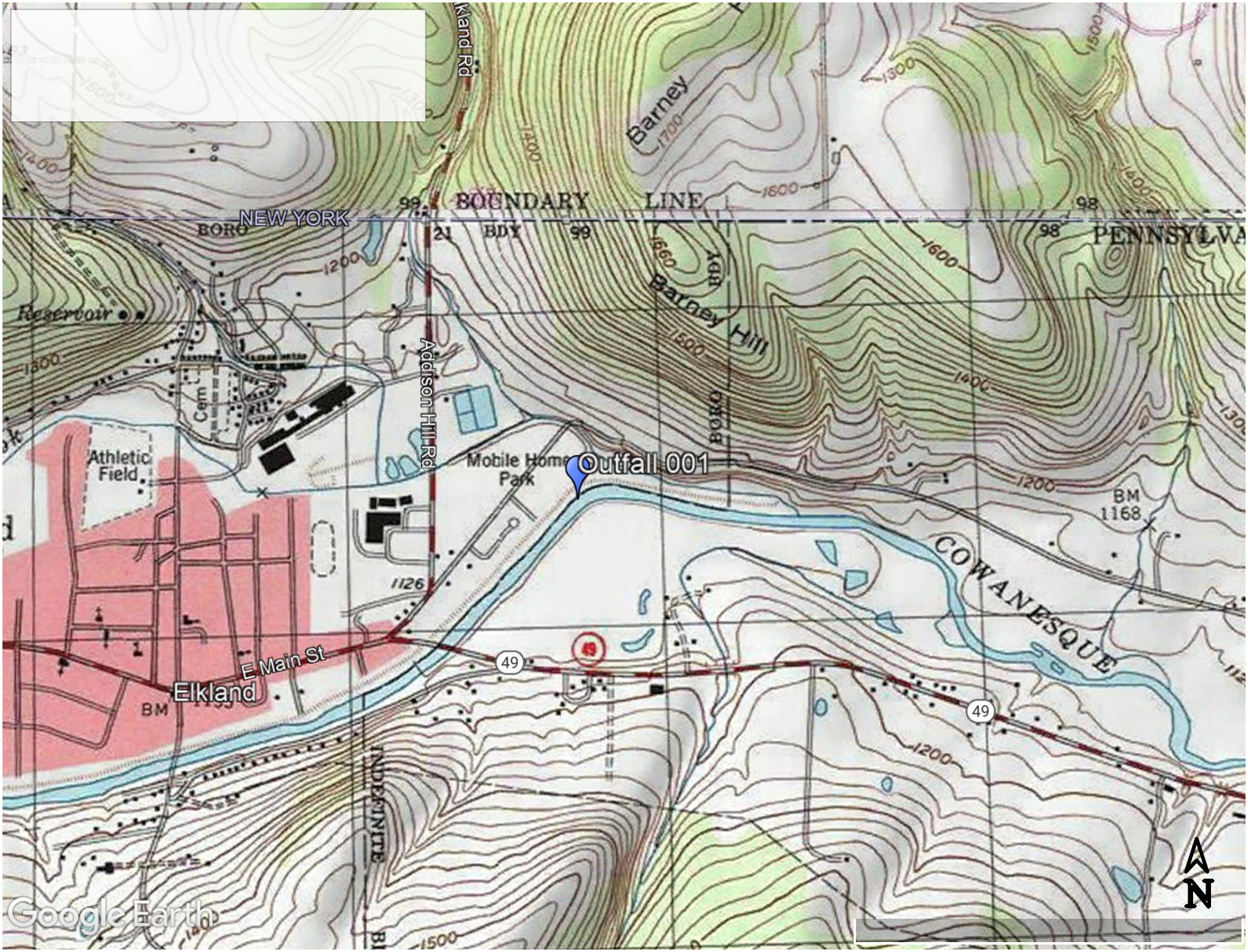
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Net Total Nitrogen	Report	10277	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	1285	XXX	XXX	XXX	XXX	1/month	Calculation

Compliance Sampling Location: Outfall 001

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment **C**)
☐	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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☒	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☒	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

Attachments:

A. Discharge Location Map
B. WQM 7.0
C. TRC Model


Outfall 001
NEW YORK
BOUNDARY LINE
PENNSYLVA
Barney Hill
Addison Hill Rd
Athletic Field
Mobile Home Park
Reservoir
Cem
BM 1168
COWANESQUE
E Main St
Elkland
BM
49
Google Earth
N

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
04A	30995	COWANESQUE RIVER	**12.770**	1120.00	234.47	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	0.013	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
Elkland Borough	PA0113298	0.5500	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	9.50	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	2.90	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
04A	30995	COWANESQUE RIVER	**10.480**	1098.00	249.79	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	0.013	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
04A	30995	COWANESQUE RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (ºC)	Analysis pH
Q7-10 Flow												
12.770	3.05	0.00	3.05	.8509	0.00182	.753	41.56	55.19	0.12	1.123	21.09	7.00
Q1-10 Flow												
12.770	1.95	0.00	1.95	.8509	0.00182	NA	NA	NA	0.10	1.352	21.52	7.00
Q30-10 Flow												
12.770	4.15	0.00	4.15	.8509	0.00182	NA	NA	NA	0.14	0.978	20.85	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 D.O.Simulation

SWP Basin	Stream Code	Stream Name
04A	30995	COWANESQUE RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
12.770	0.550	21.091	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
41.559	0.753	55.191	0.125
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.64	0.506	0.63	0.761
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.317	2.211	Tsivoglou	5
Reach Travel Time (days)			
1.123			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.112	3.43	0.58	7.19
0.225	3.23	0.53	7.13
0.337	3.04	0.49	7.11
0.449	2.86	0.45	7.12
0.562	2.70	0.41	7.16
0.674	2.54	0.38	7.22
0.786	2.39	0.35	7.28
0.899	2.25	0.32	7.36
1.011	2.12	0.29	7.43
1.123	2.00	0.27	7.51

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
04A	30995	COWANESQUE RIVER

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
12.770	Elkland Borough	14.78	5.8	14.78	5.8	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
12.770	Elkland Borough	1.79	2.9	1.79	2.9	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)		
12.77	Elkland Borough	9.5	9.5	2.9	2.9	4	4	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
04A	30995	COWANESQUE RIVER

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)
12.770	Elkland Borough	PA0113298	0.550	CBOD5	9.5		
				NH3-N	2.9	5.8	
				Dissolved Oxygen			4

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

3.11	= Q stream (cfs)	0.5	= CV Daily
0.55	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.831	= 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)
0.44	= 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 = 0.988	1.3.2.iii	WLA cfc = 1.148
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.368	5.1d	LTA_cfc = 0.667

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.440	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.439	

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)