pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0087572**
Facility Type	**Industrial**	APS ID	**278852**
Major / Minor	**Minor**	Authorization ID	**1222752**

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

Applicant and Facility Information

Applicant Name	**Williamstown Borough Authority**	Facility Name	**Williamstown Borough Water System**
Applicant Address	PO Box 32	Facility Address	8693 Route 209 8693 Rte 209
	Williamstown, PA 17098-0032		Williamstown, PA 17098-0032
Applicant Contact	Charles Croft	Facility Contact	Charles Croft
Applicant Phone	(717) 647-4466	Facility Phone	(717) 647-4466
Client ID	80931	Site ID	450582
SIC Code	4941	Municipality	Williams Township
SIC Description	Trans. & Utilities - Water Supply	County	Dauphin
Date Application Received	February 8, 2018	EPA Waived?	Yes
Date Application Accepted	April 4, 2018	If No, Reason	

Purpose of Application: NPDES Renewal for discharge of industrial waste

Summary of Review

1.0 General Discussion

This factsheet supports the renewal of an existing NPDES permit for discharge of treated industrial wastewater from a water treatment plant that serves Williamstown Borough. Water is withdrawn from unnamed tributary to Wiconisco Creek to produce potable water and discharges wastewater generated at the site back to the unnamed tributary. The facility discharges average daily maximum flow of 0.016 mgd of filter backwash, sample sink water, analyzer water from filter building and non-chemical area floor drainage. Floor drains and additional analyzers in the chemical storage building are directed to a septic system on-site. Treatment of the wastewater is provided in four settling basins with screens. The flow is split between the first two tanks which run in series with to the second set of tanks. Filter back wash water enters a pit prior to the settling basins and allowed to settle for a day in the basins before the supernatant is pumped from the basins and discharged to the unnamed tributary through a drainage Swale to outfall 001. The filters are normally backwashed twice a week and create a discharge twice per week. The filters could be backwashed more than twice if turbidity level of the intake water is high. Sludge is removed from the basins once a year to Williamstown Sewage treatment plant for further processing. The unnamed tributary to Wiconisco creek is classified for Cold Water Fishes and Migratory Fishes. This facility is not covered under ELG.

The existing permit was issued on May 24, 2013 with effective date of June 1, 2013 and expiration date of May 31, 2018. The permittee submitted and administratively completed NPDES permit renewal application to the Department on February 8, 2018 and has been operating under the conditions in the existing permit pending permit renewal. A topographical map showing discharge location is presented in attachment A.

Approve	Deny	Signatures	Date
X		J. Pascal Kwedza, P.E. / Environmental Engineer	September 18, 2019
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E./ Program Manager	

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 Changes to the existing Permit

- Total Aluminum and TRC limits are more stringent than the existing permit.

1.3 Existing Permit Limits and Monitoring Requirements

DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
	Mass Units (lbs/day)		Concentrations (mg/l)				
Discharge Parameter	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily	Inst. Maximum	Monitoring Frequency	Sample Type
Flow (mgd)	Monitor & Report	Monitor & Report	XXX	XXX	XXX	1/day	measured
pH (S.U.)	From 6.0 to 9.0 inclusive					1/week	Grab
Total Suspended Solids	Report	Report	30	60	75	1/week	24-hr Comp
Total Iron	Report	Report	2	4	5	1/week	24-hr Comp
Total Aluminum	Report	Report	4	8	10	1/week	24-hr Comp
Total Manganese	Report	Report	1	2	2.5	1/week	24-hr Comp
Total Residual Chlorine	Report	Report	0.5	XXX	1.6	1/day	Grab
Kjeldahl---N	Report	XXX	XXX	Report	XXX	1/year	24-hr Comp
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	1/year	24-hr Comp
Total Nitrogen	Report	Report	XXX	Report	XXX	1/year	Calculate
Total Phosphorus	Report	Report	XXX	Report	XXX	1/year	24-hr Comp

1.40 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.0075
Latitude	40º 34' 16.83"	Longitude	-76º 38' 40.71"
Quad Name	Lykens	Quad Code	1432
Wastewater Description:	Water Treatment Effluent		
Receiving Waters	Unnamed Tributary to Wiconisco Creek (CWF, MF)	Stream Code	17044
NHD Com ID	54972483	RMI	0.24
Drainage Area	0.84	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	0.0336	Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	6-C	Chapter 93 Class.	CWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	Final	Name	Wiconisco Creek AMD

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

Nearest Downstream Public Water Supply Intake	Suez Water PA		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	20

Changes Since Last Permit Issuance:

Other Comments:

1.4.1 Water Supply Intake:

The closest water supply intake located downstream from the discharge is by Suez Water PA on Susquehanna River in Harrisburg, Dauphin County. The distance downstream from the discharges to the intake is approximately 20 miles. The discharge is not expected to have an impact on the intake.

2.0 Compliance History

2.1 DMR Data for Outfall 001 (from July 1, 2018 to June 30, 2019)

Parameter	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18	SEP-18	AUG-18	JUL-18
Flow (MGD) Average Monthly	0.0142	0.0144	0.0124	0.01227	0.01239	0.0133	0.01019	0.00992	0.01212	0.01181	0.01309	0.0158
Flow (MGD) Daily Maximum	0.0148	0.0158	0.0142	0.0132	0.0132	0.0209	0.0143	0.0176	0.0165	0.01441	0.01331	0.0242
pH (S.U.) Minimum	5.46	5.53	5.49	5.51	5.27	5.28	5.4	5.27	5.44	5.57	5.29	5.15
pH (S.U.) Maximum	5.96	5.93	5.71	5.74	6.41	5.71	5.89	5.29	6.06	5.81	5.61	5.81
TRC (mg/L) Average Monthly	< 0.01	< 0.01	< 0.01	< 0.01	0.01	4.2	0.01	0.01	0.01	0.01	0.01	0.01
TRC (mg/L) Instant. Maximum	0.02	0.01	0.02	0.01	0.01	4.7	0.01	0.01	0.01	0.01	0.01	0.01
TSS (lbs/day) Average Monthly	3.85	0.04	< 0.2	0.2	0.2	0.4	0.4	0.3	0.7	0.3	0.5	0.2
TSS (lbs/day) Daily Maximum	4.0	0.055	< 0.2	0.3	0.2	0.5	0.6	0.3	1	0.4	0.5	0.2
TSS (mg/L) Average Monthly	3.9	5.0	< 2.0	3.0	2.3	4.2	5.9	3.2	6	3	4.3	2
TSS (mg/L) Daily Maximum	4.0	5.7	2.0	3.0	2.3	4.7	8	3.6	7.6	3.7	4.3	2
Total Nitrogen (mg/L) Annual Average							0.55					
Total Nitrogen (lbs) Total Annual							< 0.001					
Total Phosphorus (mg/L) Annl Average							0.05					
Total Phosphorus (lbs) Total Annual							< 0.01					
Total Aluminum (lbs/day) Ave. Monthly	0.38	0.04	0.03	0.04	0.03	0.08	0.05	0.04	0.09	0.04	0.07	0.03
Total Aluminum (lbs/day) Daily Max	0.39	0.04	0.04	0.04	0.03	0.08	0.07	0.04	0.1	0.04	0.07	0.03
Total Aluminum (mg/L) Ave. Monthly	0.26	0.43	0.33	0.37	0.32	0.58	0.73	0.47	0.69	0.33	0.62	0.266
Total Aluminum (mg/L) Daily Max	0.46	0.43	0.39	0.40	0.34	0.78	0.99	0.49	0.89	0.34	0.68	0.299

Total Iron (lbs/day) Average Monthly	0.022	0.03	0.007	0.008	0.007	0.02	0.01	0.01	0.05	0.03	0.02	0.02
Total Iron (lbs/day) Daily Maximum	0.026	0.03	0.007	0.009	0.008	0.16	0.01	0.02	0.07	0.03	0.02	0.02
Total Iron (mg/L) Average Monthly	< 0.14	0.23	0.07	0.09	0.07	0.02	0.14	0.16	0.43	0.24	0.14	0.209
Total Iron (mg/L) Daily Maximum	0.25	0.32	0.07	0.1	0.08	0.02	0.16	0.2	0.49	0.26	0.15	0.211
Total Manganese (lbs/day) Ave. Monthly	0.041	0.004	0.003	0.003	0.004	0.003	0.003	0.004	0.006	0.004	0.005	0.007
Total Manganese (lbs/day) Daily Max	0.041	0.005	0.003	0.003	0.004	0.003	0.003	0.004	0.007	0.004	0.005	0.007
Total Manganese (mg/L) Ave. Monthly	0.038	0.042	0.031	0.03	0.036	0.034	0.039	0.044	0.048	0.036	0.048	0.0697
Total Manganese (mg/L) Daily Max	0.043	0.049	0.031	0.033	0.037	0.034	0.04	0.048	0.049	0.039	0.049	0.0734

2.2 Effluent Violations for Outfall 001, from: August 1, 2018 To: June 30, 2019

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TRC	01/31/19	Avg Mo	4.2	mg/L	0.5	mg/L
TRC	01/31/19	IMAX	4.7	mg/L	1.6	mg/L

Discharge Monitoring Reports (DMRs) review for the facility for the last 12 months of operation presented on the table above indicate permit limits have been met most of the time. A TRC limit violation occurred in January 2019 as shown the table above but appeared to be a one-time occurrence.

2.3 Summary of Inspections:

The facility was inspected six 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 treatment units. The facility has good compliance record.

3.0 Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	0.0075
Latitude	40° 34’ 21.38”	**Longitude**	76° 38’ 45.79”

Wastewater Description: Water treatment filter backwash

3.1 Basis for Effluent Limitations

In general, the Clean Water Act (AWA) 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

Acid Mine Drainage (AMD) Requirements:

The existing permit limitations were developed based on AMD treatment requirements taken from 25 PA Code Chapter 95. Treatment requirements for industrial discharges to waters affected by abandoned mine drainage listed in chapter 95.5 are as follows:

(a) For wastes discharged to waters polluted by abandoned coal mine drainage, so that the applicable water quality criteria are not being met and designated water uses are not being achieved to the extent that aquatic communities are essentially excluded, and where the pollution cannot be remedied by controlling known, active discharges, the following degrees of treatment shall be provided:

Industrial waste as defined in The Clean Streams Law (35 P. S. § § 691.1—691.1001), shall achieve one of the following degrees of treatment, as appropriate, which are defined under 33 U.S.C.A. § § 1314(b) and 1316(b):

(i) Best Conventional Pollutant Control Technology (BCT).

(ii) Best Available Technology Economically Achievable (BAT).

(iii) Standards of performance for new sources.

(b) A greater degree of treatment will be required to the waters where one of the following exists:

(1) The water quality of the receiving water has or is expected to improve significantly.

(2) The minimum degree of treatment required would cause pollution in downstream waters, so that designated stream uses in these downstream waters would not be achievable.

Technology-based (BAT) effluent limits for water treatment plant wastewater discharges are presented in the Department's October 1, 1997 Guidance document entitled, “Technology Based Controls for Discharges from Water Treatment Plants” as follows:

Parameter	Monthly Avg mg/l	Daily Max. mg/l
Suspended Solids	30	60
Aluminum	4	8
Iron	2	4
Manganese	1	2
pH	6 - 9 S.U at all times	

The Unammed tributary that receives this discharge is attaining its uses and the downstream stream is recovering. Technology based limits as well as water quality limit analysis will be conducted during this permit renewal to determine if a more stringent limitation is required to protect water quality of the receiving stream and the recovering downstream stream.

3.3 Water Quality-Based Limitations

The Receiving Stream

The receiving stream is an unnamed tributary of Wiconisco Creek. According to 25 PA § 93.9o, Wiconisco Creek is protected for Cold Water Fishes (CWF) and Migratory Fishes (MF). It is located in Drainage List m and State Watershed 6-C. It has been assigned stream code 17044. According to the Department's Pennsylvania Integrated Water Quality Monitoring and Assessment Report, this stream is attaining its designated uses. Wiconisco Creek and some of its tributaries are impaired for pH, siltation and metals due to abandoned mine drainage. A TMDL for the effects of Acid Mine Drainage was completed and approved on November 24, 2008.

3.3.1 Streamflows:

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No. 0155500 on Mahantango. The Q_{7-10} and drainage area at the gage is 6.38 ft3/s and 164 mi^2 respectively. The resulting yields are as follows:

Q_{7-10} = 6.38 cfs /164 sq. mi = 0.0389cfs/sq.mi
Q_{30-10} /Q_{7-10} = 1.47
Q_{1-10} /Q_{7-10} = 0.74

The drainage area at the point of discharge is 0.84sq. mi. The design flow is calculated as:

Q_{7-10} = 0.04cfs/sq.mi x 0.840 sq.mi = 0.0336cfs

3.3.2 Toxics

A reasonable potential (RP) was done for pollutant Groups 1 and 2 submitted with the application. All pollutants that were detected in the samples submitted in support of the application, and on DMR were entered onto a Toxics Screening Analysis spreadsheet (Attachments C) to determine if any pollutants were candidates for PENTOXSD modeling. Total Phenol and Total Aluminum were determined to be candidates for PENTOXSD modelling in addition to the rest of the pollutants in the existing permit (Total Iron and Total Manganese). Default values for hardness and pH with a wastewater flow of 0.016 mgd were used as inputs to run PENNTOXSD to calculate WQBELs for the pollutants. The results of the PENTOXSD model (Attachment B) were added onto the Toxics Screening Analysis Spreadsheet Attachment C for recommendation. The results indicate the discharge levels presented in the application are well below calculated WQBELs for all parameters in the existing permit except Total Aluminum. A monthly average limit of 1.12mg/l is recommended for Total Aluminum, and the existing technology-based effluent limits for Total Iron and Total Manganese will remain in the permit for the renewed permit. No WQBEL was calculated for Total Phenol. The limit recommended for Total Aluminum is more stringent than the existing permit limit but the facility has the capability to meet this new limit based on DMR and inspection reports data. The facility is meeting the rest of the existing limits without difficulty. Mass limits will be written for Total Aluminum and reported for Total Manganese and Total Iron per permit writer's manual, guidance document 362-0400-001 table 5-2.

3.3.3 Chesapeake Bay Monitoring Requirement

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.

3.3.4 Total Residual Chlorine

The attached TRC results presented in attachment D 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 indicate that a water quality limit of 0.21 mg/l and 0.68 mg/l IMAX would be needed to prevent toxicity concerns. This is more stringent than the existing TRC limits, but the facilities discharge is well below this limitation and should have no problem meeting the new limitation. Therefore, it is recommended that a TRC limit of 0.21 mg/l monthly average and 0.68 mg/l IMAX be applied for this permit cycle.

3.3.5 TDS, Sulfate, Chloride, Bromide & 1,4-Dioxane

Under the authority of §92a.61, DEP has determined it should implement increased monitoring in NPDES permits for TDS, sulfate, chloride, bromide, and 1,4-dioxane. The following approach will be implemented for point source discharges upon issuance or reissuance of an individual NPDES permit:

- Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.

- Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.

- Where the concentration of 1,4-dioxane (CAS 123-91-1) in a discharge exceeds 10 µg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for 1,4-dioxane. Discharges of 0.1 MGD or less should monitor and report for 1,4-dioxane if the concentration of 1,4-dioxane in the discharge exceeds 100 µg/L.

The maximum daily TDS discharge reported in the application is 9 mg/l, Chloride reported is 2mg/l, Bromide reported is <0.04mg/l and Sulfate reported is 3mg/l. The discharge levels for TDS and Bromide are below 1000mg/l and 1mg/l respectively, therefore no monitoring for TDS, Chloride Bromide and Sulfate is required. There is no data for 1,4-dioxane, no monitoring is required at this time.

3.3.6 Settling Basin Cleaning

A permit condition is added to the permit to address cleaning of settling basins and removal of settled solids routinely to prevent solid build-up in the basins that can get carried over to the stream. The permittee is required to notify the Department during cleaning of the basins.

3..3.7 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.

3.3.8 Class A Wild Trout Fisheries

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

3.3.9 303d Listed stream:

The discharge is not located on a 303d listed stream segment. It is attaining its designated uses. Wiconisco Creek and some of its tributaries are impaired for pH, siltation and metals due to abandoned mine drainage. A TMDL for the effects of Acid Mine Drainage was completed and approved on November 24, 2008, however this discharge does not contribute to the impairment; therefore, no further action is warranted beyond the permit limits at this time.

3.3.10 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).

3.3.11 Effluent Monitoring Frequency

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.

4.0 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" (362-0400-001), SOPs and/or BPJ.

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

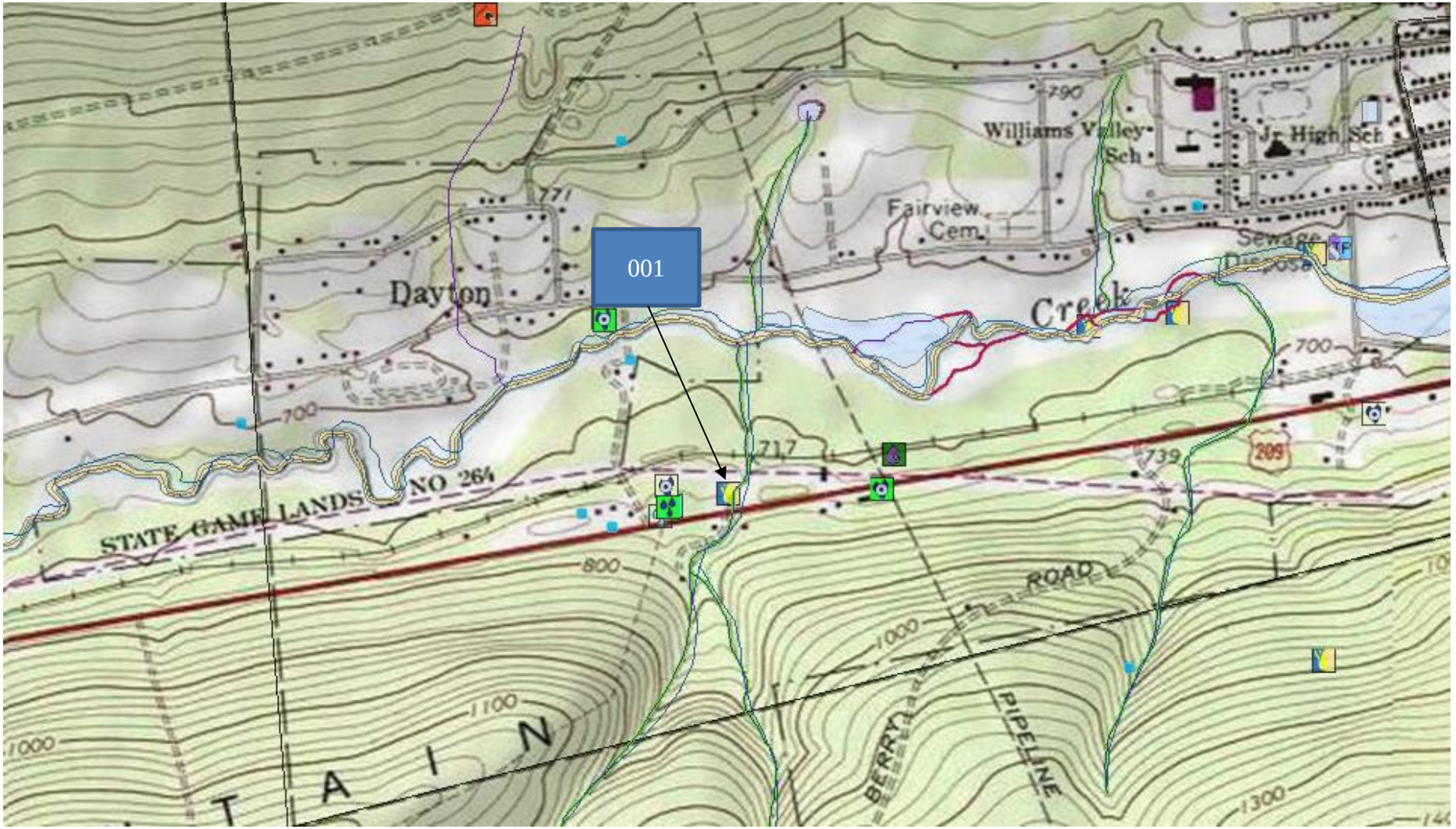
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	5.0 Daily Min	XXX	9.0	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.21	XXX	0.68	1/day	Grab
TSS	Report	Report	XXX	30	60	75	2/month	8-Hr Composite
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report	XXX	1/year	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	1/year	Calculation
TKN	XXX	XXX	XXX	XXX	Report	XXX	1/year	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report	XXX	1/year	8-Hr Composite
Total Aluminum	0.16	0.24	XXX	1.20	1.80	3.0	2/month	8-Hr Composite
Total Iron	Report	Report	XXX	2.0	4.0	5	2/month	8-Hr Composite
Total Manganese	Report	Report	XXX	1.0	2.0	2.5	2/month	8-Hr Composite

Compliance Sampling Location: At Outfall 001

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

Attachments

A. Topographical Map



B. PENTOX SD Model Result

PENTOXSD Analysis Results

Recommended Effluent Limitations

SWP Basin	Stream Code:	Stream Name:
06C	17044	Trib 17044 to Wiconisco Creek

RMI	Name	Permit Number	Disc Flow (mgd)
0.24	Willimstown Wat	PA0087572	0.0150

Parameter	Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L)	Most Stringent WQBEL Criterion
ALUMINUM	1157.643	AFC	1806.109	1157.643	AFC
MANGANESE	2408.145	THH	3757.093	2408.145	THH
PHENOLICS (PWS)	1000000	INPUT	1560000	NA	NA
TOTAL IRON	3612.217	CFC	5635.639	3612.217	CFC

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PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
17044	0.24	738.00	0.84	0.00000	0.00	☑

Stream Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	Tributary pH	Stream Hard	Stream pH	Analysis Hard	Analysis pH
	(cfsm)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.0389	0	0	0	0	0	0	0	100	7	0	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow	Permitted Disc Flow	Design Disc Flow	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard	Disc pH
		(mgd)	(mgd)	(mgd)						(mg/L)	
Willimstown Wat	PA0087572	0.0075	0.015	0.015	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Conc (µg/L)	Trib Conc (µg/L)	Disc Daily CV	Disc Hourly CV	Steam Conc (µg/L)	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc (µg/L)
ALUMINUM	1000000	0	0.5	0.5	0	0	0	0	1	0
MANGANESE	1000000	0	0.5	0.5	0	0	0	0	1	0
PHENOLICS (PWS)	1000000	0	0.5	0.5	0	0	0	0	1	0
TOTAL IRON	1000000	0	0.5	0.5	0	0	0	0	1	0

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
17044	0.01	710.00	0.94	0.00000	0.00	☑

Stream Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	Tributary pH	Stream Hard	Stream pH	Analysis Hard	Analysis pH
	(cfsm)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.0389	0	0	0	0	0	0	0	100	7	0	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow	Permitted Disc Flow	Design Disc Flow	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard	Disc pH
		(mgd)	(mgd)	(mgd)						(mg/L)	
		0	0	0	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Conc (µg/L)	Trib Conc (µg/L)	Disc Daily CV	Disc Hourly CV	Steam Conc (µg/L)	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc (µg/L)
ALUMINUM	0	0	0.5	0.5	0	0	0	0	1	0
MANGANESE	0	0	0.5	0.5	0	0	0	0	1	0
PHENOLICS (PWS)	0	0	0.5	0.5	0	0	0	0	1	0
TOTAL IRON	0	0	0.5	0.5	0	0	0	0	1	0

PENTOXSD Analysis Results

Hydrodynamics

SWP Basin	Stream Code:	Stream Name:
06C	17044	Trib 17044 to Wiconisco Creek

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Trav Time (days)	CMT (min)
Q7-10 Hydrodynamics											
0.240	0.0327	0	0.0327	0.0232	0.0231	0.3194	3.5507	11.117	0.0493	0.2852	.215
0.010	0.0366	0	0.0366	NA	0	0	0	0	0	0	NA
Qh Hydrodynamics											
0.240	0.3736	0	0.3736	0.0232	0.0231	0.7566	3.5507	4.6927	0.1477	0.0952	.153
0.010	0.4122	0	0.4122	NA	0	0	0	0	0	0	NA

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number
0.24	**Willimstown Wat**	**PA0087572**

AFC

Q7-10: **CCT (min)** 0.215 **PMF** 1 **Analysis pH** 7 **Analysis Hardness** 100

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
ALUMINUM	0	0	0	0	750	750	1806.109
TOTAL IRON	0	0	0	0	NA	NA	NA
MANGANESE	0	0	0	0	NA	NA	NA
PHENOLICS (PWS)	0	0	0	0	NA	NA	NA

CFC

Q7-10: **CCT (min)** 0.215 **PMF** 1 **Analysis pH** 7 **Analysis Hardness** 100

Parameter	Stream Conc. (µg/L)	Stream CV	Trib Conc. (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
ALUMINUM	0	0	0	0	NA	NA	NA
TOTAL IRON	0	0	0	0	1500	1500	3612.217
WQC = 30 day average. PMF = 1.							
MANGANESE	0	0	0	0	NA	NA	NA
PHENOLICS (PWS)	0	0	0	0	NA	NA	NA

THH

Q7-10: **CCT (min)** 0.215 **PMF** 1 **Analysis pH** NA **Analysis Hardness** NA

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
ALUMINUM	0	0	0	0	NA	NA	NA
TOTAL IRON	0	0	0	0	NA	NA	NA
MANGANESE	0	0	0	0	1000	1000	2408.145
PHENOLICS (PWS)	0	0	0	0	5	5	NA

CRL

Qh: **CCT (min)** 0.153 **PMF** 1

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number
0.24	**Willimstown Wat**	**PA0087572**

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
ALUMINUM	0	0	0	0	NA	NA	NA
TOTAL IRON	0	0	0	0	NA	NA	NA
MANGANESE	0	0	0	0	NA	NA	NA
PHENOLICS (PWS)	0	0	0	0	NA	NA	NA

C. Toxics Screening Analysis

TOXICS SCREENING ANALYSIS
WATER QUALITY POLLUTANTS OF CONCERN
VERSION 2.6

CLEAR FORM

Facility: **Williamstown Boro Water System** NPDES Permit No.: **PA0087572** Outfall: **001**

Analysis Hardness (mg/L): **100** Discharge Flow (MGD): **0.016** Analysis pH (SU): **7**

Stream Flow, Q_{7-10} (cfs): **0.0336**

Parameter	Maximum Concentration in Application or DMRs (µg/L)		Most Stringent Criterion (µg/L)	Candidate for PENTOXSD Modeling?	Most Stringent WQBEL (µg/L)	Screening Recommendation
Total Dissolved Solids		9000	500000	No		
Chloride		2000	250000	No		
Bromide		40	N/A	No		
Sulfate		3000	250000	No		
Total Aluminum		761	750	Yes	1157	Establish Limits
Total Antimony		0.5	5.6	No		
Total Arsenic		0.5	10	No		
Total Barium		20	2400	No		
Total Beryllium		0.2	N/A	No		
Total Boron		50	1600	No		
Total Cadmium		0.1	0.271	No		
Total Chromium		0.6	N/A	No		
Hexavalent Chromium		0.03	10.4	No		
Total Cobalt		0.8	19	No		
Total Copper		0.7	9.3	No		
Free Available Cyanide			5.2			
Total Cyanide		7	N/A	No		
Dissolved Iron		10	300	No		
Total Iron		189	1500	No	3612	
Total Lead		0.3	3.2	No		
Total Manganese		134	1000	No	2408	
Total Mercury	<	0.08	0.05	No (Value < QL)		
Total Nickel		0.9	52.2	No		
Total Phenols (Phenolics)		30	5	Yes		
Total Selenium		1	5.0	No		
Total Silver		0.1	3.8	No		
Total Thallium	<	0.9	0.24	No (Value < QL)		
Total Zinc		25	119.8	No		
Total Molybdenum		1	N/A	No		

D. TRC Calculations

Copy of TRC_CALC1

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0336	= Q stream (cfs)	0.5	= CV Daily
0.016	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	0.452	1.3.2.iii	WLA cfc =	0.433
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.168	5.1d	LTA_cfc =	0.252

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.207	AFC
		INST MAX LIMIT (mg/l) =	0.678	

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)**