pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0014648**
Facility Type	**Industrial**	APS ID	**276484**
Major / Minor	**Minor**	Authorization ID	**1425307**

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

Applicant and Facility Information

Applicant Name	**Veolia Water PA Inc.**	Facility Name	**Veolia Water PA-Hummelstown Plant**
Applicant Address	4405 N Sixth St	Facility Address	211 Wall Street
	Harrisburg, PA 17110-1654		Hummelstown, PA 17036-1013
Applicant Contact	Helen King	Facility Contact	Helen King
Applicant Phone	(223) 259-3207	Facility Phone	(223) 259-3207
Client ID	64718	Site ID	452750
SIC Code	4941	Municipality	Hummelstown Borough
SIC Description	Trans. & Utilities - Water Supply	County	Dauphin
Date Application Received	January 30, 2023	EPA Waived?	Yes
Date Application Accepted	February 10, 2023	If No, Reason	

Purpose of Application: NPDES Renewal.

Summary of Review

1.0 General Discussion

This factsheet supports the renewal of an existing NPDES permit for a discharge of filter backwash and clarifier wash supernatant from an existing water treatment plant. Veolia Water PA Inc. owns and operates the treatment plant located in Hummelstown Borough. The name of the facility changed from Suez Water PA to Veolia Water PA during the last permit cycle. Raw water is supplied to the facility from Swatara Creek to produce potable water. The following chemicals are added to various treatment processes at the facility. Aluminum Chlorohydrate is added for coagulation, Potassium Permanganate for taste, odor and Manganese and Iron removal. Sulfuric acid for pH adjustment and cleaning of membranes. Citric acid for cleaning membranes, Sodium Hypochlorite for disinfection and membrane cleaning, Caustic soda for pH adjustment, Sodium Bisulfite for de-chlorination and Zinc Orthophosphate for Corrosion Control. Wastewater generated from backwashing the membrane filters, clarifier wash supernatant and decon water (turbid water retained outside membrane) are directed to treatment lagoons. The wastewater treatment system consists of two settling lagoons for settling wastewater. Effluent is discharged via outfall 001 to Swatara Creek which is classified for Warm Water Fishes (WWF) and Migratory Fishes (MF). The existing permit was based on a wastewater flow of 0.25mgd but has been revised to 0.310MGD for the current renewal based on average maximum daily discharge for the past 12 months of operation The lagoons are periodically cleaned to remove sludge for land application. The facility is not covered by ELG but has technology-based treatment limits developed by the Department. See details at technology limits section of the report. The existing permit was issued on July 19, 2018 with effective date of August 1, 2018 and expiration date of July 31, 2023. The permit was amended on October 6, 2022 for a name change. The permittee submitted and administratively completed NPDES permit renewal application to the Department has been operating under the conditions in the existing permit pending permit renewal. Topographical map showing discharge location is attached as attachment A and process flow schematic diagram is presented in attachment B.

Approve	Deny	Signatures	Date
X		J. *Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	April 2, 2024
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	April 15, 2024
X		*Maria D. Bebenek* Maria D. Bebenek, P.E. / Program Manager	April 15, 2024

Summary of Review

1.1 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.

1.2 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.31
Latitude	40º 16' 12.68"	Longitude	-76º 43' 4.26"
Quad Name	Hershey	Quad Code	1632
Wastewater Description:	IW Process Effluent without ELG		

Receiving Waters	Swatara Creek	Stream Code	09361
NHD Com ID	56401793	RMI	10.10
Drainage Area	513	Yield (cfs/mi^2)	0.14
Q_{7-10} Flow (cfs)	71.8	Q_{7-10} Basis	USGS Gage Station
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Not Assessed		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

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

Nearest Downstream Public Water Supply Intake		Middletown Borough Water System	
PWS Waters	Swatara Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	>8

Changes Since Last Permit Issuance: None

1.2.1 Water Supply Intake:

The closest water supply intake located downstream from the discharge is the Middletown Borough Water System provided by Veolia Water PA on the Swatara Creek located approximately 8 miles downstream. Because of the distance downstream and dilution, the discharge should have no impact on the intake.

1.3 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	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
TSS	Report	Report	XXX	30	60	75	1/week	24-Hr Composite
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	1/year	Calculation
TKN	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
Total Aluminum	Report	Report	XXX	4.0	8.0	10	1/week	24-Hr Composite
Total Iron	Report	Report	XXX	2.0	4.0	5	1/week	24-Hr Composite
Total Manganese	Report	Report	XXX	1.0	2.0	2.5	1/week	24-Hr Composite

2.0 Compliance History

2.1 DMR Data for Outfall 001 (from March 1, 2023 to February 29, 2024)

Parameter	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23
Flow (MGD) Average Monthly	0.127	0.154	0.157	0.15	0.146	0.176	0.181	0.181	0.159	0.169	0.143	0.165
Flow (MGD) Daily Maximum	0.200	0.298	0.479	0.318	0.202	0.268	0.297	0.276	0.282	0.304	0.218	0.402
pH (S.U.) Daily Minimum	6.93	7.01	7.26	7.3	7.15	7.11	7.05	6.93	6.99	6.94	6.98	7.23
pH (S.U.) Daily Maximum	7.55	7.88	7.77	8.01	7.69	8.36	7.80	7.65	7.70	7.33	7.51	7.60
TRC (mg/L) Average Monthly	0.04	0.01	0.03	0.03	0.05	0.13	0.19	0.29	0.18	0.1	0.04	0.02
TRC (mg/L) Instantaneous Maximum	0.25	0.06	0.14	0.12	0.12	0.80	0.91	1.25	0.74	0.67	0.30	0.05
TSS (lbs/day) Average Monthly	< 5.3	< 9.2	< 9.2	< 11.8	< 6.1	< 8.44	< 11.2	< 7.5	< 7.62	< 5.9	< 5.96	< 6.9
TSS (lbs/day) Daily Maximum	< 7.7	20.7	36.0	19.5	11.3	15.8	17.2	< 9.38	9.52	< 12.7	< 8.05	< 16.8
TSS (mg/L) Average Monthly	< 5.0	< 7.2	< 7.0	< 9.4	< 5.75	< 5.75	< 7.4	< 5.0	< 5.75	< 4.20	< 5.0	< 5.0
TSS (mg/L) Daily Maximum	< 5.0	16.0	9.0	19.0	8.0	8.0	11	< 5.0	7.0	< 5.0	5.0	< 5.0
Nitrate-Nitrite (mg/L) Daily Maximum			3.2									
Total Nitrogen (mg/L) Daily Maximum			4.2									
TKN (mg/L) Daily Maximum			2.3									
Total Phosphorus (mg/L) Daily Maximum			0.13									
Total Aluminum (lbs/day) Average Monthly	0.02	< 0.14	0.4	0.39	0.21	0.27	0.20	0.15	0.33	0.09	0.94	< 0.03
Total Aluminum (lbs/day) Daily Maximum	0.04	0.28	1.8	0.79	0.42	0.63	0.31	0.28	0.89	0.12	4.35	< 0.11
Total Aluminum (mg/L) Average Monthly	0.023	< 0.11	0.3	0.308	0.173	0.182	0.13	0.1	0.25	0.063	0.79	< 0.023

Total Aluminum (mg/L) Daily Maximum	0.029	0.22	0.7	0.86	0.3	0.32	0.23	0.15	0.5	0.099	2.7	< 0.033
Total Iron (lbs/day) Average Monthly	< 0.03	< 0.04	< 0.1	< 0.04	< 0.04	< 0.05	< 0.06	< 0.05	< 0.05	< 0.04	< 0.14	< 0.04
Total Iron (lbs/day) Daily Maximum	< 0.05	0.05	0.9	0.08	0.05	0.09	0.08	0.07	0.11	< 0.08	0.48	< 0.10
Total Iron (mg/L) Average Monthly	< 0.03	< 0.033	< 0.1	< 0.035	< 0.032	< 0.035	< 0.04	< 0.032	< 0.04	< 0.3	< 0.114	< 0.03
Total Iron (mg/L) Daily Maximum	< 0.03	0.047	0.22	0.056	0.036	0.044	0.07	0.038	0.08	< 0.03	0.31	< 0.03
Total Manganese (lbs/day) Average Monthly	0.02	0.07	0.1	0.16	0.10	0.09	0.14	0.06	0.15	< 0.035	0.21	< 0.005
Total Manganese (lbs/day) Daily Maximum	0.04	0.15	0.5	0.47	0.23	0.22	0.24	0.012	0.46	0.044	0.87	0.009
Total Manganese (mg/L) Average Monthly	0.023	0.057	0.1	0.126	0.082	0.062	0.09	0.042	0.11	< 0.025	0.18	< 0.0036
Total Manganese (mg/L) Daily Maximum	0.053	0.14	0.4	0.32	0.22	0.14	0.2	0.062	0.26	0.036	0.54	0.006

2.2 Summary of DMRs:

Discharge Monitoring Reports (DMRs) review for the facility for the last 12 months of operation presented on the table in section 2.1 indicate permit limits have been met consistently. No permit violation noted on DMRs during the period reviewed.

2.3 Summary of Inspections:

The facility was inspected a couple of times during the past permit cycle. Inspection reports review for the facility during the period indicate permit limits have been met satisfactorily. The reports indicate good operation and maintenance of the facility.

3.0 Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	.25
Latitude	40º 16' 12.67"	**Longitude**	-76º 43' 4.27"

Wastewater Description: IW Process Effluent without ELG

3.1 Basis for Effluent Limitations

In general, the Clean Water Act (CWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit (WQBEL) is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

3.2 Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Technology-based (BAT) effluent limits for water treatment plant wastewater discharges are presented in the Department's June 1989 Guidance document entitled, “Technology Based Controls for Discharges from Water Treatment Plants” as follows:

Parameter	Monthly Average (mg/l)	Daily Max (mg/l)
Suspended Solids	30	60
Iron (total)	2	4
Aluminum (total)	4	8
Manganese (total)	1	2
Flow	Monitor	
pH	6-9 at all time	
Total Residual Chlorine*	0.5	1.0

*See TRC section of the report for details

3.3 Water Quality-Based Limitations

3.3.1 Receiving Stream

The receiving stream is the Swatara Creek. According to 25 PA § 93.9, this stream is protected for Warm Water Fishes (WWF) and Migratory Fishes (MF). It is located in Drainage List N and State Watershed 7-D. It has been assigned stream code 09361. According to eMapPA, the segment of Swatara Creek receiving the discharge is attaining its designated uses

3.3.2 Streamflows

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No. 01573560 on Swatara Creek near Hershey. The Q_{7-10} and drainage area at the gage is 67.7ft3/s and 483mi^2 respectively. The resulting yields are as follows:

- Q_{7-10} = (67.7ft^3/s)/483 mi^2 = 0.14ft^3/s/ mi^2
- Q_{30-10} / Q_{7-10} = 0.89
- Q_{1-10} / Q_{7-10} = 1.23

The drainage area at discharge is determined to be 513 mi^2

The Q_{7-10} at discharge = 513 mi^2 x 0.14 ft^3/s/mi^2 = 71.82 ft^3/s.

3.3.3 Toxics

A reasonable potential (RP) analysis was done for pollutant Groups 1 and 2 submitted with the application with the re-sampled results for Total Thallium, Total Silver, Total Zinc and Hexavalent Chromium . All pollutants that were presented in the application sampling data were entered into the Toxics Management Spreadsheet (TMS) to calculate WQBELs. WQBELs recommended by the TMS are presented in attachment C. The results of the TMS indicate discharge levels for all pollutants are well below DEP's target quantitation limits and the calculated WQBELs, therefore, no monitoring or limitation was recommended. Mass load will be established for water-quality base limits and reported for technology-based limits following DEP permit writer's manual No. 362-0400-001 Table 5-2, 10/1/97 Edition. Mass-based limits are expressed in pounds per day and are calculated as follows: Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34. The recommended limitations follow the logic presented in DEPs SOP, to establish limits in the permit where the maximum reported concentration exceeds 50% of the WQBEL, or for non-conservative pollutants to establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL, or to establish monitoring requirements for conservative pollutants where the maximum reported concentration is between 10% - 50% of the WQBEL

3.3.4 Per- and Polyfluoroalkyl Substances (PFAS) Monitoring Strategy

DEP is implementing PFAS monitoring program to investigate PFAS discharges. Applicants are required to test for 4 of the PFAS parameters, PFOA, PFOS, HFPO-DA and PFBS during permit application. If the results of the tests are non-detect using screening level at or below the Target QLs, 1/year monitoring is required and if there are detections or non-detects above the TQLs a quarterly monitoring required in the permit. Applications received without the tests and applications already received will be drafted with annual or quarterly monitoring depending on if the industrial facility falls under or If a major sewage facility received flow from an industry EPA believes to be sources (organic chemicals, plastics & synthetic fibers; metal finishing; electroplating; electric and electronic components; landfills; pulp, paper & paperboard; leather tanning & finishing; plastics molding & forming; textile mills; paint formulating, and airport). This facility does not fall under any of the sources, annual monitoring of PFOA, PFOS, HFPO-DA, and PFBS is required. The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in 4 consecutive monitoring periods indicate non-detect results at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittees shall enter a No Discharge Indicator (NODI) Code of "GG" on DMRs.

3.3.5 Total Residual Chlorine

The attached TRC result utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The Guidance references Chapter 92a, Section 92a.48 (b) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The attached results presented in attachment D indicates a technology limit of 0.5 mg/l and 1.6mg/l IMAX would be needed to prevent toxicity concerns. In addition, the BPT TBEL referenced in section 3.2 requires a Daily Maximum TRC of 1.0 mg/l. Therefore, it is recommended that a TRC limit of 0.5 mg/l monthly average and 1.0 mg/l as daily maximum limit and 1.6mg/l IMAX be applied for this permit cycle with minimum monitoring frequency of 1/day.

3.3.6 Total Suspended Solids (TSS):

There is no water quality criteria for TSS. The existing BPT TBEL referenced in section 3.2 will remain in the permit with a monitoring frequency of 1/week.

3.3.7 Instantaneous Maximum:

The existing IMAX limitations in the permit determined using multiplier of 2.5 will be carried forward.

3.3.8 Chesapeake Bay Strategy:

In 2003, EPA established state-wide cap loads for Total Nitrogen and Total Phosphorus for Pennsylvania that are needed to ensure compliance with new water quality standards enacted to restore the water quality of the Chesapeake Bay. DEP released Pennsylvania's Chesapeake Bay Tributary Strategy (CBTS) in January of 2005 to guide Pennsylvania's efforts to meet those cap loads and made revisions to the Strategy in 2006-2007 following a stakeholder process. Industrial

discharges have been prioritized by Central Office based on their delivered TN and TP loadings to the Bay. Significant industrial wastewater dischargers are facilities that discharge more than 75 lbs/day of TN or 25 lbs/day of TP on an average annual basis and the rest are classified as non-significant dischargers. DEP developed Chesapeake Bay IW monitoring plan for all industrial facilities that discharge to the Chesapeake Bay. This facility is classified as a non-significant discharger with little or no potential to introduce nutrients to the receiving stream but has been monitoring TP and the TN series (nitrate-nitrite, TKN) and will continue monitoring them annually to collect data for Chesapeake Bay modelling in future.

3.3.9 Cleaning of Sedimentation Tanks/Lagoons

A permit condition will be added in PART C. II of the permit to address cleaning of lagoons and notification requirement during lagoon cleaning.

4.0 Other Considerations

4.1 Anti-backsliding

Not applicable to this permit

4.2 Anti-Degradation (93.4)

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

4.3 Class A Wild Trout Fisheries:

No Class A Wild Trout Fisheries are impacted by this discharge.

4.4 303d Listed stream:

The discharge is not located on a 303d listed stream segment.

4.5 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

4.6 Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

5.0 Proposed Effluent Limitations and Monitoring Requirements

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

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

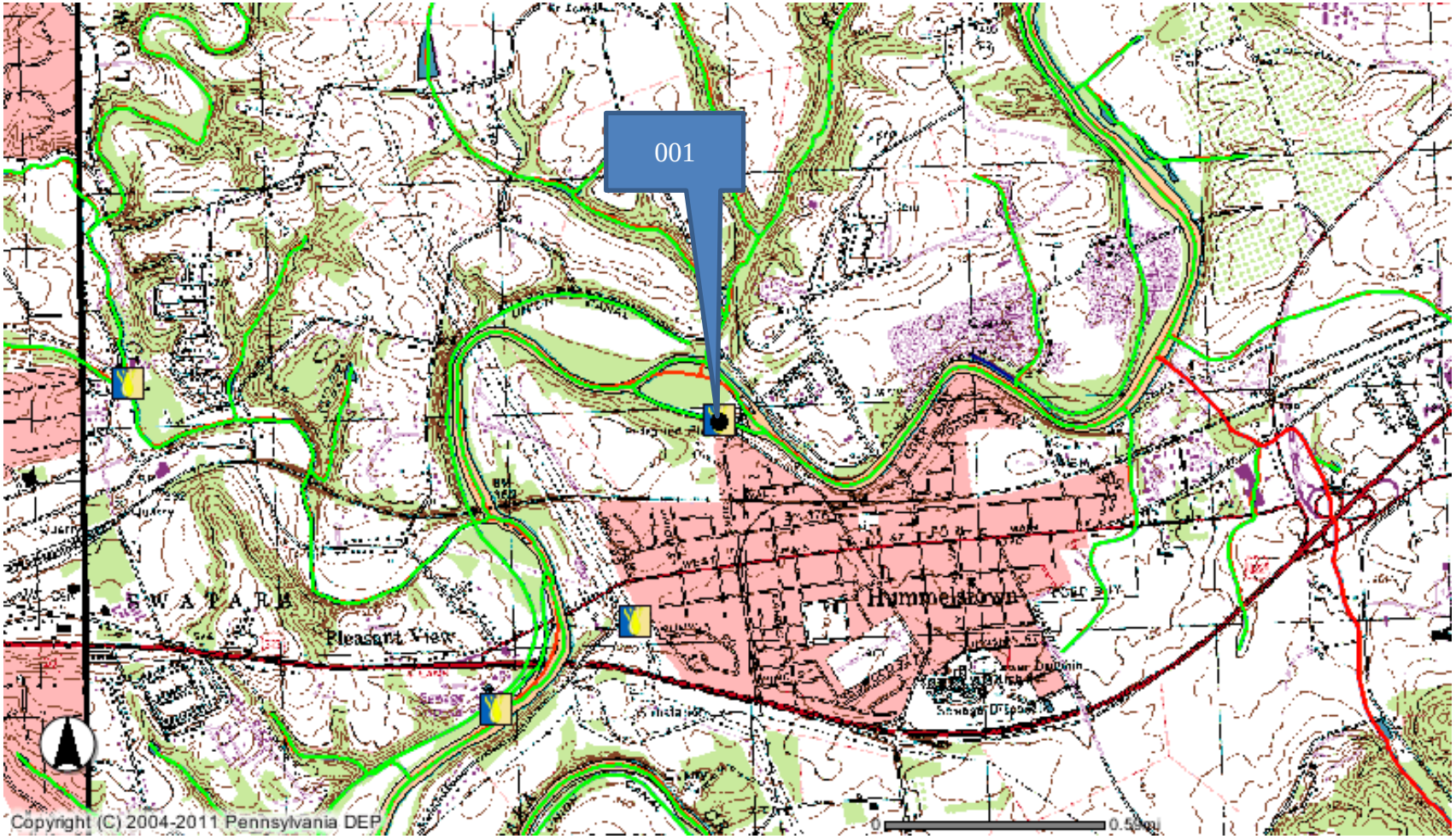
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	1.0	1.6	1/day	Grab
TSS	Report	Report	XXX	30	60	75	1/week	24-Hr Composite
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	1/year	Calculation
TKN	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
Total Aluminum	Report	Report	XXX	4.0	8.0	10	1/week	24-Hr Composite
Total Iron	Report	Report	XXX	2.0	4.0	5	1/week	24-Hr Composite
Total Manganese	Report	Report	XXX	1.0	2.0	2.5	1/week	24-Hr Composite
PFOA (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
PFOS (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
PFBS (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
HFPO-DA (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

Compliance Sampling Location: At Outfall 001.

6.0 Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment C)
☒	TRC Model Spreadsheet (see Attachment **D**)
☐	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: Establishing effluent limitation for individual industrial waste
☐	Other:

7. Attachment

A. Topographical Map



B. Process Flow Diagram

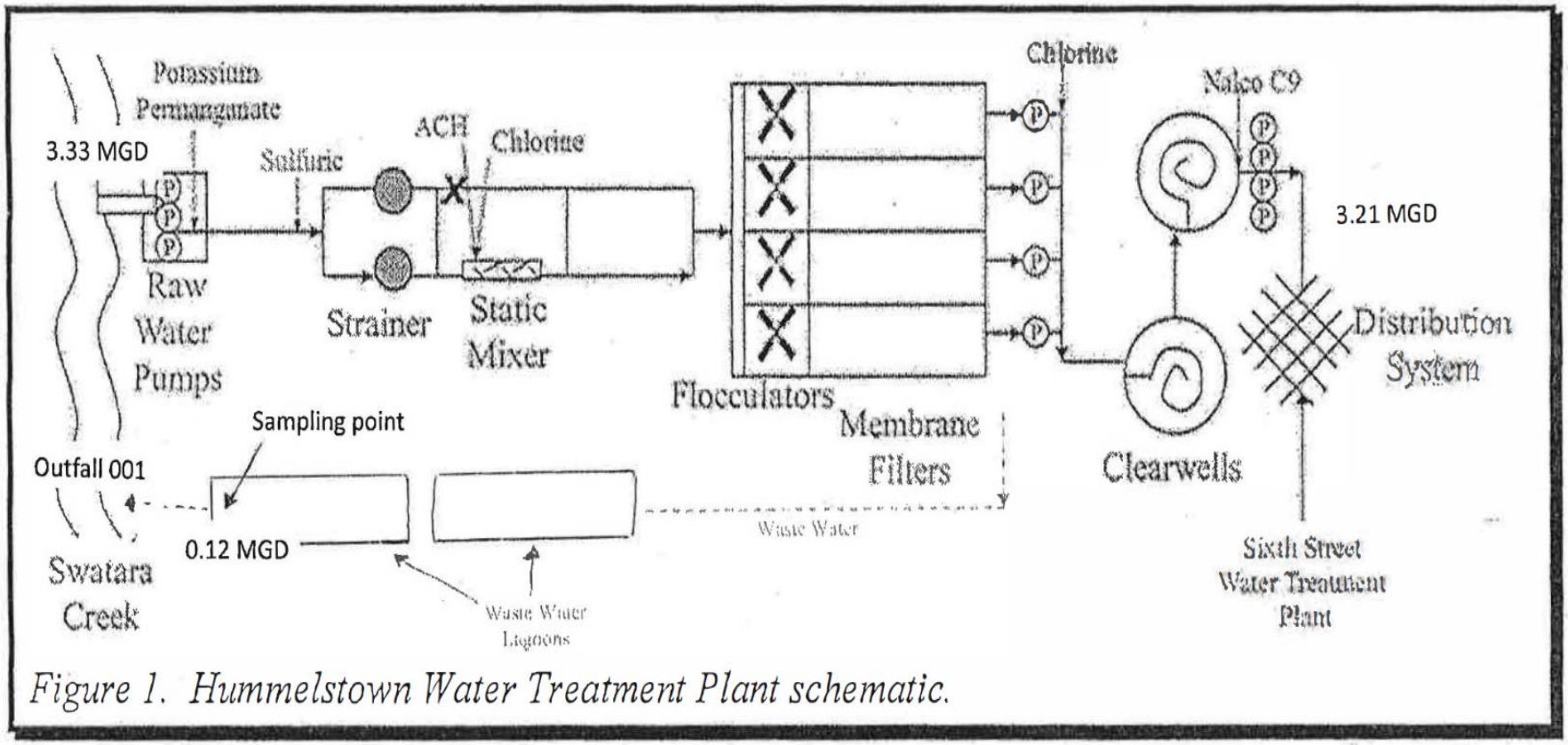


Figure 1. Hummelstown Water Treatment Plant schematic.

C. Toxic Management Spreadsheet

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Veolia PA Hummelstown Plant** NPDES Permit No.: **PA0014648** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Industrial watewater**

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
0.31	100	7.05						

					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		305									
	Chloride (PWS)	mg/L		49.9									
	Bromide	mg/L	<	1									
	Sulfate (PWS)	mg/L		41.6									
	Fluoride (PWS)	mg/L	<	1									
Group 2	Total Aluminum	µg/L		354									
	Total Antimony	µg/L	<	8									
	Total Arsenic	µg/L		8									
	Total Barium	µg/L		48.6									
	Total Beryllium	µg/L	<	1.6									
	Total Boron	µg/L		31									
	Total Cadmium	µg/L	<	1.6									
	Total Chromium (III)	µg/L	<	4									
	Hexavalent Chromium	µg/L		0.31									
	Total Cobalt	µg/L	<	8									
	Total Copper	µg/L	<	8									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L		4030									
	Total Iron	µg/L		92.7									
	Total Lead	µg/L	<	1.6									
	Total Manganese	µg/L		179									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		1.27									
	Total Phenols (Phenolics) (PWS)	µg/L		923									
	Total Selenium	µg/L	<	28									
	Total Silver	µg/L	<	0.5									
	Total Thallium	µg/L	<	0.5									
	Total Zinc	mg/L	<	0.0045									
	Total Molybdenum	µg/L	<	8									

Stream / Surface Water Information

Veolia PA Hummelstown Plant, NPDES Permit No. PA0014648, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Swatara Creek**

No. Reaches to Model: 1

(●) Statewide Criteria
( ) Great Lakes Criteria
( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	009361	10.1	311	526			Yes
End of Reach 1	009631	9.1	305	549			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi²)*	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	10.1	0.14										100	7		
End of Reach 1	9.1	0.14													

Q_h

Location	RMI	LFY (cfs/mi²)	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	10.1														
End of Reach 1	9.1														

Model Results

Veolia PA Hummelstown Plant, NPDES Permit No. PA0014648, Outfall 001

Instructions | *Results* | RETURN TO INPUTS | SAVE AS PDF | PRINT | (●) All ( ) Inputs ( ) Results ( ) Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.142 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

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	17,157	
Total Antimony	0	0		0	1,100	1,100	25,164	
Total Arsenic	0	0		0	340	340	7,778	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	480,395	
Total Boron	0	0		0	8,100	8,100	185,295	
Total Cadmium	0	0		0	2.014	2.13	48.8	Chem Translator of 0.944 applied
Total Chromium (III)	0	0		0	569.763	1,803	41,246	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	373	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	2,173	
Total Copper	0	0		0	13.439	14.0	320	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	64.581	81.6	1,868	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	37.7	Chem Translator of 0.85 applied
Total Nickel	0	0		0	468.236	469	10,733	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	3.217	3.78	86.6	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	1,487	
Total Zinc	0	0		0	117.180	120	2,741	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 720 PMF: 0.987 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

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	33,563	
Total Arsenic	0	0		0	150	150	22,884	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	625,500	
Total Boron	0	0		0	1,600	1,600	244,097	
Total Cadmium	0	0		0	0.246	0.27	41.3	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.115	86.2	13,148	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	1,586	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	2,899	

Total Copper	0	0		0	8.956	9.33	1,423	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	231,831	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.517	3.18	485	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	138	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.007	52.2	7,958	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	761	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	1,983	
Total Zinc	0	0		0	118.139	120	18,279	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 720 PMF: 0.987 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	854	
Total Arsenic	0	0		0	10	10.0	1,526	
Total Barium	0	0		0	2,400	2,400	366,146	
Total Boron	0	0		0	3,100	3,100	472,939	
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	45,768	
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	152,561	
Total Mercury	0	0		0	0.050	0.05	7.63	
Total Nickel	0	0		0	610	610	93,062	
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	36.6	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): ###### 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

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

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☑ ***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	10,997	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	854	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	1,526	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	307,913	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	118,767	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	31.3	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	13,148	µg/L	Discharge Conc < TQL
Hexavalent Chromium	239	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	1,393	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	205	µg/L	Discharge Conc ≤ 10% WQBEL
Dissolved Iron	45,768	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	231,831	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	485	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	152,561	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	7.63	µg/L	Discharge Conc < TQL
Total Nickel	6,879	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	761	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	55.5	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	36.6	µg/L	Discharge Conc < TQL
Total Zinc	1.76	mg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS

D. TRC Calculation Results

TRC EVALUATION			
Input appropriate values in A3:A9 and D3:D9			
71.82	= Q stream (cfs)	0.5	= CV Daily
0.31	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.142	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	0.987	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 6.803	1.3.2.iii	WLA cfc = 45.981
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 2.535	5.1d	LTA_cfc = 26.731

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)**