Pennsylvania Department of Environmental Protection

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0216895**
Facility Type	**Industrial**	APS ID	**1119154**
Major / Minor	**Minor**	Authorization ID	**1494646**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**Highridge Water Authority**	Facility Name	**Tubmill Water Filtration Plant**
Applicant Address	17 Maple Avenue	Facility Address	Ross Mountain Park Road
	Blairsville, PA 15717-1232		Fairfield Twp, PA 15944
Applicant Contact	George Sulkosky	Facility Contact	Calvin Gindlesperger
Applicant Phone	(724) 459-8033	Facility Phone	(724) 459-5629
Client ID	73099	Site ID	242497
SIC Code	4941	Municipality	Fairfield Township
SIC Description	Trans. & Utilities - Water Supply	County	Westmoreland
Date Application Received	August 2, 2024	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: Renewal NPDES permit

Summary of Review

The Department received a timely renewal NPDES permit application from the Highridge Water Authority for the Tubmill Water Filtration Plant located in Fairfield Township, Westmoreland County on August 2, 2024. The Facility has a SIC Code of 4941 (Water Supply) and a NAICS code of 221310 (Water supply and irrigation systems).

The TWFP purifies raw water withdrawn from the Tubmill reservoir for potable public consumption. Potable water treatment includes the addition of a chemical coagulant consisting of polyaluminum chloride before clarification and filtration. Other chemicals used in the water treatment process may include sodium phosphate, potassium permanganate, soda ash and chlorine. Filter and clarifier backwash water is directed to precast concrete settling basins. The wastewater treatment system consists of duplicate settling basins (6 in total), recirculation pumps, and discharge piping to Tubmill Creek.

Backwash from the filters is conveyed to one of the two open-air, precast concrete settling basins. The water flows through first settling basin, back to front. Then to back of second concrete tank, and flows to the front. The settling basins provide at least 24-hours of settling time in one of these sedimentation basins, as well as sludge thickening. The first settling basin removes up to 95% of the solids and collected in first one. The clarified water is discharged via piping to Outfall 002 along Tubmill Creek downstream of the dam.

The facility has four Outfalls, Outfall 001 is a sewage release, and it has its own outfall. Outfalls 002, 003, and 004 are all tied together as a single pipe to Tubmill Creek. Samples at Outfall 002 are collected at a pipe leaving the basins.

The site was last inspected on January 7, 2025, by Kristin Gearhart. No violations were noted.

The client has two open violations with the Safe Drinking Water program and two violations with the WRM Dam Safety program.

Approve	Deny	Signatures	Date
X		Angela Rohrer / Environmental Engineering Specialist	February 26, 2025
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	March 7, 2025

Summary of Review
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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.0004
Latitude	40º 19' 53.79"	Longitude	-79º 05' 28.34"
Quad Name	Rachelwood	Quad Code	1613
Wastewater Description:	Sewage Effluent		
Receiving Waters	Tubmill Creek (TSF)	Stream Code	44797
NHD Com ID	123714148	RMI	8.48
Drainage Area	10.6 mi^2	Yield (cfs/mi^2)	0.083
Q_{7-10} Flow (cfs)	0.887	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1,286	Slope (ft/ft)	0.006
Watershed No.	18-D	Chapter 93 Class.	Trout Stocking (TSF)
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	None		
Source(s) of Impairment	None		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Authority Freeport (1.040 MGD)		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	66.22

Changes Since Last Permit Issuance:

The previous permit identified Saltsburg Municipal Waterworks as the Nearest Downstream Public Water Supply Intake. However, eMapPA now shows this intake as inactive. Consequently, Buffalo Township Municipal Authority Freeport is now considered the nearest intake to the facility.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0.141
Latitude	40º 19' 51.86"	Longitude	-79º 05' 19.82"
Quad Name	Rachelwood	Quad Code	1613
Wastewater Description:	Settled filter backwash water		
Receiving Waters	Tubmill Creek (TSF)	Stream Code	44797
NHD Com ID	123714148	RMI	8.48
Drainage Area	10.6 mi^2	Yield (cfs/mi^2)	0.083
Q_{7-10} Flow (cfs)	0.887	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1,286	Slope (ft/ft)	0.006
Watershed No.	18-D	Chapter 93 Class.	Trout Stocking (TSF)
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	None		
Source(s) of Impairment	None		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Authority Freeport (1.040 MGD)		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	66.22

Changes Since Last Permit Issuance:

The previous permit identified Saltsburg Municipal Waterworks as the Nearest Downstream Public Water Supply Intake. However, eMapPA now shows this intake as inactive. Consequently, Buffalo Township Municipal Authority Freeport is now considered the nearest intake to the facility.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	0
Latitude	40º 19' 51.86"	Longitude	-79º 05' 19.82"
Quad Name	Rachelwood	Quad Code	1613
Wastewater Description:	Emergency overflow from storage tank		
Receiving Waters	Tubmill Creek (TSF)	Stream Code	44797
NHD Com ID	123714148	RMI	8.48
Drainage Area	10.6 mi^2	Yield (cfs/mi^2)	0.083
Q_{7-10} Flow (cfs)	0.887	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1,286	Slope (ft/ft)	0.006
Watershed No.	18-D	Chapter 93 Class.	Trout Stocking (TSF)
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	None		
Source(s) of Impairment	None		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Authority Freeport (1.040 MGD)		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	66.22

Changes Since Last Permit Issuance:

The previous permit identified Saltsburg Municipal Waterworks as the Nearest Downstream Public Water Supply Intake. However, eMapPA now shows this intake as inactive. Consequently, Buffalo Township Municipal Authority Freeport is now considered the nearest intake to the facility.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	0
Latitude	40º 19' 52.97"	Longitude	-79º 05' 26.03"
Quad Name	Rachelwood	Quad Code	1613
Wastewater Description:	Stormwater		
Receiving Waters	Tubmill Creek (TSF)	Stream Code	44797
NHD Com ID	123714148	RMI	8.48
Drainage Area	10.6 mi^2	Yield (cfs/mi^2)	0.083
Q_{7-10} Flow (cfs)	0.887	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1,286	Slope (ft/ft)	0.006
Watershed No.	18-D	Chapter 93 Class.	Trout Stocking (TSF)
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	None		
Source(s) of Impairment	None		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Authority Freeport (1.040 MGD)		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	66.22

Changes Since Last Permit Issuance:

The previous permit identified Saltsburg Municipal Waterworks as the Nearest Downstream Public Water Supply Intake. However, eMapPA now shows this intake as inactive. Consequently, Buffalo Township Municipal Authority Freeport is now considered the nearest intake to the facility.

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	0.0004
Latitude	40º 19' 53.79"	**Longitude**	-79º 05' 28.34"
Wastewater Description:	Sewage Effluent		

Technology-Based Effluent Limitations (TBELs)

There are no Federal Effluent Limitations Guidelines (ELGs) applicable to Outfall 001's discharges.

Regulatory Effluent Standards and Monitoring Requirements

25 Pa. Code § 92a.47 – Sewage Permits

Regulations at 25 Pa. Code § 92a.47 specify TBELs and effluent standards that apply to sewage discharges. Section 92a.47(a) requires that sewage be given a minimum of secondary treatment with significant biological treatment that achieves the following:

Table 1: 25 Pa. Code § 92a.47(a) TBELs for Sanitary Wastewater

Parameter	Monthly Average (mg/L)	Instant Maximum (mg/L)	Basis
Total Suspended Solids	30	60†	25 Pa. Code § 92a.47(a)(1)
$CBOD_5$	25	50†	25 Pa. Code § 92a.47(a)(1)
Fecal Coliform (No./100 mL) May 1 – September 30	200 (Geometric Mean)	1,000	25 Pa. Code § 92a.47(a)(4)
Fecal Coliform (No./100 mL) October 1 – April 30	2,000 (Geometric Mean)	10,000	25 Pa. Code § 92a.47(a)(5)
Total Residual Chlorine	0.5 (or facility-specific)	1.6 (or facility-specific)	25 Pa. Code § 92a.47(a)(8)
pH (s.u.)	not less than 6.0 and not greater than 9.0		25 Pa. Code § 92a.47(a)(7)

† Value is calculated as two times the monthly average in accordance with Chapter 2 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits"

Pursuant to Section IV.G of the Department of Environmental Protection's (DEP) Standard Operating Procedure (SOP) No. BCW-PMT-003, "Standard Operating Procedure for Clean Water Program - New and Reissuance Small Flow Treatment Facility Individual NPDES Permit Applications," Outfall 001's design flow of 0.0004 MGD (400 gpd) qualifies as a small flow treatment facility, as it is less than 2,000 GPD. As a result, the following effluent limitations and monitoring requirements, at a minimum, will be established in the permit:

Table 2: Effluent Limitations for a Small Flow Treatment Facility (SFTF)

Parameter	Average (mg/L)	Instant Maximum (mg/L)
Flow (GPD)	Report	XXX
BOD_5	10	20†
Total Suspended Solids	10	20†
Fecal Coliform (No./100 mL)	200 (Semi-Annual Average)	200
Total Residual Chlorine	0.5 (or facility-specific)	1.6 (or facility-specific)
pH (s.u.)	not less than 6.0 and not greater than 9.0	

† Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants)

A review of the DMRs revealed an increase in discharge flow at Outfall 001 over the past two years, peaking at 0.008 MGD (8,000 gpd). The existing sewage treatment plant has a design flow of 0.0004 MGD (400 gpd). With this additional flow, the treatment plant may not operate as designed (malfunctioning or passthrough). Upon investigation, the facility attributed the increased flows to a hole in the side wall of the collection tank, located at the outfall entrance. This issue was rectified on January 31, 2025, and the facility has confirmed that discharge flows have returned to normal levels. To ensure compliance, the effluent monitoring frequency for flow at Outfall 001 will be increased from 1/6 months to 1/month.

The draft permit sets effluent limitations based on Small Flow Treatment Facility (SFTF) standards, with two conditions that trigger additional requirements, to be included in Part C:

1. If the facility's average daily flow, calculated over a 12-month period from the permit effective date, exceeds its design flow of 0.0004 MGD, it must submit a report within three months after the one-year anniversary. This report must demonstrate the treatment plant's capability to handle the increased flow. If the plant is inadequate, expansion may be necessary.

2. If the facility's average daily flow, calculated over a 12-month period from the permit effective date, exceeds 2,000 gpd, it must submit an amendment application within three months after the one-year anniversary to reclassify as a Minor Sewage Outfall.

Water Quality-Based Effluent Limitations

Total Maximum Daily Load (TMDL)

Wastewater discharges from the facility are located within the Kiskiminetas-Conemaugh River Watersheds for which the Department has developed a TMDL. The TMDL was finalized on January 29, 2010, to address impairments resulting from metals, pH, and total suspended solids (TSS).

Of the total impaired waters in the watershed, 59 percent of all impairments are attributed to AMD and its impacts (singly or in combination with other sources and causes of pollutants): high levels of metals, low pH, and increased rates of siltation. In addition to mining, past and present, the watershed is also affected by agriculture, malfunctioning septic systems, impoundments, urban runoff, land development, and other sources.

The site’s NPDES permit (PA0216895) is not listed in the Appendix G of the Kiskiminetas-Conemaugh Watershed TMDL. Consequently, the TMDL does not include a waste load allocation for Tubmill Water Filtration Plant. In accordance with Section IV.G of DEP’s “Standard Operating Procedure (SOP) for Clean Water Program – New and Reissuance Small Flow Treatment Facility Individual NPDES Permit Application” [SOP No. BCW-PMT-003], no TMDL related effluent limitations will be imposed.

WQM 7.0 Water Quality Modeling

For sewage discharges, DEP typically runs its WQM 7.0 water quality modeling program. WQM 7.0 is a water quality modeling program for Windows that determines waste load allocations and effluent limitations for carbonaceous biochemical oxygen demand, ammonia nitrogen, and dissolved oxygen for single and multiple point-source discharge scenarios. In accordance with Section IV.G of DEP’s SOP No. BCW-PMT-003, water quality modeling is not required.

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and discharge chlorine demands for the receiving stream, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of

the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/L from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is then proposed. The results of the modeling, included in Attachment C, indicate that no WQBELs are required for TRC.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 3. These limitations are currently imposed on Outfall 001.

Table 3: Current Effluent Limitation at Outfall 001

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/6 months	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/6 months	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/6 months	Grab
Biochemical Oxygen Demand (BOD_5)	XXX	XXX	XXX	10.0	XXX	20.0	1/6 months	Grab
Total Suspended Solids	XXX	XXX	XXX	10.0	XXX	20.0	1/6 months	Grab
Fecal Coliform (No./100)	XXX	XXX	XXX	200	XXX	Report	1/6 months	Grab

Proposed Effluent Limitations and Monitoring Requirements

The proposed effluent limitations and monitoring requirements for Outfall 001 are shown below in Table 4. The limits are the most stringent values from the above limitation analysis.

Table 4: Proposed Effluent Limitation at Outfall 001

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Instant. Minimum	Semi-Annual Average	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/ month	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/6 months	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/6 months	Grab
Biochemical Oxygen Demand (BOD_5)	XXX	XXX	XXX	10.0	XXX	20.0	1/6 months	Grab
Total Suspended Solids	XXX	XXX	XXX	10.0	XXX	20.0	1/6 months	Grab
Fecal Coliform (No./100)	XXX	XXX	XXX	200	XXX	Report	1/6 months	Grab

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 0.141
Latitude 40º 19' 51.86" **Longitude** -79º 05' 19.82"
Wastewater Description: Settled filter backwash water

Technology-Based Effluent limitations:

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1) which is displayed in Table 5 below.

Effluent standards for pH are also imposed on industrial wastes by 25 Pa. Code §§ 95.2(1) which is displayed in Table 5 below.

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation which is displayed in Table 5 below.

Table 5: Regulatory Effluent Standards

Parameter	Monthly Avg	Daily Max	IMAX
Flow	Monitor	Monitor	----
pH	6-9 at all times		----
TRC	0.5 mg/l	----	1.6 mg/l

Best Practicable Control Technology Currently Achievable (BPT)

BPT for wastewater from treatment of WTP sludges and filter backwash is found in DEPs Technology-Based Control Requirements for Water Treatment Plant Wastes Document which falls under Best Professional Judgement under 40 CFR § 125.3 and the limits imposed are displayed in Table 6 below.

Table 6: BPT Limits for WTP sludge and filter backwash wastewater

Parameter	Monthly Avg (mg/l)	Daily Max (mg/l)
Suspended solids	30.0	60.0
Iron (total)	2.0	4.0
Aluminum (total)	4.0	8.0
Manganese (total)	1.0	2.0
Flow	Monitor	----
pH	6-9 at all times	
Total Residual Chlorine	0.5	1.0

Water Quality-Based Effluent limitations:

Toxics Management Spread Sheet

The Department of Environmental Protection (DEP) has developed the DEP Toxics Management Spreadsheet ("TMS") to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The Toxics Management Spreadsheet is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The Toxics Management Spread Sheet is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit

application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the Toxics Management Spread sheet recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 002

Discharges from Outfall 002 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the Toxics Management Spread Sheet. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the Toxics Management Spread Sheet. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion are considered to be pollutants of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion]. The Toxics Management Spread Sheet is run with the discharge and receiving stream characteristics shown in Table 7. For IW discharges, the design flow used in modeling is the average flow during production or operation taken from the permit application. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL. The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the Toxics Management Spread Sheet in Attachment D of this Fact Sheet. The Toxics Management Spread Sheet did not recommend any WQBELS Outfall 002.

Table 7: TMS Inputs for Outfall 002

Parameter	**Value**
River Mile Index	8.48
Discharge Flow (MGD)	0.141
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	10.6
Q_{7-10} (cfs)	0.887
Low-flow yield (cfs/mi^2)	0.083
Elevation (ft)	1286
Slope	0.006

Total Maximum Daily Load (TMDL)

Wastewater discharges from the facility are located within the Kiskiminetas-Conemaugh River Watersheds for which the Department has developed a TMDL. The TMDL was finalized on January 29, 2010, to address impairments resulting from metals, pH, and total suspended solids (TSS). A TMDL establishes the amount of a pollutant that a water body can assimilate without exceeding the water quality criteria for that pollutant. TMDLs provide the scientific basis for a state to establish water quality-based controls to reduce pollution from both point and non-point sources in order to restore and maintain the quality of the state's water resources (USEPA 1991a). Stream reaches within the Kiskiminetas-Conemaugh River Watersheds are included in the state's 2008 Section 303(d) list because of various impairments, including metals, pH and sediment. The TMDL includes consideration for each river and tributary within the target watershed and its impairment sources. Stream data is then used to calculate minimum pollutant reductions that are necessary to attain water quality criteria levels. Target concentrations published in the TMDL were based on established water quality criteria of 0.750 $^{mg}/_{L}$ total recoverable aluminum, 1.5 $^{mg}/_{L}$ total recoverable iron based on a 30-day average and 1.0 $^{mg}/_{L}$ total recoverable manganese. The reduction needed to meet the minimum water quality standards is then divided between each known point and non-point pollutant source in the form of a watershed allocation. TMDLs prescribe allocations that minimally achieve water quality criteria (i.e., 100 percent use of a stream's assimilative capacity).

Of the total impaired waters in the watershed, 59 percent of all impairments are attributed to AMD and its impacts (singly or in combination with other sources and causes of pollutants): high levels of metals, low pH, and increased rates of siltation. In addition to mining, past and present, the watershed is also affected by agriculture, malfunctioning septic systems, impoundments, urban runoff, land development, and other sources.

The site's NPDES permit (PA0216895) is not listed in the Appendix G of the Kiskiminetas-Conemaugh Watershed TMDL. Consequently, the TMDL does not include a waste load allocation for Tubmill Water Filtration Plant.

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/l from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit. The results of the modeling, included in Attachment E, indicate that no WQBELs are required for TRC.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The previous limitations for Outfall 002 are displayed below in Table 8.

According to DEP's previous determination, stream segment 4028 is listed as impaired in region 5 of the TMDL. As a result, effluent limitations were established to meet the TMDL requirements and were set consistent with the TMDL criteria.

Table 8: Current Effluent Limitation at Outfall 002

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Instant Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measured
Total Suspended Solids	XXX	XXX	XXX	30.0	60.0	XXX	2/Month	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.0	XXX	2/Month	Grab
Total Aluminum	XXX	XXX	XXX	0.75	0.75	XXX	2/Month	Grab

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Instant Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Total Iron	XXX	XXX	XXX	1.5	3.0	XXX	2/Month	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab
Total Cadmium (µg/L)	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab

Proposed Effluent Limitations and Monitoring Requirements

The proposed effluent limitations and monitoring requirements for Outfall 002 are shown below in Table 9.

Table 9: Proposed Effluent Limitation at Outfall 002

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measured
Total Suspended Solids	XXX	XXX	XXX	30.0	60.0	XXX	2/Month	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.0	XXX	2/Month	Grab
Total Aluminum	XXX	XXX	XXX	0.75	0.75	XXX	2/Month	Grab
Total Iron	XXX	XXX	XXX	1.5	3.0	XXX	2/Month	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab
Total Cadmium (µg/L)	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab

Development of Effluent Limitations

Outfall No. 003 **Design Flow (MGD)** 0
Latitude 40º 23' 34" **Longitude** -79º 01' 28"
Wastewater Description: Emergency overflow from storage tank

Technology-Based Limitations

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1) which is displayed in Table 10 below.

Effluent standards for pH are imposed in accordance with 25 Pa. Code §§ 95.2(1) which is displayed in Table 10 below.

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation which is displayed in Table 10 below.

Table 10: Regulatory Effluent Standards and Monitoring Requirements for Outfall 003

Parameter	Monthly Average	Daily Maximum	Units
Flow	Monitor and Report		MGD
Total Residual Chlorine (TRC)	0.5	1.6	mg/L
pH	Not less than 6.0 nor greater than 9.0		S.U.

Best Practicable Control Technology Currently Achievable (BPT)

BPT for wastewater from treatment of WTP wastewater is found in DEPs Technology-Based Control Requirements for Water Treatment Plant Wastes Document which falls under Best Professional Judgement under 40 CFR § 125.3 and the limits imposed are displayed in Table 11 below.

Table 11*:* BPT Limits for WTP wastewater

Parameter	Monthly Avg (mg/l)	Daily Max (mg/l)
Suspended solids	30.0	60.0
Iron (total)	2.0	4.0
Aluminum (total)	4.0	8.0
Manganese (total)	1.0	2.0
Flow MGD	Monitor	----
pH (S.U.)	6.0 – 9.0 at all times	
Total Residual Chlorine	0.5	1.0

Water Quality-Based Limitations

A water quality analysis was not conducted for the discharges from the Emergency Overflow Discharges because the discharges are not expected to occur and have not occurred within the past five years, and no data for these discharges are available.

Anti-Backsliding

This outfall serves as the emergency overflow point for the water treatment plant. Under the current permit, effluent limitations and monitoring requirements are not explicitly stated in Part A. Instead, a Part C condition mandates that a written report be submitted to DEP within 15 days of any overflow, accompanied by sample data for specified parameters within 30 days. To be consistent with Department Practices, the Limitations will now be included in Part A of the permit and the Part C condition will be removed.

Proposed Effluent Limitations and Monitoring Requirements at Outfall 003

The proposed effluent limitations and monitoring requirements for Outfall 003 are shown below in Table 12. Since this Outfall is an emergency overflow and normally does not discharge, the sample frequency will be updated to 2/discharge to reflect the current Department's practices.

Table 12: Proposed Effluent Limitation at Outfall 003

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Discharge	Estimate
Duration (Hours)	XXX	XXX	XXX	XXXX	Report	XXX	Continuous	Recorded
Total Suspended Solids	XXX	XXX	XXX	30.0	60.0	XXX	2/Discharge	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.0	XXX	2/Discharge	Grab
Total Aluminum	XXX	XXX	XXX	0.75	0.75	XXX	2/Discharge	Grab
Total Iron	XXX	XXX	XXX	1.5	3.0	XXX	2/Discharge	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	2/Discharge	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Discharge	Grab
Total Cadmium (µg/L)	XXX	XXX	XXX	Report	Report	XXX	2/Discharge	Grab

Development of Effluent Limitations

Outfall No.	004	**Design Flow (MGD)**	0.0 (varied)
Latitude	40° 19’ 52.97”	**Longitude**	-79° 05’ 26.03”

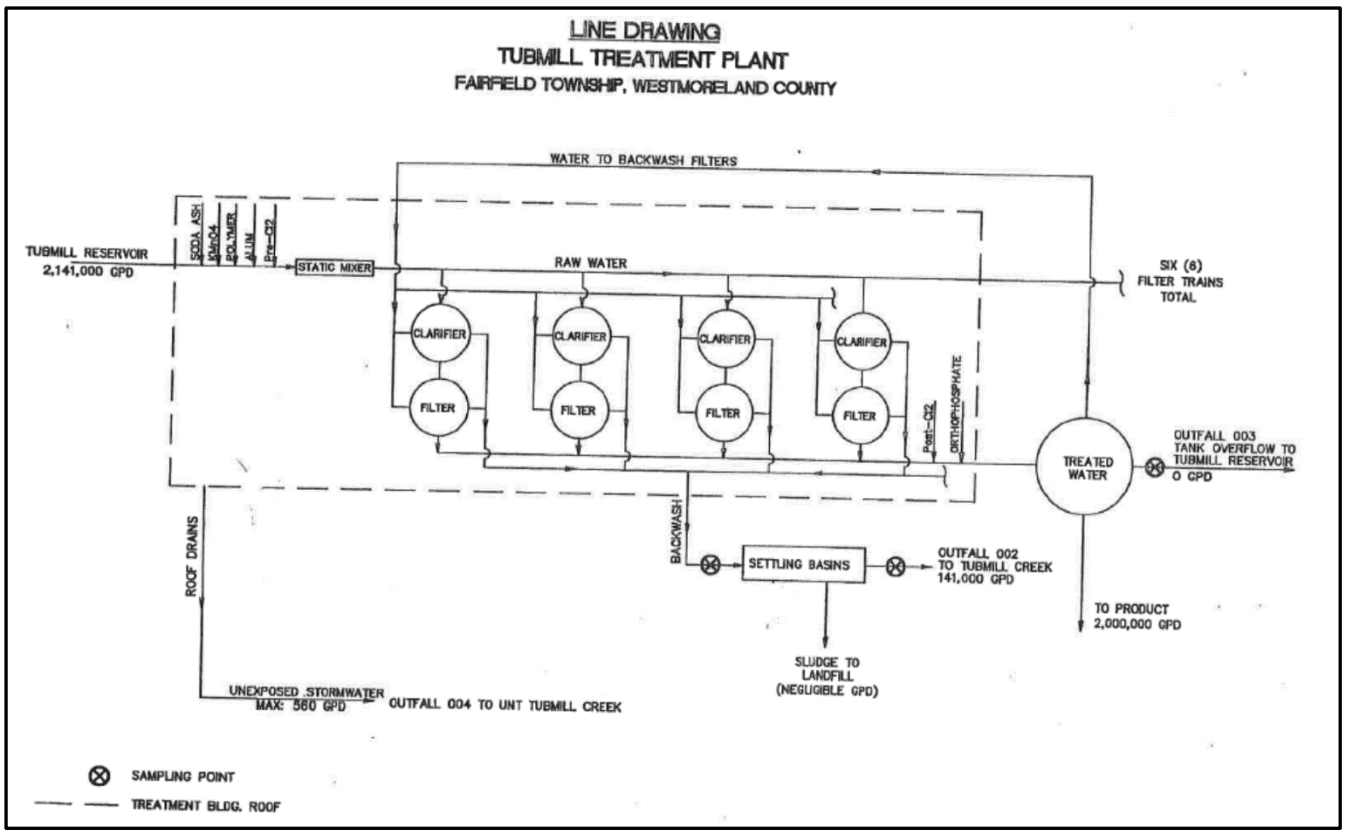
Wastewater Description: Stormwater

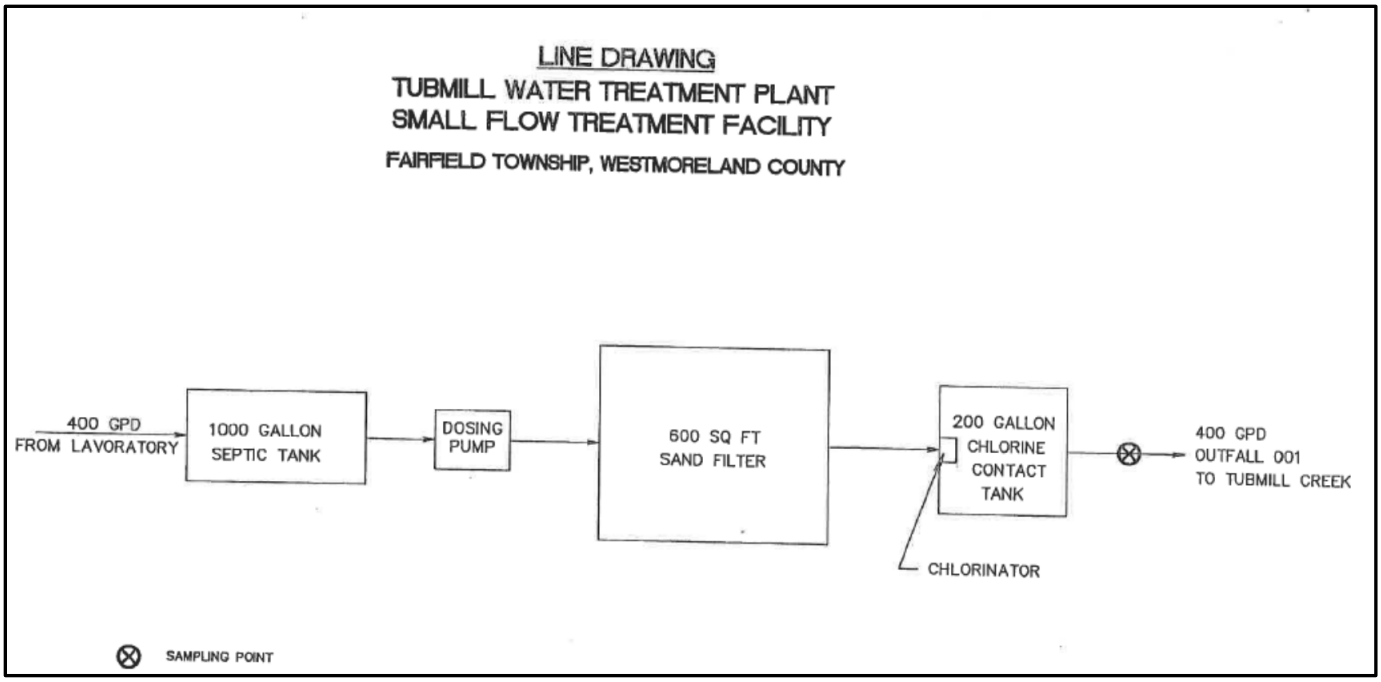
Outfall 004 has traditionally been exempt from monitoring requirements. During the current review, the facility was asked to complete Module 1 of the individual permit application for industrial wastewater discharge and collect a sample at Outfall 004. However, the facility confirmed that stormwater sampling is impossible due to the piping configuration.

Given that Outfalls 002, 003, and 004 share a single pipe that discharges into Tubmill Creek, the exemption from monitoring requirements for Outfall 004 will be maintained in the permit.

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment D)
☒	TRC Model Spreadsheet (see Attachment C, E)
☐	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:

Attachment A: Process Diagram





Attachment B: StreamStats Report

PA0216895 - StreamStats Report

Region ID: PA
Workspace ID: PA20241202124237222000
Clicked Point (Latitude, Longitude): 40.33182, -79.08931
Time: 2024-12-02 07:42:59 -0500

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	0	percent
DRNAREA	Area that drains to a point on a stream	10.6	square miles
ELEV	Mean Basin Elevation	2120	feet
FOREST	Percentage of area covered by forest	97.9831	percent
PRECIP	Mean Annual Precipitation	47	inches
URBAN	Percentage of basin with urban development	0.0457	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	10.6	square miles	2.33	1720
ELEV	Mean Basin Elevation	2120	feet	898	2700
PRECIP	Mean Annual Precipitation	47	inches	38.7	47.9

Low-Flow Statistics Flow Report [Low Flow Region 3]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.74	ft^3/s	43	43
30 Day 2 Year Low Flow	2.48	ft^3/s	38	38
7 Day 10 Year Low Flow	0.887	ft^3/s	54	54
30 Day 10 Year Low Flow	1.14	ft^3/s	49	49
90 Day 10 Year Low Flow	1.64	ft^3/s	41	41

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/)

Base Flow Statistics

Base Flow Statistics Parameters [Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	10.6	square miles	2.26	1720
PRECIP	Mean Annual Precipitation	47	inches	33.1	50.4
CARBON	Percent Carbonate	0	percent	0	99
FOREST	Percent Forest	97.9831	percent	5.1	100

Attachment D: TRC Modeling Results for Outfall 001

TRC EVALUATION - Outfall 001

0.887	= Q stream (cfs)	0.5	= CV Daily
0.0004	= 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)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	457.280	1.3.2.iii	WLA cfc =	445.804
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	170.393	5.1d	LTA_cfc =	259.170

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)**

Attachment D: Toxic Management Spreadsheet for Outfall 002

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Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Tubmill Water Filtration Plant** NPDES Permit No.: **PA0216895** Outfall No.: **002**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Settled filter backwash water**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.141	17.6	7.21						

					0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		64									
	Chloride (PWS)	mg/L		10.8									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		6.51									
	Fluoride (PWS)	mg/L		0.053									
Group 2	Total Aluminum	µg/L		0.053									
	Total Antimony	µg/L	<	0.3									
	Total Arsenic	µg/L		0.004									
	Total Barium	µg/L		0.033									
	Total Beryllium	µg/L	<	0.0004									
	Total Boron	µg/L	<	0.047									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L	<	0.001									
	Hexavalent Chromium	µg/L		0.1									
	Total Cobalt	µg/L	<	0.2									
	Total Copper	µg/L	<	2									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	0.005									
	Dissolved Iron	µg/L	<	0.02									
	Total Iron	µg/L		0.0851									
	Total Lead	µg/L	<	0.3									
	Total Manganese	µg/L		1.13									
	Total Mercury	µg/L	<	0.0003									
	Total Nickel	µg/L	<	0.001									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	0.5									
	Total Silver	µg/L	<	0.2									
	Total Thallium	µg/L	<	0.05									
	Total Zinc	µg/L		0.004									
	Total Molybdenum	µg/L		0.01									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										
	Carbon Tetrachloride	µg/L	<										
	Chlorobenzene	µg/L											

Group 3	Chlorodibromomethane	µg/L	<										
	Chloroethane	µg/L	<										
	2-Chloroethyl Vinyl Ether	µg/L	<										
	Chloroform	µg/L	<										
	Dichlorobromomethane	µg/L	<										
	1,1-Dichloroethane	µg/L	<										
	1,2-Dichloroethane	µg/L	<										
	1,1-Dichloroethylene	µg/L	<										
	1,2-Dichloropropane	µg/L	<										
	1,3-Dichloropropylene	µg/L	<										
	1,4-Dioxane	µg/L	<										
	Ethylbenzene	µg/L	<										
	Methyl Bromide	µg/L	<										
	Methyl Chloride	µg/L	<										
	Methylene Chloride	µg/L	<										
	1,1,2,2-Tetrachloroethane	µg/L	<										
	Tetrachloroethylene	µg/L	<										
	Toluene	µg/L	<										
	1,2-trans-Dichloroethylene	µg/L	<										
	1,1,1-Trichloroethane	µg/L	<										
	1,1,2-Trichloroethane	µg/L	<										
	Trichloroethylene	µg/L	<										
	Vinyl Chloride	µg/L	<										
Group 4	2-Chlorophenol	µg/L	<										
	2,4-Dichlorophenol	µg/L	<										
	2,4-Dimethylphenol	µg/L	<										
	4,6-Dinitro-o-Cresol	µg/L	<										
	2,4-Dinitrophenol	µg/L	<										
	2-Nitrophenol	µg/L	<										
	4-Nitrophenol	µg/L	<										
	p-Chloro-m-Cresol	µg/L	<										
	Pentachlorophenol	µg/L	<										
	Phenol	µg/L	<										
	2,4,6-Trichlorophenol	µg/L	<										
Group 5	Acenaphthene	µg/L	<										
	Acenaphthylene	µg/L	<										
	Anthracene	µg/L	<										
	Benzidine	µg/L	<										
	Benzo(a)Anthracene	µg/L	<										
	Benzo(a)Pyrene	µg/L	<										
	3,4-Benzofluoranthene	µg/L	<										
	Benzo(ghi)Perylene	µg/L	<										
	Benzo(k)Fluoranthene	µg/L	<										
	Bis(2-Chloroethoxy)Methane	µg/L	<										
	Bis(2-Chloroethyl)Ether	µg/L	<										
	Bis(2-Chloroisopropyl)Ether	µg/L	<										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<										
	4-Bromophenyl Phenyl Ether	µg/L	<										
	Butyl Benzyl Phthalate	µg/L	<										
	2-Chloronaphthalene	µg/L	<										
	4-Chlorophenyl Phenyl Ether	µg/L	<										
	Chrysene	µg/L	<										
	Dibenzo(a,h)Anthrancene	µg/L	<										
	1,2-Dichlorobenzene	µg/L	<										
	1,3-Dichlorobenzene	µg/L	<										
	1,4-Dichlorobenzene	µg/L	<										
	3,3-Dichlorobenzidine	µg/L	<										
	Diethyl Phthalate	µg/L	<										
	Dimethyl Phthalate	µg/L	<										
	Di-n-Butyl Phthalate	µg/L	<										
	2,4-Dinitrotoluene	µg/L	<										
	2,6-Dinitrotoluene	µg/L	<										
	Di-n-Octyl Phthalate	µg/L	<										
	1,2-Diphenylhydrazine	µg/L	<										

	Fluoranthene	µg/L	<										
	Fluorene	µg/L	<										
	Hexachlorobenzene	µg/L	<										
	Hexachlorobutadiene	µg/L	<										
	Hexachlorocyclopentadiene	µg/L	<										
	Hexachloroethane	µg/L	<										
	Indeno(1,2,3-cd)Pyrene	µg/L	<										
	Isophorone	µg/L	<										
	Naphthalene	µg/L	<										
	Nitrobenzene	µg/L	<										
	n-Nitrosodimethylamine	µg/L	<										
	n-Nitrosodi-n-Propylamine	µg/L	<										
	n-Nitrosodiphenylamine	µg/L	<										
	Phenanthrene	µg/L	<										
	Pyrene	µg/L	<										
	1,2,4-Trichlorobenzene	µg/L	<										
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Tubmill Water Filtration Plant, NPDES Permit No. PA0216895, Outfall 002

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Tubmill Creek**

No. Reaches to Model: **1**

- (•) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	044797	8.48	1286	10.6			Yes
End of Reach 1	044797	0.5	1049	54.4			Yes

Q $_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	8.48	0.1	0.887									100	7		
End of Reach 1	0.5	0.1	3.46									100	7		

Q $_{h}$

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	8.48														
End of Reach 1	0.5														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Tubmill Water Filtration Plant, NPDES Permit No. PA0216895, Outfall 002

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | All | Inputs | Results | Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 7.850 PMF: 1 Analysis Hardness (mg/l): 83.736 Analysis pH: 7.03

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	3,800	
Total Antimony	0	0		0	1,100	1,100	5,573	
Total Arsenic	0	0		0	340	340	1,723	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	106,395	
Total Boron	0	0		0	8,100	8,100	41,038	
Total Cadmium	0	0		0	1.694	1.78	9.02	Chem Translator of 0.951 applied
Total Chromium (III)	0	0		0	492.675	1,559	7,899	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	82.5	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	481	
Total Copper	0	0		0	11.369	11.8	60.0	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	53.205	65.1	330	Chem Translator of 0.817 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	8.34	Chem Translator of 0.85 applied
Total Nickel	0	0		0	402.948	404	2,046	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	2.370	2.79	14.1	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	329	
Total Zinc	0	0		0	100.818	103	522	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 7.850 PMF: 1 Analysis Hardness (mg/l): 83.736 Analysis pH: 7.03

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	1,115	
Total Arsenic	0	0		0	150	150	760	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	20,772	
Total Boron	0	0		0	1,600	1,600	8,106	
Total Cadmium	0	0		0	0.217	0.24	1.2	Chem Translator of 0.916 applied
Total Chromium (III)	0	0		0	64.087	74.5	378	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	52.7	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	96.3	
Total Copper	0	0		0	7.695	8.02	40.6	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	7,600	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.073	2.54	12.9	Chem Translator of 0.817 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	4.59	Chem Translator of 0.85 applied
Total Nickel	0	0		0	44.755	44.9	227	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	25.3	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	65.9	
Total Zinc	0	0		0	101.643	103	522	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 7.850 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	28.4	
Total Arsenic	0	0		0	10	10.0	50.7	
Total Barium	0	0		0	2,400	2,400	12,159	
Total Boron	0	0		0	3,100	3,100	15,706	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	

Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	1,520	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	5,066	
Total Mercury	0	0		0	0.050	0.05	0.25	
Total Nickel	0	0		0	610	610	3,091	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	1.22	
Total Zinc	0	0		0	N/A	N/A	N/A	

CRL CCT (min): 3.409 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

Pollutants	*Mass Limits*		*Concentration Limits*				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	2,436	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	50.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	12,159	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	8,106	µg/L	Discharge Conc < TQL
Total Cadmium	1.2	µg/L	Discharge Conc < TQL
Total Chromium (III)	378	µg/L	Discharge Conc < TQL
Hexavalent Chromium	52.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	96.3	µg/L	Discharge Conc < TQL
Total Copper	38.5	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	1,520	µg/L	Discharge Conc < TQL
Total Iron	7,600	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	12.9	µg/L	Discharge Conc < TQL
Total Manganese	5,066	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.25	µg/L	Discharge Conc < TQL
Total Nickel	227	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	25.3	µg/L	Discharge Conc < TQL
Total Silver	9.06	µg/L	Discharge Conc < TQL
Total Thallium	1.22	µg/L	Discharge Conc < TQL
Total Zinc	335	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

Attachment E: TRC Modeling Results for Outfall 002

TRC EVALUATION - Outfall 002

0.887	= Q stream (cfs)	0.5	= CV Daily
0.141	= Q discharge (MGD)	0.5	= CV Hourly
4	= 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)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 1.316	1.3.2.iii	WLA cfc = 1.276
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.490	5.1d	LTA_cfc = 0.742

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.170	

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)**