pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0082538**
Facility Type	**Industrial**	APS ID	**4003**
Major / Minor	**Minor**	Authorization ID	**1214849**

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

Applicant and Facility Information

Applicant Name	**Altoona Water Authority**	Facility Name	**Altoona City Water System**
Applicant Address	900 Chestnut Avenue	Facility Address	1923 Veterans Memorial Highway
	Altoona, PA 16601-4617		Altoona, PA 16602
Applicant Contact	Doug DeAngelis	Facility Contact	Doug DeAngelis
Applicant Phone	(814) 944-2597	Facility Phone	(814) 944-2597
Client ID	85897	Site ID	238359
SIC Code	4941	Municipality	Logan Township
SIC Description	Trans. & Utilities - Water Supply	County	Blair
Date Application Received	December 29, 2017	EPA Waived?	Yes
Date Application Accepted	February 5, 2018	If No, Reason	

Purpose of Application: This is an application for NPDES renewal.

Summary of Review

Approve	Deny	Signatures	Date
X		Nicholas Hong, P.E. / Environmental Engineer Nick Hong (via electronic signature)	January 25, 2021
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria Bebenek, P.E. / Environmental Program Manager	

Summary of Review

The application submitted by the applicant requests a NPDES renewal permit for the Altoona City Water System (Andronic PAPPAS Water Treatment Plant) located at 1923 Veterans Memorial Highway, Altoona, PA 16601 in Blair County, municipality of Logan Township. The NPDES became effective July 1, 2013 and expired on June 30, 2018. The application for renewal was received by DEP Southcentral Regional Office (SCRO) on February 23, 2018. Supplementary information was received on January 15, 2021.

The purpose of this Fact Sheet is to present the basis of information used for establishing the proposed NPDES permit effluent limitations. The Fact Sheet includes a description of the facility, a description of the facility's receiving waters, a description of the facility's receiving waters attainment/non-attainment assessment status, and a description of any changes to the proposed monitoring/sampling frequency. Section 6 provides the justification for the proposed NPDES effluent limits derived from technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), total maximum daily loading (TMDL), antidegradation, anti-backsliding, and/or whole effluent toxicity (WET). A brief summary of the outlined descriptions has been included in the Summary of Review section.

The subject facility is a 0.35 MGD treatment facility. The applicant anticipates proposed upgrades to the treatment facility in the next five years. The facility anticipates (a) the ozone generating system converted to a liquid oxygen (LOX) system; (b) the conventional gravity filters converted to membrane filtration. The NPDES application has been processed as an Industrial Wastewater Facility due to the type of wastewater and the design flow rate for the facility. The applicant disclosed the Act 14 requirement to Blair County Court House and Logan Township Supervisors and the notice was received by the parties on February 14, 2018. Since the facility is an industrial waste facility, planning approval was not necessary.

Utilizing the DEP's web-based Emap-PA information system, the receiving waters has been determined to be initially Lake Altoona and then Burgoon Run. The sequence of receiving streams that Burgoon Run discharges into are the Beaverdam Branch, the Frankstown Branch Juniata River, the Juniata River, and the Susquehanna River which eventually drains into the Chesapeake Bay. The subject site is subject to the Chesapeake Bay implementation requirements. The receiving water has protected water usage for trout stocking fishes (TSF) and migratory fishes (MF). No Class A Wild Trout fisheries are impacted by this discharge. The absence of high quality and/or exceptional value surface waters removes the need for an additional evaluation of anti-degradation requirements.

Burgoon Run is a Category 4a and 5 stream listed in the 2020 Integrated List of All Waters (formerly 303d Listed Streams). This stream is impaired for pH and siltation due to abandoned mine drainage. The receiving waters is subject to the Beaverdam Branch Watershed total maximum daily load (TMDL) plan to improve water quality in the subject facility's watershed.

The existing permit and proposed permit differ as follows:

- **There are no changes to the monitoring frequency or effluent performance requirements.**

The proposed permit will expire five (5) years from the effective date.

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

Any additional information or public review of documents associated with the discharge or facility may be available at PA DEP Southcentral Regional Office (SCRO), 909 Elmerton Avenue, Harrisburg, PA 17110. To make an appointment for file review, contact the SCRO File Review Coordinator at 717.705.4700.

1.0 Applicant

1.1 General Information

This fact sheet summarizes PA Department of Environmental Protection's review for the NPDES renewal for the following subject facility.

Facility Name:	Altoona Water Authority- Andronic Pappas Water Treatment Plant
NPDES Permit #	PA0082538
Physical Address:	1923 Veterans Memorial Highway Altoona, PA 16601
Mailing Address:	900 Chestnut Avenue Altoona, PA 16602
Contact:	Doug DeAngelis Supervisor Water Treatment Operations DDeAngelis@altoonawater.com
Consultant:	There was no consultant utilized for this NPDES renewal

1.2 Permit History

Permit submittal included the following information.

- NPDES- Industrial Wastewater Application (revised 4/2011)
- Plant Schematic
- Pollutant Groups 1 and 2
- NPDES renewal application resubmittal on 1/15/2021

2.0 Treatment Facility Summary

2.1 Site location

The physical address for the facility is 1923 Veterans Memorial Highway, Altoona, PA 16601. A topographical and an aerial photograph of the facility are depicted as Figure 1 and Figure 2.

Figure 1: Topographical map of the subject facility

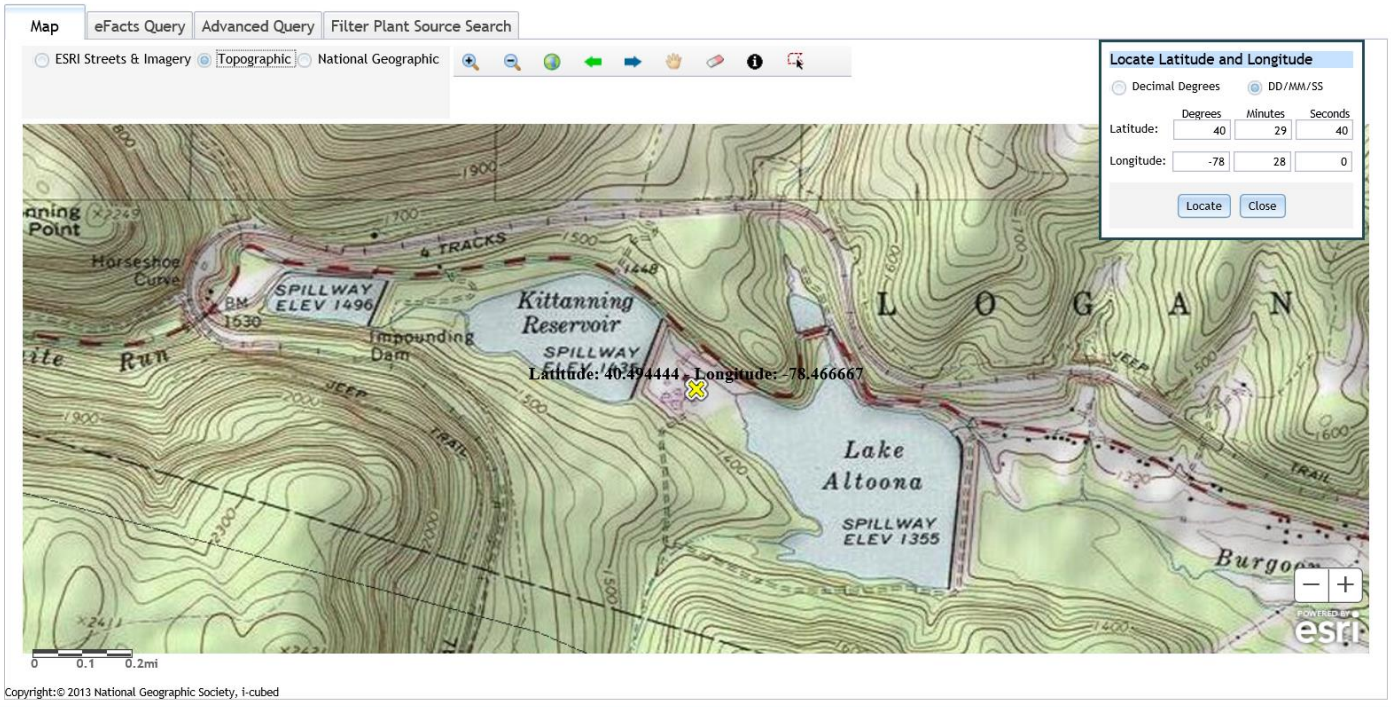
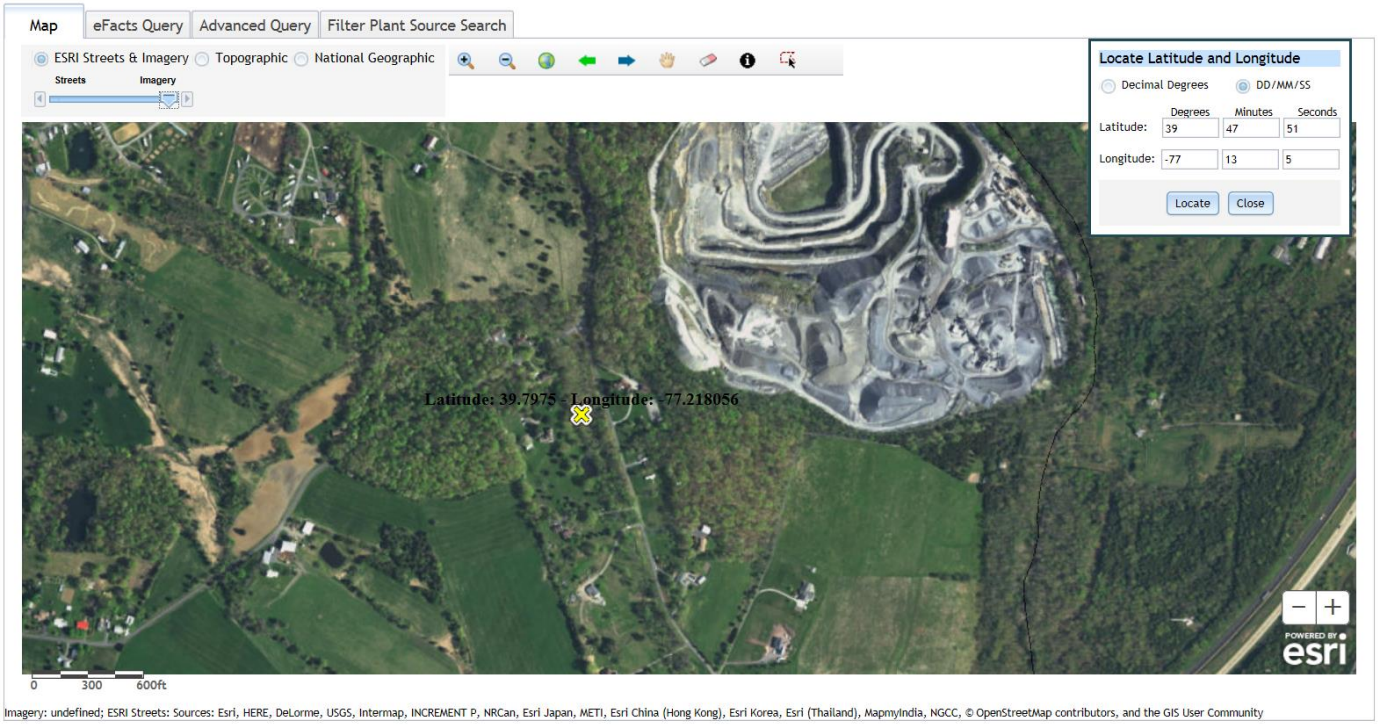


Figure 2: Aerial Photograph of the subject facility



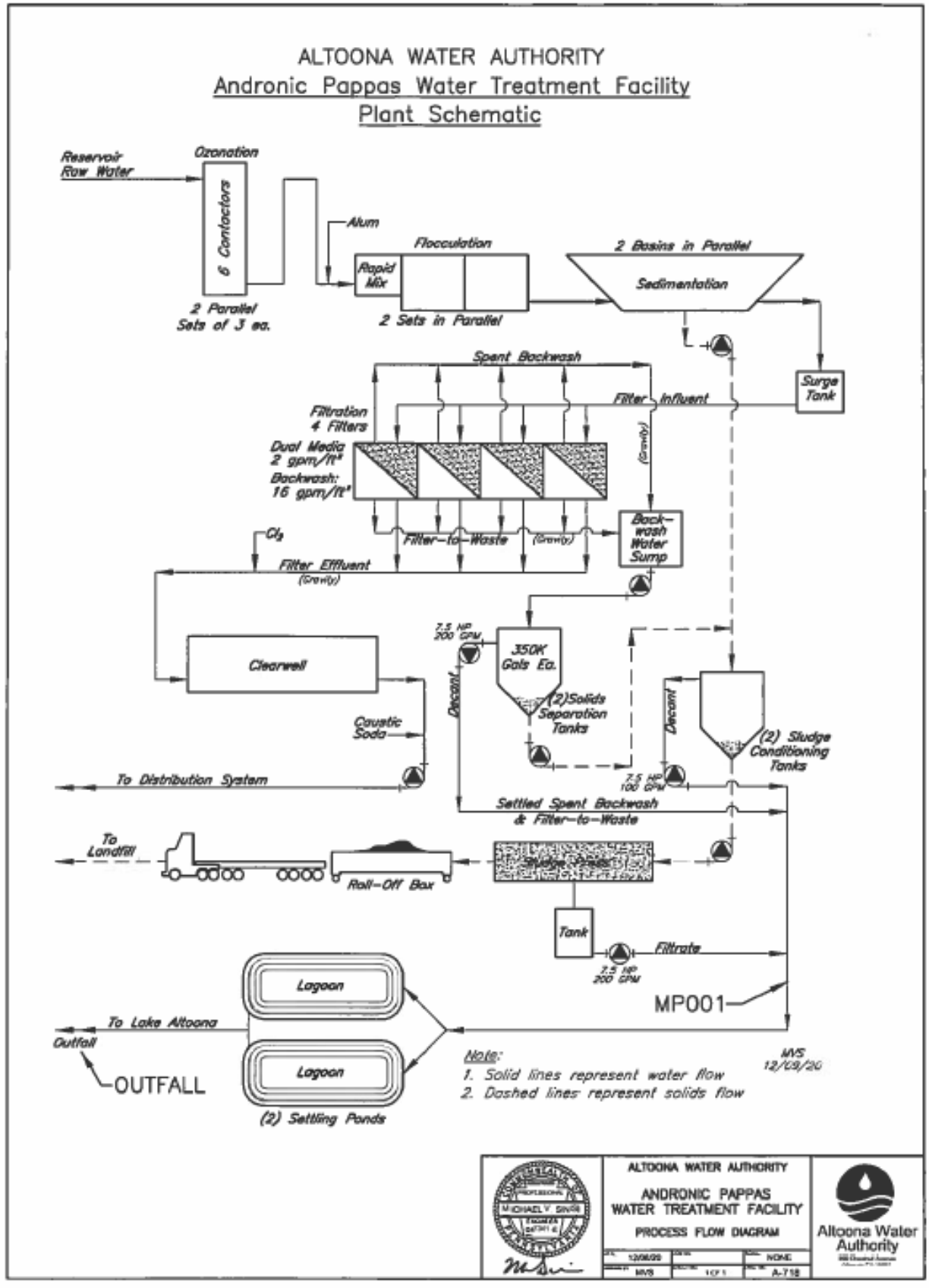
2.2 Description of Wastewater Treatment Process

The subject facility is a 0.35 MGD design flow facility. The facility is a water plant. The primary source of wastewater is backwash water from the drinking water plant. Wastewater discharges from Outfall 001 to the wash water lagoons and finally into Lake Altoona. Lake Altoona then flows into Burgoon Run. The facility is being evaluated for flow, pH, TRC, TSS, aluminum, iron, manganese, nitrogen, and phosphorus. The existing permits limits for the facility is summarized in Section 2.4.

The treatment process is summarized in the table.

Treatment Facility Summary				
Treatment Facility Name: Altoona C A / Horseshoe Curve Ws				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Industrial			No Disinfection	0.35
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.35		Not Overloaded		

A schematic of the process for the plant is shown in the figure.



2.3 Facility Outfall Information

The facility has the following outfall information.

Outfall No. 001 **Design Flow (MGD)** .35
Latitude 40º 29' 38.00" **Longitude** -78º 27' 55.00"
Wastewater Description: Water Treatment Effluent

2.3.1 Operational Considerations- Chemical Additives

Chemical additives are chemical products introduced into a waste stream that is used for cleaning, disinfecting, or maintenance and which may be detected in effluent discharged to waters of the Commonwealth. Chemicals excluded are those used for neutralization of waste streams, the production of goods, and treatment of wastewater.

The subject facility utilizes the following chemicals as part of their treatment process.

The facility did not report any chemicals used in the past two years for wastewater treatment.

2.4 Existing NPDES Permits Limits

The existing NPDES permit limits are summarized in the table.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. A. For Outfall 001 , **Latitude** 40° 29' 38.00" , **Longitude** 78° 27' 55.00" , **River Mile Index** 3.30 , **Stream Code** 16416

Receiving Waters: Burgoon Run

Type of Effluent: Water treatment filter backwash

1. The permittee is authorized to discharge during the period from July 1, 2013 through June 30, 2018.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

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	XXX	XXX	9.0	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.4	XXX	1.4	1/day	Grab
Total Suspended Solids	Report	Report	XXX	30	60	75	1/week	24-Hr Composite
Total Aluminum	6.3	Report	XXX	4.0	8.0	9.0	1/week	24-Hr Composite
Total Iron	3.2	Report	XXX	2.0	4.0	5.0	1/week	24-Hr Composite
Total Manganese	Report	Report	XXX	1.0	2.0	2.5	1/week	24-Hr Composite
Total Nitrogen	XXX	Report Total Annual	XXX	Report Annl Avg	XXX	XXX	1/year	Calculation
Total Phosphorus	XXX	Report Total Annual	XXX	Report Annl Avg	XXX	XXX	1/year	24-Hr Composite

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at Outfall 001

3.0 Facility NPDES Compliance History

3.1 Summary of Inspections

A summary of the most recent inspections during the existing permit review cycle is as follows.

The DEP inspector noted the following during the inspection:

02/24/2016:

- There was nothing significant to report.

03/23/2017:

- The facility had permit violations in December 2016 for aluminum, manganese, and TSS. The operator attributed the violations to lack of sludge wasting before sampling event.
- The facility was advised to complete a Non-Compliance Reporting Form as needed.

04/18/2018:

- The backwash flow was measured with an in-pipe magmeter.
- The facility has 2 concrete backwash settling tanks. The tanks are alternated for use. The west side tank had a hole in the concrete wall and was scheduled for repair. Currently, the discharge to the tank was kept below the level of the hole.
- Effluent pH test results should only be reported for days there was an effluent discharge from the plant.
- The effluent storage refrigerator needed a thermometer.

04/19/2019:

- Both concrete settling tanks were repaired last year. The concrete around the inlet pipes were deteriorated and causing leaking.
- The effluent storage refrigerator was replaced with a thermometer.

3.2 Summary of DMR Data

A review of approximately 1-year of DMR data shows that the monthly average flow data for the facility below the design capacity of the treatment system. The maximum average flow data for the DMR reviewed was 0.1359 MGD in March 2020. The design capacity of the treatment system is 0.35 MGD.

The off-site laboratory used for the analysis of the parameters was Fairway Laboratory located at 2019 Ninth Avenue, Altoona, PA 16601.

DMR Data for Outfall 001 (from December 1, 2019 to November 30, 2020)

Parameter	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19
Flow (MGD) Average Monthly	0.1238	0.1214	0.1247	0.1157	0.1259	0.1249	0.1221	0.1256	0.1359	0.1276	0.1279	0.1245
Flow (MGD) Daily Maximum	0.2401	0.2093	0.1912	0.2120	0.2145	0.2092	0.2090	0.2048	0.2114	0.2194	0.2247	0.2268
pH (S.U.) Minimum	7.33	7.28	7.22	7.35	7.42	7.29	7.0	7.06	7.21	7.00	7.07	7.21
pH (S.U.) Maximum	7.78	7.77	7.91	7.83	7.89	7.81	7.78	7.77	7.76	7.75	7.89	7.89
TRC (mg/L) Average Monthly	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.03	< 0.02	< 0.02	< 0.03	< 0.04	< 0.03	< 0.03
TRC (mg/L) Instantaneous Maximum	0.06	0.06	0.03	0.04	0.09	0.1	0.07	0.07	0.12	0.16	0.1	0.10
TSS (lbs/day) Average Monthly	< 4	< 3	< 3	< 2	< 4	< 3	< 5	< 4	< 5	< 5	< 9.0	< 3
TSS (lbs/day) Daily Maximum	8	5	5	< 3	7	< 6	10	7	14	12	32	6
TSS (mg/L) Average Monthly	< 5	< 3	< 3	< 2	< 4	< 3	< 5	< 3	< 4	< 4	< 6	< 3
TSS (mg/L) Daily Maximum	11.6	5.8	5.5	2.8	10.4	< 4	11	5.8	15	8	19.5	4.3
Total Nitrogen (mg/L) Annual Average												< 1.85
Total Nitrogen (lbs) Total Annual												< 1113
Total Phosphorus (mg/L) Annual Average												< 0.11
Total Phosphorus (lbs) Total Annual												< 66
Total Aluminum (lbs/day) Average Monthly	0.6	0.4	0.4	0.2	0.5	0.3	0.9	0.9	0.9	0.9	1.6	0.50
Total Aluminum (lbs/day) Daily Maximum	1	0.9	1	0.4	2	0.6	2.0	2	3	2	6	1
Total Aluminum (mg/L) Average Monthly	0.7	0.4	0.4	0.2	0.5	0.3	0.9	0.8	0.8	0.7	1.1	0.50

Total Aluminum (mg/L) Daily Maximum	1.617	1.172	1.256	0.547	1.657	0.59	1.840	1.543	3.678	1.758	3.63	0.727
Total Iron (lbs/day) Average Monthly	< 0.05	< 0.06	< 0.06	< 0.04	< 0.06	< 0.06	< 0.09	< 0.08	< 0.09	< 0.09	< 0.1	< 0.05
Total Iron (lbs/day) Daily Maximum	< 0.08	< 0.09	< 0.08	< 0.07	0.09	< 0.08	0.1	0.1	0.2	0.2	0.4	0.09
Total Iron (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Iron (mg/L) Daily Maximum	< 0.074	0.098	< 0.062	< 0.05	0.112	< 0.05	0.146	0.105	0.231	0.114	0.267	0.06
Total Manganese (lbs/day) Average Monthly	< 0.2	< 0.3	< 0.08	< 0.04	0.3	< 0.3	0.1	0.2	< 0.1	0.3	0.2	0.1
Total Manganese (lbs/day) Daily Maximum	0.3	2	0.1	< 0.07	2.0	2	0.2	0.3	0.3	0.9	0.7	0.2
Total Manganese (mg/L) Average Monthly	< 0.2	< 0.2	< 0.1	< 0.1	< 0.4	< 0.2	0.1	0.2	< 0.1	0.2	0.2	0.1
Total Manganese (mg/L) Daily Maximum	0.4	1.034	0.137	0.078	2.643	1.136	0.28	0.29	0.298	1.018	0.406	0.142

3.3 Non-Compliance

3.3.1 Non-Compliance- NPDES Effluent

A summary of the non-compliance to the permit limits for the existing permit cycle is as follows.

Summary of Non Compliance with NPDES Effluent Permit Limits
Beginning 07/01/2013 and ending 01/05/2021

NON COMPLIANCE DATE	NON COMPLIANCE CATEGORY	PARAMETER	SAMPLE VALUE	VIOLATION CONDITION	PERMIT VALUE	UNIT OF MEASURE	STATISTICAL BASE CODE
12/12/2015	Concentration 3 Effluent Violation	Manganese, Total	3.4	>	2.0	mg/L	Daily Maximum
02/23/2016	Concentration 3 Effluent Violation	Manganese, Total	2.33	>	2.0	mg/L	Daily Maximum
04/22/2016	Concentration 3 Effluent Violation	Aluminum, Total	9.903	>	8.0	mg/L	Daily Maximum
01/20/2017	Concentration 3 Effluent Violation	Total Suspended Solids	86	>	60	mg/L	Daily Maximum
01/20/2017	Concentration 3 Effluent Violation	Aluminum, Total	19.34	>	8.0	mg/L	Daily Maximum
01/20/2017	Concentration 3 Effluent Violation	Manganese, Total	3.271	>	2.0	mg/L	Daily Maximum
02/27/2019	Concentration 3 Effluent	Aluminum, Total	10.95	>	8.0	mg/L	Daily Maximum
08/25/2020	Concentration 3 Effluent	Manganese, Total	2.643	>	2.0	mg/L	Daily Maximum

3.3.2 Non-Compliance- Enforcement Actions

A summary of the non-compliance enforcement actions for the current permit cycle is as follows:

There were no enforcement actions taken from 07/01/2013 to 01/05/2021.

3.4 Summary of Industrial Sludge Disposal

A summary of the sludge disposed of from the facility is as follows.

2019 Sludge Production Information

Hauled Off-Site			
2019	Tons Dewatered	% Solids	Dry Tons
January	13.26	22.4	2.97
February	10.94	22.3	2.44
March			
April	12.47	21.8	2.72

Notes:
Greentree Landfill, Permit #101397

3.5 Open Violations

As of January 2021, there were no open violations.

4.0 Receiving Waters and Water Supply Information Detail Summary

4.1 Receiving Waters

The receiving waters has been determined to be initially Lake Altoona and then Burgoon Run.. The sequence of receiving streams that Burgoon Run discharges into are the Beaverdam Branch, the Frankstown Branch Juniata River, the Juniata River and the Susquehanna River which eventually drains into the Chesapeake Bay.

4.2 Public Water Supply (PWS) Intake

The closest PWS to the subject facility is Mifflintown Municipal Authority (PWS ID # 4340008) located approximately 106 miles downstream of the subject facility on the Juniata River. Based upon the distance and the flow rate of the facility, the PWS should not be impacted.

4.3 Class A Wild Trout Streams

Class A Wild Trout Streams are waters that support a population of naturally produced trout of sufficient size and abundance to support long-term and rewarding sport fishery. DEP classifies these waters as high-quality coldwater fisheries.

The information obtained from EMAP suggests that no Class A Wild Trout Fishery will be impacted by this discharge.

4.4 2020 Integrated List of All Waters (303d Listed Streams):

Section 303(d) of the Clean Water Act requires States to list all impaired surface waters not supporting uses even after appropriate and required water pollution control technologies have been applied. The 303(d) list includes the reason for impairment which may be one or more point sources (i.e. industrial or sewage discharges) or non-point sources (i.e. abandoned mine lands or agricultural runoff and the pollutant causing the impairment such as metals, pH, mercury or siltation).

States or the U.S. Environmental Protection Agency (EPA) must determine the conditions that would return the water to a condition that meets water quality standards. As a follow-up to listing, the state or EPA must develop a Total Maximum Daily Load (TMDL) for each waterbody on the list. A TMDL identifies allowable pollutant loads to a waterbody from both point and non-point sources that will prevent a violation of water quality standards. A TMDL also includes a margin of safety to ensure protection of the water.

The water quality status of Pennsylvania's waters uses a five-part categorization (lists) of waters per their attainment use status. The categories represent varying levels of attainment, ranging from Category 1, where all designated water uses are met to Category 5 where impairment by pollutants requires a TMDL for water quality protection.

The receiving waters is listed in the 2020 Pennsylvania Integrated Water Quality Monitoring and Assessment Report as a Category 4a and 5 waterbody. The surface waters is impaired for aquatic life due to pH and siltation from abandoned mine drainage. The designated use has been classified as protected waters for trout stocking fishes (TSF) and migratory fishes (MF).

4.5 Low Flow Stream Conditions

Water quality modeling estimates are based upon conservative data inputs. The data are typically estimated using either a stream gauge or through USGS web based StreamStats program. The NPDES effluent limits are based upon the combined flows from both the stream and the facility discharge.

A conservative approach to estimate the impact of the facility discharge using values which minimize the total combined volume of the stream and the facility discharge. The volumetric flow rate for the stream is based upon the seven-day, 10-year low flow (Q710) which is the lowest estimated flow rate of the stream during a 7 consecutive day period that occurs once in 10 year time period. The facility discharge is based upon a known design capacity of the subject facility.

The closest WQN to the subject facility is the Beaver Dam Branch Juniata River (WQN252). This WQN station is located approximately 9 miles downstream of the subject facility

The closest gauge station (USGS station number 1556000) to the subject facility is the Frankstown Branch Juniata River at Williamsburg, PA. The gauge station is located 23 miles downstream of the subject facility.

For WQM modeling, pH and stream water temperature data from the water quality network station was used. pH was estimated to be 7.3 and the stream water temperature was estimated to be 19.5 C.

The low flow yield and the Q710 for the subject facility was estimated as shown below.

Gauge Station Data			
USGS Station Number	01556000		
Station Name	Frankstown Branch Juniata River at Williamsburg, PA		
Q710	47.8	ft^3/sec	
Drainage Area (DA)	291	mi^2	
Calculations			
The low flow yield of the gauge station is:			
Low Flow Yield (LFY) = Q710 / DA			
LFY =	(47.8 ft^3/sec / 291 mi^2)		
LFY =	0.1643	$ft^3/sec/mi^2$	
The low flow at the subject site is based upon the DA of		9.87	mi^2
Q710 = (LFY@gauge station)(DA@Subject Site)			
Q710 = (0.1643 $ft^3/sec/mi^2$)(9.87 mi^2)			
Q710 =	1.621	ft^3/sec	

The discharge from the subject facility is the Lake Altoona. Lake Altoona then discharges to Burgoon Run. The calculated Q710 is utilized for total residual chlorine permit limits. Its likely the long detention time in the lagoon and the dilution in Lake Altoona will dissipate impacts from total residual chlorine. Consistent with the existing permit, the TRC effluent limit has been carried to the proposed permit.

4.6 Summary of Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.35
Latitude	40Âº 29' 39.41"	Longitude	-78Âº 27' 54.55"
Quad Name		Quad Code	
Wastewater Description:	Water Treatment Effluent		

Receiving Waters	Burgoon Run	Stream Code	16416
NHD Com ID	65608058	RMI	3.7
Drainage Area	9.87	Yield (cfs/mi^2)	0.1643
Q_{7-10} Flow (cfs)	1.62	Q_{7-10} Basis	StreamStats/Stream Gauge
Elevation (ft)	1367	Slope (ft/ft)	
Watershed No.	11-A	Chapter 93 Class.	TSF, MF
Existing Use	Same as Chapter 93	Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	None
Assessment Status	Impaired for aquatic life		
Cause(s) of Impairment	Metals		
Source(s) of Impairment	ACID MINE DRAINAGE, ACID MINE DRAINAGE		
TMDL Status	Final	Name	Beaverdam Branch Watershed

Background/Ambient Data		Data Source
pH (SU)	7.3	WQN252; median July to Sept
Temperature (°C)	19.5	WQN252; median July to Sept
Hardness (mg/L)	120	WQN252; median historical
Other:		

Nearest Downstream Public Water Supply Intake		Mifflintown Municipal Authority	
PWS Waters	Juniata River	Flow at Intake (cfs)	
PWS RMI	37	Distance from Outfall (mi)	106

5.0: Overview of Presiding Water Quality Standards

5.1 General

There are at least six (6) different policies which determines the effluent performance limits for the NPDES permit. The policies are technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), antidegradation, total maximum daily loading (TMDL), anti-backsliding, and whole effluent toxicity (WET) The effluent performance limitations enforced are the selected permit limits that is most protective to the designated use of the receiving waters. An overview of each of the policies that are applicable to the subject facility has been presented in Section 6.

5.2 Technology-Based Limitations

TBEL treatment requirements under section 301(b) of the Act represent the minimum level of control that must be imposed in a permit issued under section 402 of the Act (40 CFR 125.3).

Water treatment plants are subject to the following TBEL effluent limits.

Parameter	Monthly Average	Daily Max
	mg/l	mg/l
Suspended Solids	30	60
Iron (total)	2	4
Aluminum (total)	4	8
Manganese (total)	1	2
pH	6 - 9	-----
TRC	0.5	1
Notes:		
Source: TECHNOLOGY-BASED CONTROL REQUIREMENTS FOR WATER TREATMENT PLANT WASTES		

5.2.2 Mass Based Limits

For publicly owned treatment works (POTW), mass loadings are calculated based upon design flow rate of the facility and the permit limit concentration. The generalized calculation for mass loadings is shown below:

$$Quantity\left(\frac{lb}{day}\right) = (MGD)(Concentration)(8.34)$$

5.3 Water Quality-Based Limitations

WQBEL are based on the need to attain or maintain the water quality criteria and to assure protection of designated and existing uses (PA Code 25, Chapter 92a.2). The subject facility that is typically enforced is the more stringent limit of either the TBEL or the WQBEL.

Determination of WQBEL is calculated by spreadsheet analysis or by a computer modeling program developed by DEP. DEP permit engineers utilize the following computing programs for WQBEL permit limitations: (1) MS Excel worksheet for Total Residual Chorine (TRC); (2) WQM 7.0 for Windows Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen Version 1.0 (WQM Model) and (3) PENTOXSD for Windows 2.0 (PENTOXSD) for Toxics pollutants.

5.3.1 Water Quality Modeling 7.0

The facility is not subject to WQM.

5.3.2 Toxics Modeling

Modeling was not completed.

The facility discharges into Lake Altoona which is an 82-acre lake. Best professional judgment yields sufficient dilution. Technology based effluent limits have been applied for the permit. The facility will be subject to a local TMDL.

5.3.3 Whole Effluent Toxicity (WET)

WET is not applicable to the subject facility.

5.4 Total Maximum Daily Loading (TMDL)

5.4.1 TMDL

The goal of the Clean Water Act (CWA), which governs water pollution, is to ensure that all of the Nation's waters are clean and healthy enough to support aquatic life and recreation. To achieve this goal, the CWA created programs designed to regulate and reduce the amount of pollution entering United States waters. Section 303(d) of the CWA requires states to assess their waterbodies to identify those not meeting water quality standards. If a waterbody is not meeting standards, it is listed as impaired and reported to the U.S. Environmental Protection Agency. The state then develops a plan to clean up the impaired waterbody. This plan includes the development of a Total Maximum Daily Load (TMDL) for the pollutant(s) that were found to be the cause of the water quality violations. A Total Maximum Daily Load (tmdl) calculates the maximum amount of a specific pollutant that a waterbody can receive and still meet water quality standards.

Pennsylvania has committed to restoring all impaired waters by developing TMDLs and TMDL alternatives for all impaired waterbodies. The TMDL serves as the starting point or planning tool for restoring water quality.

5.4.1.1 Local TMDL

The subject facility discharges into a local TMDL named the Beaverdam Branch TMDL.

Beaverdam Branch flows about six miles from its headwaters to its confluence with the Frankstown Branch Juniata River. The entire length of Beaverdam Branch is listed as impaired, as well as three of its tributaries: Mill Run, Sugar Run, and Burgoon Run.

Due to high levels of metals, a Total Maximum Daily Load (TMDL) was developed for a stream segment in the Beaverdam Branch Watershed. The sources of the impairments are listed as urban runoff/storm sewers and combined sewer overflows (CSOs). The TMDL addresses the two primary metals (iron and aluminum) which have been identified as the causes of impairment in the watershed. Beaverdam Branch is listed for abandoned mine drainage.

The table below summarizes the TMDL waste load allocation for Altoona Water Treatment Plant (PA0082538).

TMDL Waste Load Allocation for Altoona Water (PA0082538)

Parameter	Monthly Average Allowable Concentration	Flow	Allowable Load
	mg/l	MGD	lbs/day
Iron	2.0	0.19	3.2
Aluminum	4.0	0.19	6.3
Notes:			
- Beaverdam Branch Watershed TMDL, Table 5			

5.4.1.2 Chesapeake Bay TMDL Requirement

The Chesapeake Bay Watershed is a large ecosystem that encompasses approximately 64,000 square miles in Maryland, Delaware, Virginia, West Virginia, Pennsylvania, New York and the District of Columbia. An ecosystem is composed of interrelated parts that interact with each other to form a whole. All of the plants and animals in an ecosystem depend on each other in some way. Every living thing needs a healthy ecosystem to survive. Human activities affect the Chesapeake Bay ecosystem by adding pollution, using resources and changing the character of the land.

Most of the Chesapeake Bay and many of its tidal tributaries have been listed as impaired under Section 303(d) of the federal Water Pollution Control Act ("Clean Water Act"), 33 U.S.C. § 1313(d). While the Chesapeake Bay is outside the boundaries of Pennsylvania, more than half of the State lies within the watershed. Two major rivers in Pennsylvania are part of the Chesapeake Bay Watershed. They are (a) the Susquehanna River and (b) the Potomac River. These two rivers total 40 percent of the entire Chesapeake Bay watershed.

The overall management approach needed for reducing nitrogen, phosphorus and sediment are provided in the Bay TMDL document and the Phase I, II, and III WIPs which is described in the Bay TMDL document and Executive Order 13508.

The Bay TMDL is a comprehensive pollution reduction effort in the Chesapeake Bay watershed identifying the necessary pollution reductions of nitrogen, phosphorus and sediment across the seven Bay watershed jurisdictions of Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia to meet applicable water quality standards in the Bay and its tidal waters.

The Watershed Implementation Plans (WIPs) provides objectives for how the jurisdictions in partnership with federal and local governments will achieve the Bay TMDL's nutrient and sediment allocations.

Phase 3 WIP provides an update on Chesapeake Bay TMDL implementation activities for point sources and DEP's current implementation strategy for wastewater. The latest revision of the supplement was December 17, 2019.

The Chesapeake Bay TMDL (Appendix Q) categorizes point sources into four sectors:

- Sector A- significant sewage dischargers;
- Sector B- significant industrial waste (IW) dischargers;
- Sector C- non-significant dischargers (both sewage and IW facilities); and
- Sector D- combined sewer overflows (CSOs).

All sectors contain a listing of individual facilities with NPDES permits that were believed to be discharging at the time the TMDL was published (2010). All sectors with the exception of the non-significant dischargers have individual wasteload allocations (WLAs) for TN and TP assigned to specific facilities. Non-significant dischargers have a bulk or aggregate allocation for TN and TP based on the facilities in that sector that were believed to be discharging at that time and their estimated nutrient loads.

Based upon the supplement the subject facility has been categorized as a Sector C discharger. The supplement defines Sector C as a non-significant dischargers include sewage facilities (Phase 4 facilities: ≥ 0.2 MGD and < 0.4 MGD and Phase 5 facilities: > 0.002 MGD and < 0.2 MGD), small flow/single residence sewage treatment facilities (≤ 0.002 MGD), and non-significant IW facilities, all of which may be covered by statewide General Permits or may have individual NPDES permits.

For non-significant IW facilities, monitoring and reporting of TN and TP will be required throughout the permit term in renewed or amended permits anytime the facility has the potential to introduce a net TN or TP increase to the load contained within the intake water used in processing.

Non-significant IW facilities that propose expansion or production increases and as a result will discharge at least 75 lbs/day TN or 25 lbs/day TP (on an annual average basis), will be classified as Significant IW dischargers and receive Cap Loads in their permits based on existing performance (existing TN/TP concentrations at current average annual flow).

In general, for new non-significant IW discharges (including existing facilities discharging without a permit), DEP will issue permits containing Cap Loads of "0" and these facilities will be expected to purchase credits and/or apply offsets to achieve compliance.

This facility is subject to Sector C monitoring requirements. Monitoring has been recommended at least 1x/yr.

5.5 Anti-Degradation Requirement

Chapter 93.4a of the PA regulations requires that surface water of the Commonwealth of Pennsylvania may not be degraded below levels that protect the existing uses. The regulations specifically state that *Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected*. Antidegradation requirements are implemented through DEP's guidance manual entitled Water Quality Antidegradation Implementation Guidance (Document #391-0300-02).

The policy requires DEP to protect the existing uses of all surface waters and the existing quality of High Quality (HQ) and Exceptional Value (EV) Waters. Existing uses are protected when DEP makes a final decision on any permit or approval for an activity that may affect a protected use. Existing uses are protected based upon DEP's evaluation of the best available information (which satisfies DEP protocols and Quality Assurance/Quality Control (QA/QC) procedures) that indicates the protected use of the waterbody.

For a new, additional, or increased point source discharge to an HQ or EV water, the person proposing the discharge is required to utilize a nondischarge alternative that is cost-effective and environmentally sound when compared with the cost of the proposed discharge. If a nondischarge alternative is not cost-effective and environmentally sound, the person must use the best available combination of treatment, pollution prevention, and wastewater reuse technologies and assure that any discharge is nondegrading. In the case of HQ waters, DEP may find that after satisfaction of intergovernmental coordination and public participation requirements lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In addition, DEP will assure that cost-effective and reasonable best management practices for nonpoint source control in HQ and EV waters are achieved.

The subject facility's discharge will be to a non-special protection waters and the permit conditions are imposed to protect existing instream water quality and uses. Neither HQ waters or EV waters is impacted by this discharge.

5.6 Anti-Backsliding

Anti-backsliding is a federal regulation which prohibits a permit from being renewed, reissued, or modified containing effluent limitations which are less stringent than the comparable effluent limitations in the previous permit (40 CFR 122.l.1 and 40 CFR 122.l.2). A review of the existing permit limitations with the proposed permit limitations confirm that the facility is consistent with anti-backsliding requirements. The facility has proposed effluent limitations that are as stringent as the existing permit.

6.0 NPDES Parameter Details

The basis for the proposed sampling and their monitoring frequency that will appear in the permit for each individual parameter are itemized in this Section. The final limits are the more stringent of technology based effluent treatment (TBEL) requirements, water quality based (WQBEL) limits, TMDL, antidegradation, anti-degradation, or WET.

The reader will find in this section:

a) a justification of recommended permit monitoring requirements and limitations for each parameter in the proposed NPDES permit;
b) a summary of changes from the existing NPDES permit to the proposed permit; and
c) a summary of the proposed NPDES effluent limits.

6.1 Recommended Monitoring Requirements and Effluent Limitations

A summary of the recommended monitoring requirements and effluent limitations are itemized in the tables. The tables are categorized by (a) Conventional Pollutants and Disinfection, (b) Nitrogen Species and Phosphorus, and (c) Toxics.

The facility discharges into Lake Altoona which is an 82-acre lake. Best professional judgment yields sufficient dilution. Technology based effluent limits have been applied for the permit. The facility will be subject to a local TMDL.

6.1.1 Conventional Pollutants and Disinfection

Summary of Proposed NPDES Parameter Details for Conventional Pollutants and Disinfection
Altoona Water Authority- Andronic Pappas; PA0082538

Parameter	Permit Limitation Required by[1]:	Recommendation	
pH (S.U.)	TBEL	Monitoring:	The monitoring frequency shall be daily as a grab sample (Table 6-4).
		Effluent Limit:	Effluent limits may range from pH = 6.0 to 9.0
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-4 and the effluent limits assigned by Chapter 95.2(1) and Technology Based Control Requirements for Water Treatment Plant Wastes
TRC	WQBEL	Monitoring:	The monitoring frequency shall be on a daily basis as a grab sample.
		Effluent Limit:	The average monthly limit should not exceed 0.4 mg/l and/or 1.4 mg/l as an instantaneous maximum.
		Rationale:	Chlorine in both combined (chloramine) and free form is extremely toxic to freshwater fish and other forms of aquatic life (Implementation Guidance Total Residual Chlorine 1). The TRC effluent limitations to be imposed on a discharger shall be the more stringent of either the WQBEL or TBEL requirements and shall be expressed in the NPDES permit as an average monthly and instantaneous maximum effluent concentration (Implementation Guidance Total Residual Chlorine 4). Based on the stream flow rate (lowest 7-day flow rate in 10 years) and the design flow rate of the subject facility calculated by the TRC Evaluation worksheet, the WQBEL is more stringent than the TBEL.
TSS	DEP Guidance Document- Water Treatment Plant Wastes	Monitoring:	The monitoring frequency shall be 1/week as a 24-hr composite sample (Table 6-4).
		Effluent Limit:	The effluent limit should not exceed 30 mg/l as an average monthly.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-4 and the effluent limits assigned by Technology Based Control Requirements for Water Treatment Plant Wastes.

Notes:

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, and/or (f) WQBEL

2 Monitoring frequency based on flow rate of 0.35 MGD.

3 Table 6-4 (Self Monitoring Requirements for Industrial Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Phase 2 Watershed Implementation Plan Wastewater Supplement, Revised September 6, 2017

6.1.2 Nitrogen Species and Phosphorus

Summary of Proposed NPDES Parameter Details for Nitrogen Species and Phosphorus

Altoona Water Authority- Andronic Pappas; PA0082538

Parameter	Permit Limitation Required by[1]:	Recommendation	
Total Nitrogen	Cheapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/yr as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/yr.
Total Phosphorus	Cheapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/yr as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/yr.

Notes:

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, and/or (f) WQBEL

2 Monitoring frequency based on flow rate of 0.35 MGD.

3 Table 6-4 (Self Monitoring Requirements for Industrial Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Phase 2 Watershed Implementation Plan Wastewater Supplement, Revised September 6, 2017

6.1.3 Toxics

6.1.3.2 Summary of Toxics Monitoring/Limits

Summary of Proposed NPDES Parameter Details for Toxics (Continued)

Altoona Water Authority- Andronic Pappas; PA0082538

Parameter	Permit Limitation Required by[1]:	Recommendation	
Total Aluminum	**DEP Guidance Document- Water Treatment Plant Wastes- TBEL/ Beaverdam BranchTMDL**	Monitoring:	The monitoring frequency shall be 1x/wk as a 24-hr composite sample (Table 6-4).
		Effluent Limit:	The effluent limit should not exceed 4.0 mg/l as an average monthly. The TMDL load shall not exceed 6.3 lbs/day.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-4 and the effluent limits assigned by TBEL and TMDL. Limits are established by the Technology Based Control Requirements for Water Treatment Plant Wastes and the TMDL loadings from the Beaverdam Branch Watershed TMDL- Blair and Cambria Counties.
Total Iron	**DEP Guidance Document- Water Treatment Plant Wastes- TBEL/ Beaverdam BranchTMDL**	Monitoring:	The monitoring frequency shall be 1x/wk as a 24-hr composite sample (Table 6-4).
		Effluent Limit:	The effluent limit should not exceed 2 mg/l as an average monthly. The TMDL load shall not exceed 3.2 lbs/day.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-4 and the effluent limits assigned by TBEL and TMDL. Limits are established by the Technology Based Control Requirements for Water Treatment Plant Wastes and the TMDL loadings from the Beaverdam Branch Watershed TMDL- Blair and Cambria Counties.
Total Manganese	**DEP Guidance Document- Water Treatment Plant Wastes- TBEL**	Monitoring:	The monitoring frequency shall be 1x/wk as a 24-hr composite sample (Table 6-4).
		Effluent Limit:	The effluent limit should not exceed 1 mg/l as an average monthly.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-4 and the effluent limits assigned by Technology Based Control Requirements for Water Treatment Plant Wastes.

Notes:

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, and/or (f) WQBEL

2 Monitoring frequency based on flow rate of 0.35 MGD.

3 Table 6-4 (Self Monitoring Requirements for Industrial Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Phase 2 Watershed Implementation Plan Wastewater Supplement, Revised September 6, 2017

6.2 Summary of Changes From Existing Permit to Proposed Permit

A summary of how the proposed NPDES permit differs from the existing NPDES permit is summarized as follows.

- **There are no changes to the monitoring frequency or effluent limit requirements.**

6.3.1 Summary of Proposed NPDES Effluent Limits

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.

The proposed NPDES effluent limitations are summarized in the table below.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. A. For Outfall 001 , **Latitude** 40° 29' 38.00" , **Longitude** 78° 27' 55.00" , **River Mile Index** 3.7 , **Stream Code** 16416

Receiving Waters: Burgoon Run (TSF)

Type of Effluent: Water Treatment Effluent

1. The permittee is authorized to discharge during the period from **Permit Effective Date** through **Permit Expiration Date**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

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 Inst Min	XXX	XXX	9.0	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.4	XXX	1.4	1/day	Grab
Total Suspended Solids	Report	Report	XXX	30	60	75	1/week	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Appl Avg	XXX	XXX	1/year	Calculation
Total Nitrogen (Total Load, lbs) (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus	XXX	XXX	XXX	Report Appl Avg	XXX	XXX	1/year	24-Hr Composite
Total Phosphorus (Total Load, lbs) (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Aluminum, Total	6.3	Report	XXX	4.0	8.0	9	1/week	24-Hr Composite
Iron, Total	3.2	Report	XXX	2.0	4.0	5	1/week	24-Hr Composite
Manganese, Total	Report	Report	XXX	1.0	2.0	2.5	1/week	24-Hr Composite

6.3.2 Summary of Proposed Permit Part C Conditions

The subject facility has the following Part C conditions.

- Chlorine Minimization
- Chesapeake Bay Nutrient Definitions
- Water Treatment Plant Basin Cleaning

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

Attachment A

Stream Stats/Gauge Data

Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

[Latitude and Longitude in decimal degrees; mi², square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi²)	Regulated[1]
01541303	West Branch Susquehanna River at Hyde, Pa.	41.005	-78.457	474	Y
01541308	Bradley Run near Ashville, Pa.	40.509	-78.584	6.77	N
01541500	Clearfield Creek at Dimeling, Pa.	40.972	-78.406	371	Y
01542000	Moshannon Creek at Osceola Mills, Pa.	40.850	-78.268	68.8	N
01542500	WB Susquehanna River at Karthaus, Pa.	41.118	-78.109	1,462	Y
01542810	Waldy Run near Emporium, Pa.	41.579	-78.293	5.24	N
01543000	Driftwood Branch Sinnemahoning Creek at Sterling Run, Pa.	41.413	-78.197	272	N
01543500	Sinnemahoning Creek at Sinnemahoning, Pa.	41.317	-78.103	685	N
01544000	First Fork Sinnemahoning Creek near Sinnemahoning, Pa.	41.402	-78.024	245	Y
01544500	Kettle Creek at Cross Fork, Pa.	41.476	-77.826	136	N
01545000	Kettle Creek near Westport, Pa.	41.320	-77.874	233	Y
01545500	West Branch Susquehanna River at Renovo, Pa.	41.325	-77.751	2,975	Y
01545600	Young Womans Creek near Renovo, Pa.	41.390	-77.691	46.2	N
01546000	North Bald Eagle Creek at Milesburg, Pa.	40.942	-77.794	119	N
01546400	Spring Creek at Houserville, Pa.	40.834	-77.828	58.5	N
01546500	Spring Creek near Axemann, Pa.	40.890	-77.794	87.2	N
01547100	Spring Creek at Milesburg, Pa.	40.932	-77.786	142	N
01547200	Bald Eagle Creek below Spring Creek at Milesburg, Pa.	40.943	-77.786	265	N
01547500	Bald Eagle Creek at Blanchard, Pa.	41.052	-77.604	339	Y
01547700	Marsh Creek at Blanchard, Pa.	41.060	-77.606	44.1	N
01547800	South Fork Beech Creek near Snow Shoe, Pa.	41.024	-77.904	12.2	N
01547950	Beech Creek at Monument, Pa.	41.112	-77.702	152	N
01548005	Bald Eagle Creek near Beech Creek Station, Pa.	41.081	-77.549	562	Y
01548500	Pine Creek at Cedar Run, Pa.	41.522	-77.447	604	N
01549000	Pine Creek near Waterville, Pa.	41.313	-77.379	750	N
01549500	Blockhouse Creek near English Center, Pa.	41.474	-77.231	37.7	N
01549700	Pine Creek below Little Pine Creek near Waterville, Pa.	41.274	-77.324	944	Y
01550000	Lycoming Creek near Trout Run, Pa.	41.418	-77.033	173	N
01551500	WB Susquehanna River at Williamsport, Pa.	41.236	-76.997	5,682	Y
01552000	Loyalsock Creek at Loyalsockville, Pa.	41.325	-76.912	435	N
01552500	Muncy Creek near Sonestown, Pa.	41.357	-76.535	23.8	N
01553130	Sand Spring Run near White Deer, Pa.	41.059	-77.077	4.93	N
01553500	West Branch Susquehanna River at Lewisburg, Pa.	40.968	-76.876	6,847	Y
01553700	Chillisquaque Creek at Washingtonville, Pa.	41.062	-76.680	51.3	N
01554000	Susquehanna River at Sunbury, Pa.	40.835	-76.827	18,300	Y
01554500	Shamokin Creek near Shamokin, Pa.	40.810	-76.584	54.2	N
01555000	Penns Creek at Penns Creek, Pa.	40.867	-77.048	301	N
01555500	East Mahantango Creek near Dalmatia, Pa.	40.611	-76.912	162	N
01556000	Frankstown Branch Juniata River at Williamsburg, Pa.	40.463	-78.200	291	N
01557500	Bald Eagle Creek at Tyrone, Pa.	40.684	-78.234	44.1	N
01558000	Little Juniata River at Spruce Creek, Pa.	40.613	-78.141	220	N
01559000	Juniata River at Huntingdon, Pa.	40.485	-78.019	816	LF
01559500	Standing Stone Creek near Huntingdon, Pa.	40.524	-77.971	128	N
01559700	Sulphur Springs Creek near Manns Choice, Pa.	39.978	-78.619	5.28	N
01560000	Dunning Creek at Belden, Pa.	40.072	-78.493	172	N

Table 2. Selected low-flow statistics for streamgage locations in and near Pennsylvania.—Continued

[ft³/s; cubic feet per second; —, statistic not computed; <, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	1-day, 10-year (ft³/s)	7-day, 10-year (ft³/s)	7-day, 2-year (ft³/s)	30-day, 10-year (ft³/s)	30-day, 2-year (ft³/s)	90-day, 10-year (ft³/s)
01546000	1912–1934	17	1.8	2.2	6.8	3.7	12.1	11.2
01546400	1986–2008	23	13.5	14.0	19.6	15.4	22.3	18.7
01546500	1942–2008	67	26.8	29.0	41.3	31.2	44.2	33.7
01547100	1969–2008	40	102	105	128	111	133	117
01547200	1957–2008	52	99.4	101	132	106	142	115
01547500	[2]1971–2008	38	28.2	109	151	131	172	153
01547500	[3]1956–1969	14	90.0	94.9	123	98.1	131	105
01547700	1957–2008	52	.5	.6	2.7	1.1	3.9	2.2
01547800	1971–1981	11	1.6	1.8	2.4	2.1	2.9	3.5
01547950	1970–2008	39	12.1	13.6	28.2	17.3	36.4	23.8
01548005	[2]1971–2000	25	142	151	206	178	241	223
01548005	[3]1912–1969	58	105	114	147	125	165	140
01548500	1920–2008	89	21.2	24.2	50.1	33.6	68.6	49.3
01549000	1910–1920	11	26.0	32.9	78.0	46.4	106	89.8
01549500	1942–2008	67	.6	.8	2.5	1.4	3.9	2.6
01549700	1959–2008	50	33.3	37.2	83.8	51.2	117	78.4
01550000	1915–2008	94	6.6	7.6	16.8	11.2	24.6	18.6
01551500	[2]1963–2008	46	520	578	1,020	678	1,330	919
01551500	[3]1901–1961	61	400	439	742	523	943	752
01552000	1927–2008	80	20.5	22.2	49.5	29.2	69.8	49.6
01552500	1942–2008	67	.9	1.2	3.1	1.7	4.4	3.3
01553130	1969–1981	13	1.0	1.1	1.5	1.3	1.8	1.7
01553500	[2]1968–2008	41	760	838	1,440	1,000	1,850	1,470
01553500	[3]1941–1966	26	562	619	880	690	1,090	881
01553700	1981–2008	28	9.1	10.9	15.0	12.6	17.1	15.2
01554000	[2]1981–2008	28	1,830	1,990	3,270	2,320	4,210	3,160
01554000	[3]1939–1979	41	1,560	1,630	2,870	1,880	3,620	2,570
01554500	1941–1993	53	16.2	22.0	31.2	25.9	35.7	31.4
01555000	1931–2008	78	33.5	37.6	58.8	43.4	69.6	54.6
01555500	1931–2008	78	4.9	6.5	18.0	9.4	24.3	16.6
01556000	1918–2008	91	43.3	47.8	66.0	55.1	75.0	63.7
01557500	1946–2008	63	2.8	3.2	6.3	4.2	8.1	5.8
01558000	1940–2008	69	56.3	59.0	79.8	65.7	86.2	73.7
01559000	1943–2008	66	104	177	249	198	279	227
01559500	1931–1958	28	9.3	10.5	15.0	12.4	17.8	15.8
01559700	1963–1978	16	.1	.1	.2	.1	.3	.2
01560000	1941–2008	68	8.5	9.4	15.6	12.0	20.2	16.2
01561000	1932–1958	27	.4	.5	1.6	.8	2.5	1.7
01562000	1913–2008	96	64.1	67.1	106	77.4	122	94.5
01562500	1931–1957	27	1.1	1.6	3.8	2.3	5.4	3.7
01563200	[2]1974–2008	35	—	—	—	112	266	129
01563200	[3]1948–1972	25	10.3	28.2	86.1	64.5	113	95.5
01563500	[2]1974–2008	35	384	415	519	441	580	493
01563500	[3]1939–1972	34	153	242	343	278	399	333
01564500	1940–2008	69	3.6	4.2	10.0	6.2	14.4	10.6

Attachment B

TRC Evaluation

Altoona Water- Andronic Pappas January 2021
PA0082538

1A	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	1.621	**= Q stream (cfs)**		0.5	**= CV Daily**	
5	0.35	**= Q discharge (MGD)**		0.5	**= CV Hourly**	
6	30	**= no. samples**		1	**= AFC_Partial Mix Factor**	
7	0.3	**= Chlorine Demand of Stream**		1	**= CFC_Partial Mix Factor**	
8	0	**= Chlorine Demand of Discharge**		15	**= AFC_Criteria Compliance Time (min)**	
9	0.5	**= BAT/BPJ Value**		720	**= CFC_Criteria Compliance Time (min)**	
	0	**= % Factor of Safety (FOS)**		0	**=Decay Coefficient (K)**	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	**1.3.2.iii**	WLA afc = 0.974		**1.3.2.iii**	WLA cfc = 0.942
12	PENTOXSD TRG	**5.1a**	LTAMULT afc = 0.373		**5.1c**	LTAMULT cfc = 0.581
13	PENTOXSD TRG	**5.1b**	LTA_afc= 0.363		**5.1d**	LTA_cfc = 0.548
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.447		AFC	
18			INST MAX LIMIT (mg/l) = 1.461			

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)**