

Application Type Renewal
 Facility Type Industrial
 Major / Minor Minor

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

Application No. PA0087971
 APS ID 979626
 Authorization ID 1318937

Applicant and Facility Information

Applicant Name	<u>Bedford Borough Municipal Authority</u>	Facility Name	<u>Bedford Borough Water System</u>
Applicant Address	<u>244 W Penn Street</u> <u>Bedford, PA 15522-1226</u>	Facility Address	<u>185 Fairlane Drive</u> <u>Bedford, PA 15522-1226</u>
Applicant Contact	<u>Barbara Diehl</u>	Facility Contact	<u>John Whitmore</u>
Applicant Phone	<u>(814) 623-8192</u>	Facility Phone	<u>(814) 623-0473</u>
Client ID	<u>34446</u>	Site ID	<u>454263</u>
SIC Code	<u>4941</u>	Municipality	<u>Bedford Township</u>
SIC Description	<u>Trans. & Utilities - Water Supply</u>	County	<u>Bedford</u>
Date Application Received	<u>June 30, 2020</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>July 20, 2020</u>	If No, Reason	<u></u>
Purpose of Application	<u>This is an application for NPDES renewal.</u>		

Summary of Review

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

Summary of Review

The application submitted by the applicant requests a NPDES renewal permit for the Bedford Borough Water Plant located at 185 Fairlane Drive, Bedford, PA 15522 in Bedford County, municipality of Bedford. The existing permit became effective on January 1, 2016 and expired on December 31, 2020. The application for renewal was received by DEP Southcentral Regional Office (SCRO) on June 30, 2020.

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 0.20 MGD treatment facility. The applicant anticipates upgrades by 2025 to the chemical pumps, backwash pumps, decant pumps, service pumps, SCADA system and entire chemical feed room. The NPDES application has been processed as an Industrial Wastewater application due to the type of wastewater and the design flow rate for the facility. The applicant disclosed the Act 14 requirement to Bedford County Commissioners, Bedford Borough, Bedford Township, and the notice was received by the parties on in June 2020. A planning approval letter was not necessary as the facility is neither new or expanding.

Utilizing the DEP's web-based Emap-PA information system, the receiving waters has been determined to be Tributary 15069 to Raystown Branch Juniata River. The sequence of receiving streams that the Tributary 15069 to Raystown Branch Juniata River discharges into are the Raystown Branch Juniata River, the Juniata River, and the Susquehanna River which eventually drains into the Chesapeake Bay. The subject site is not subject to the Chesapeake Bay implementation requirements. The receiving water has protected water usage for warm water fishes (WWF) 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.

The Tributary 15069 to Raystown Branch Juniata River is a Category 2 stream listed in the 2020 Integrated List of All Waters (formerly 303d Listed Streams). This stream is an attaining stream that supports aquatic life. The receiving waters is not subject to a 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 limits.**

Sludge use and disposal description and location(s): Solids are disposed to the sanitary waste system

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: Bedford Water Treatment Plant

NPDES Permit # PA0087971

Physical Address: 185 Fairlane Drive
Bedford, PA 15522

Mailing Address: 244 West Penn Street
Bedford, PA 15522

Contact: John Whitmore
jwhitmore@bedboro.com

Consultant: Tobias Nagle
Senior Environmental Scientist
Stiffler McGraw
tnagle@stiffler-mcgraw.com

1.2 Permit History

Description of Facility & Sources of Water

The water treatment plant is a conventional treatment plant with 3 Westec tri media filters. The Westec Filters house an up flow buoyant media clarifier as well as a tri-media downflow conventional filter.

Permit submittal included the following information.

- NPDES Application
- Pollutant Groups 1 and 2
- Flow Diagrams
- Process Flow Narrative
- Hydraulic Re-Rate Evaluation of the MABB Backwash Wastewater System Flow Engineering dated April 2021. This was received by DEP on May 6, 2021.

2.0 Treatment Facility Summary

2.1.1 Site location

The physical address for the facility is 185 Fairlane Drive, Bedford, PA 15522. 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

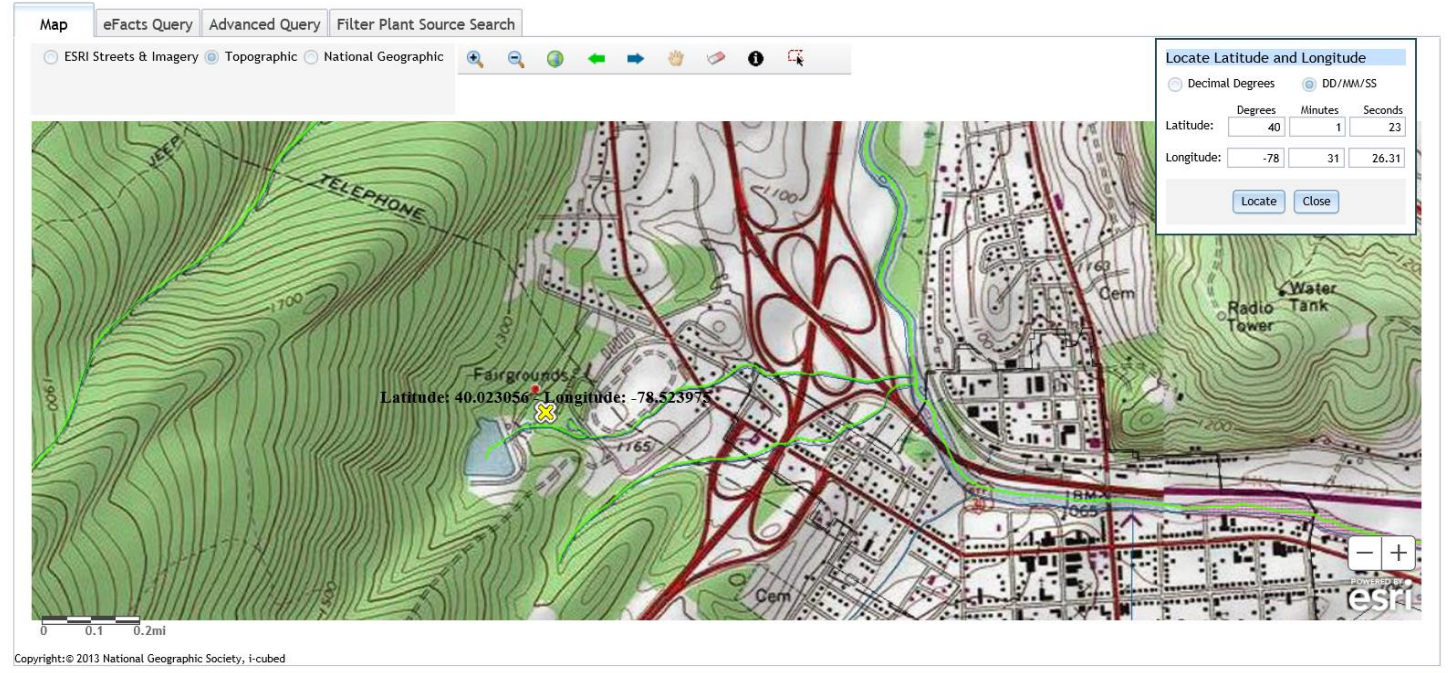
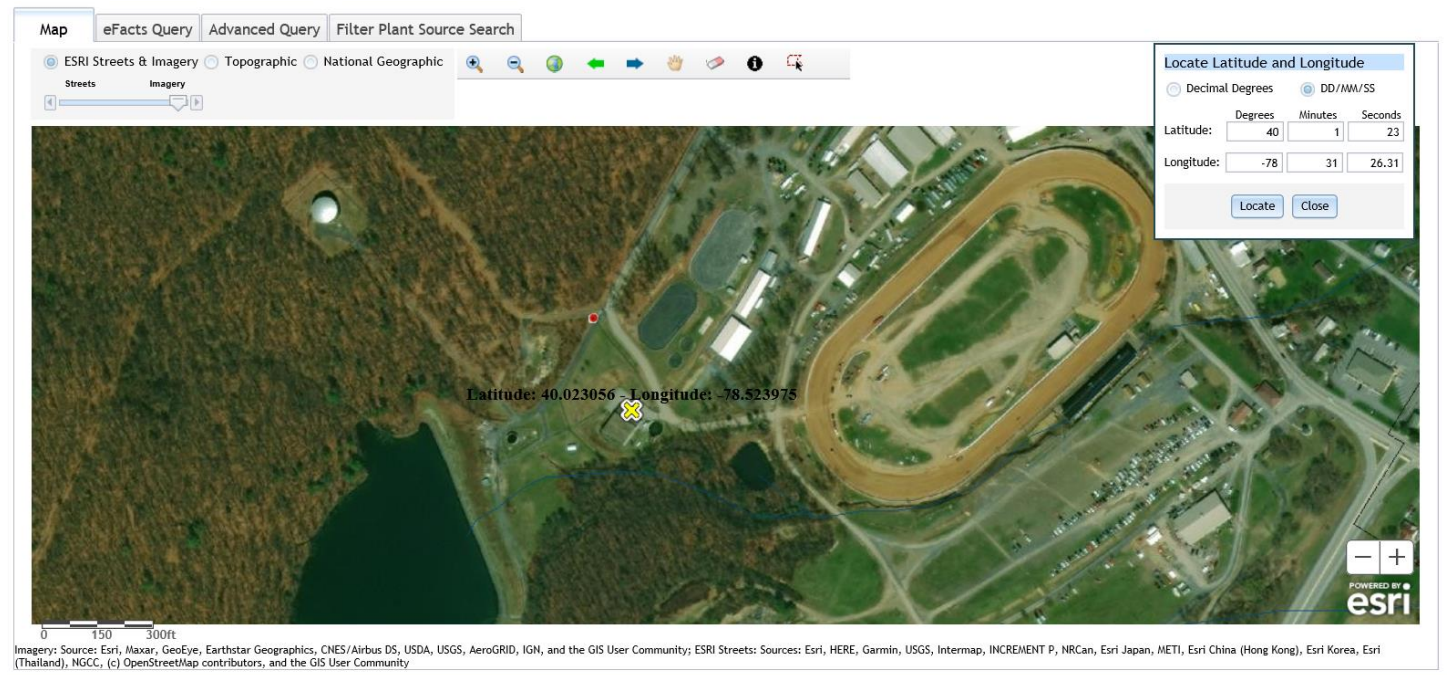


Figure 2: Aerial Photograph of the subject facility



2.2 Description of Wastewater Treatment Process

The subject facility was currently a 0.089 MGD design flow facility. Via an engineering re-rate justification statement dated for April 2021 (engineering re-rate statement), the facility requested that the wastewater discharge flow rate to increase to 0.200 MGD. The re-rate results from changes in regulations that require water treatment plants to filter to waste and achieve an effluent turbidity of 0.15 NTU.

Wastewater generated from the rinses and backwashes are held in the backwash holding pond until solids settle. After a preestablished settling time the decant water of the backwash tank is sent to the Todd Reservoir for discharge. Presumably, the Todd Reservoir discharges into the Tributary 15069 to Raystown Branch Juniata River.

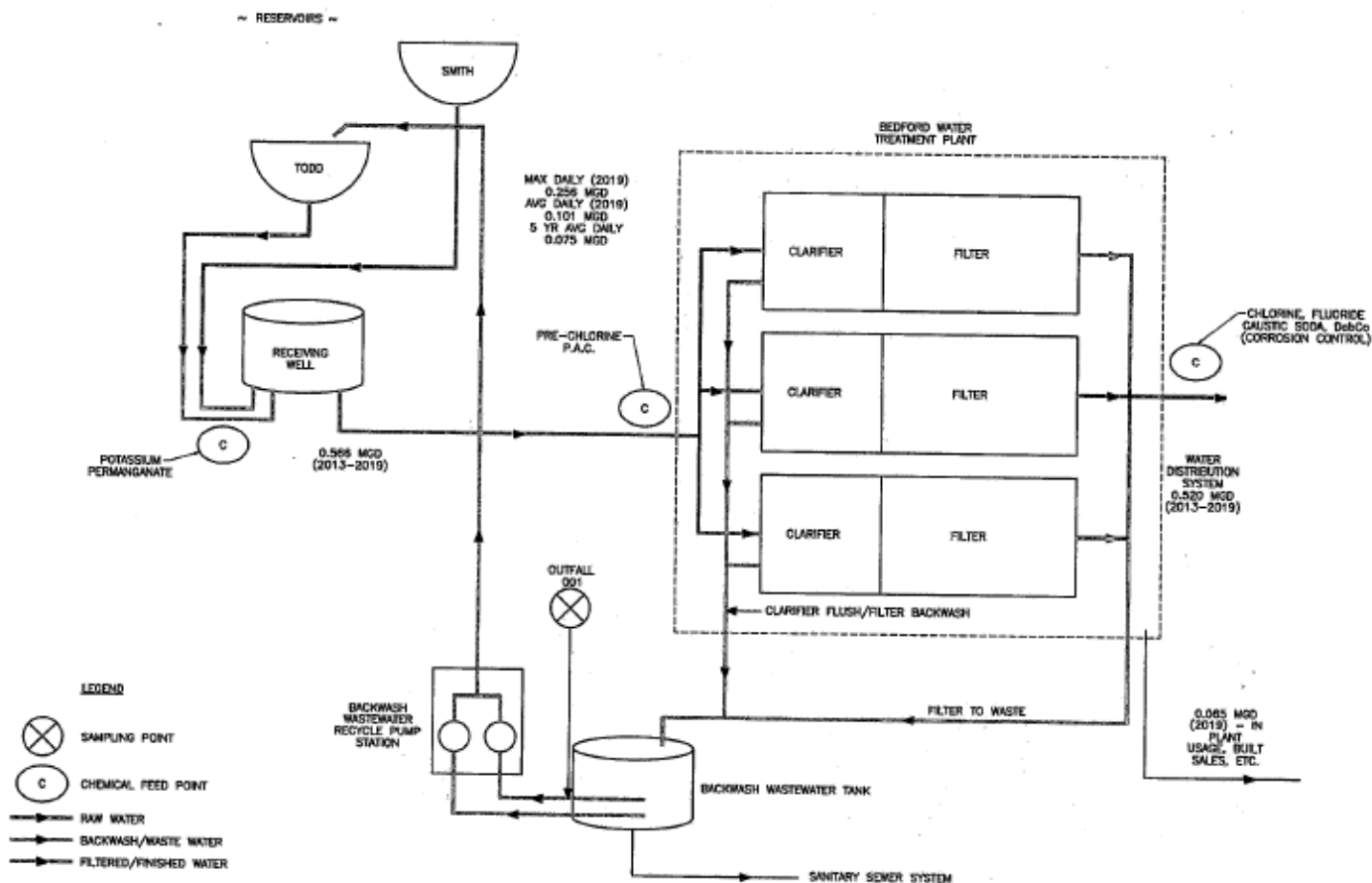
The engineering re-rate statement projects on a worst-case scenario the facility would have to wash two filters per day. The backwash wastewater volume would generate 0.098 MGD and the clarifier flush wastewater volume would generate 0.045 MGD (0.098 MGD + 0.045 MGD = 0.143 MGD). The wash water holding tank has a volume of 0.086 million gallons. Overflow goes to the sanitary sewer system.

The re-rate of 0.200 MGD is arrived from the 2019 maximum daily discharge. The consultant states that the facility can accommodate flows up to 0.432 MGD. This would be the hydraulic limitation for one functional transfer pump.

The Safe Drinking Water Program was consulted. They concurred with the engineering justification provided by the consultant. Since no construction permit amendment is being processed, the engineering re-rate has been described in this NPDES renewal Fact Sheet.

The facility is being evaluated for flow, pH, TRC, TSS, aluminum, iron and manganese. The existing permits limits for the facility is summarized in Section 2.4.

A schematic of the treatment process is shown below.



2.3 Facility Outfall Information

The facility has the following outfall information for wastewater.

Outfall No.	001	Design Flow (MGD)	.200
Latitude	40° 1' 22.57"	Longitude	-78° 31' 25.90"
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.

- Pre-chlorine and Sodium Manganate for oxidation
- Alum, poly-aluminum chloride and ferric chloride for coagulation
- Liquid caustic soda for pH adjustment
- Chlorine gas for disinfection

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° 1' 22.57", Longitude 78° 31' 25.89", River Mile Index 0.92, Stream Code 15069

Receiving Waters: Unnamed Tributary to Raystown Branch Juniata River

Type of Effluent: IW (Filter backwash)

1. The permittee is authorized to discharge during the period from January 1, 2016 through December 31, 2020.
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	0.5	1.0	1.25	1/day	Grab
Total Suspended Solids	Report	Report	XXX	30	60	75	2/month	8-Hr Composite
Total Aluminum	Report	Report	XXX	4.0	8.0	10	2/month	8-Hr Composite
Total Iron	Report	Report	XXX	2.0	4.0	5.0	2/month	8-Hr Composite
Total Manganese	Report	Report	XXX	1.0	2.0	2.5	2/month	8-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.

01/10/2017:

- The wastewater treatment unit consists of a single concrete settling tank. The unit receives routine backwashing and water treatment plant clarifier flushes. The tank discharges to the reservoir above the treatment plant. When the reservoir is full, overflow enters the UNT to Raystown Branch.
- The facility was advised to revise November 2016 eDMR to correct for results for aluminum.

01/11/2018:

- There was nothing significant to report.

01/30/2019:

- There was nothing significant to report.

02/05/2020:

- There was nothing significant to report.

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 0.121 MGD in February 2021. The design capacity of the treatment system is 0.200 MGD.

DMR Data for Outfall 001 (from March 1, 2020 to February 28, 2021)

Parameter	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20
Flow (MGD) Average Monthly	0.121	0.102	0.103	0.105	0.113	0.083	0.084	0.064	0.077	0.084	0.099	0.088
Flow (MGD) Daily Maximum	0.180	0.131	0.171	0.177	0.185	0.182	0.142	0.123	0.142	0.150	0.155	0.163
pH (S.U.) Instantaneous Minimum	7.11	6.97	7.19	7.27	7.36	7.05	6.84	6.53	6.42	6.41	6.71	6.74
pH (S.U.) Instantaneous Maximum	7.34	7.37	7.57	7.56	7.58	7.54	7.44	7.00	7.12	6.94	7.01	7.28
TRC (mg/L) Average Monthly	0.21	0.19	0.18	0.20	0.16	0.22	0.23	0.16	0.16	0.20	0.22	0.31
TRC (mg/L) Daily Maximum	0.40	0.43	0.34	0.54	0.42	0.53	0.44	0.35	0.59	0.64	0.45	0.61
TSS (lbs/day) Average Monthly	7.2328	7.3484	4.5303	< 2.1816	3.2568	3.7217	6.4496	6.7098	3.2646	5.670	10.8016	< 5.6829
TSS (lbs/day) Daily Maximum	12.8853	18.0344	10.8987	5.6095	5.0040	10.2749	17.1462	14.2614	8.6235	7.7062	18.0061	15.0387
TSS (mg/L) Average Monthly	7.238	8.323	4.600	< 2.890	4.250	5.850	11.660	10.038	6.614	7.430	13.45	< 7.52
TSS (mg/L) Daily Maximum	15.00	21.200	10.800	3.800	5.200	16.000	26.700	19.000	11.000	13.700	17.00	19.60
Total Aluminum (lbs/day) Average Monthly	2.4977	1.7872	1.5176	0.6677	0.7371	1.0601	1.4023	1.0586	0.7761	1.2565	2.3916	1.5326
Total Aluminum (lbs/day) Daily Maximum	4.9651	5.3253	2.8660	1.2843	1.2635	2.4724	3.4099	2.0942	2.5478	1.8798	3.7071	3.0677
Total Aluminum (mg/L) Average Monthly	2.5680	2.0765	1.5200	0.6578	0.9138	1.6210	2.6258	1.5778	1.4154	1.6188	3.5000	2.3602
Total Aluminum (mg/L) Daily Maximum	5.7800	6.2600	2.8400	1.0900	1.2100	3.8500	5.3100	2.7900	3.2500	2.7100	3.0425	6.0300
Total Iron (lbs/day) Average Monthly	< 0.1997	< 0.1579	< 0.1859	< 0.1978	< 0.1454	< 0.1106	< 0.2696	< 0.1261	< 0.0871	< 0.1628	< 0.1944	< 0.1337
Total Iron (lbs/day) Daily Maximum	< 0.2299	< 0.1821	< 0.2206	< 0.2731	< 0.2314	< 0.1574	0.5195	0.2109	0.1873	< 0.2160	0.2952	< 0.1635
Total Iron (mg/L) Average Monthly	< 0.2038	< 0.189	< 0.185	< 0.185	< 0.185	< 0.1855	< 0.5208	< 0.2118	< 0.196	< 0.185	< 0.259	< 0.2070
Total Iron (mg/L) Daily Maximum	0.2600	0.2000	< 0.185	< 0.185	< 0.185	0.187	1.2400	0.2810	0.2390	< 0.185	0.448	0.2950

**NPDES Permit Fact Sheet
Bedford Borough Water System**

NPDES Permit No. PA0087971

Total Manganese (lbs/day) Average Monthly	< 0.0266	< 0.0238	< 0.262	< 0.0214	< 0.0195	0.0661	0.2697	0.1710	0.0336	0.0336	0.0393	< 0.0240
Total Manganese (lbs/day) Daily Maximum	0.0441	0.0453	0.0398	< 0.0295	0.0400	0.1837	0.5996	0.3468	0.0823	0.0488	0.0604	0.0374
Total Manganese (mg/L) Average Monthly	< 0.0278	< 0.0283	< 0.0264	< 0.0200	< 0.0230	0.1022	0.3386	0.2655	0.0733	0.0399	0.0503	< 0.0374
Total Manganese (mg/L) Daily Maximum	0.0513	0.0533	0.0415	< 0.0200	0.0320	0.2860	0.9100	0.4620	0.1050	0.0512	0.0685	0.0736

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.

From the DMR data beginning in January 1, 2016 to April 29, 2021, there were no observed effluent non-compliances.

3.3.2 Non-Compliance- Enforcement Actions

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

Beginning in January 1, 2016 to April 29, 2021, there were no observed enforcement actions.

3.4 Summary of Solids Disposal

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

- Summary of 2019 Solids Removed: 0 tons
- Summary of 2020 Solids Removed: 0 tons

3.5 Open Violations

As of May 2021, the facility has an open violation in the Clean Water Program. The NPDES has been submitted to client as draft for review. Finalization for the NPDES issuance may be withheld until the open violation is resolved.

4.0 Receiving Waters and Water Supply Information Detail Summary

4.1 Receiving Waters

The receiving waters has been determined to be Tributary 15069 to Raystown Branch Juniata River. The sequence of receiving streams that the Tributary 15069 to Raystown Branch Juniata River discharges into are the Raystown 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 Saxton Municipal Water Authority (PWS ID #4050021) located approximately 52 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 2 waterbody. The surface waters is an attaining stream that supports aquatic life. The designated use has been classified as protected waters for warm water fishes (WWF) 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 station to the subject facility is the Raystown Branch Juniata River @ Saxton, PA (WQN223). This WQN station is located approximately 53 miles downstream of the subject facility.

The closest gauge station to the subject facility is the Raystown Branch Juniata River @ Saxton, PA (USGS station number 1562000). This gauge station is located approximately 53 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 8.0 and the stream water temperature was estimated to be 23.3 C.

The hardness of the stream was estimated from the water quality network. The median hardness was 96 mg/l CaCO₃.

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

Gauge Station Data		
USGS Station Number	1562000	
Station Name	Raystown Branch Juniata River @ Saxton, PA	
Q710	8.1	ft ³ /sec
Drainage Area (DA)	756	mi ²
Calculations		
The low flow yield of the gauge station is:		
Low Flow Yield (LFY) = Q710 / DA		
LFY =	(8.1 ft ³ /sec / 756 mi ²)	
LFY =	0.0107	ft ³ /sec/mi ²
The low flow at the subject site is based upon the DA of		
	0.72	mi ²
Q710 = (LFY@gauge station)(DA@Subject Site)		
Q710 = (0.0107 ft ³ /sec/mi ²)(0.72 mi ²)		
Q710 =	0.008	ft ³ /sec

4.6 Summary of Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>001</u>	Design Flow (MGD)	<u>.200</u>
Latitude	<u>40° 1' 21.47"</u>	Longitude	<u>-78° 31' 25.98"</u>
Quad Name	<u></u>	Quad Code	<u></u>
Wastewater Description: <u>Water Treatment Effluent</u>			

Receiving Waters	<u>Unnamed Tributary to Raystown Branch Juniata River (WWF)</u>	Stream Code	<u>15069</u>
NHD Com ID	<u>65847635</u>	RMI	<u>0.8</u>
Drainage Area	<u>0.72</u>	Yield (cfs/mi ²)	<u>0.0107</u>
Q ₇₋₁₀ Flow (cfs)	<u>0.008</u>	Q ₇₋₁₀ Basis	<u>StreamStats/StreamGauge</u>
Elevation (ft)	<u>1171</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>11-C</u>	Chapter 93 Class.	<u>WWF, MF</u>
Existing Use	<u>Same as Chapter 93 class.</u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Attaining Use(s) supports aquatic life</u>		
Cause(s) of Impairment	<u>Not appl.</u>		
Source(s) of Impairment	<u>Not appl.</u>		
TMDL Status	<u>Not appl.</u>	Name	<u></u>

Background/Ambient Data		Data Source	
pH (SU)	<u>8.00</u>	WQN223; Median Jul to Sept	<u></u>
Temperature (°C)	<u>23.3</u>	WQN223; Median Jul to Sept	<u></u>
Hardness (mg/L)	<u>96</u>	WQN223; median historical	<u></u>
Other:	<u></u>		<u></u>

Nearest Downstream Public Water Supply Intake	<u>Saxton Municipal Water Authority</u>		
PWS Waters	<u>Juniata River</u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u>40</u>	Distance from Outfall (mi)	<u>52</u>

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.

5.2.1 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).

Permit limits for water treatment plant wastes are subject to handling and disposal of water treatment plant (WTP) using Best Practicable Control Technology (BPCT) currently available. Waste water from treatment of WTP sludges and filter backwash shall have the following permit 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

5.3 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 Chlorine (TRC); (2) WQM 7.0 for Windows Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen Version 1.1 (WQM Model) and (3) Toxics Management Spreadsheet for Toxics pollutants.

5.3.1 Water Quality Modeling 7.0

The facility is not subject to WQM.

5.3.2 Toxics Modeling

Since the facility discharges to a dam (Todd Reservoir), toxics modeling was not completed. The enforceable limits shall be technology based effluent limits for aluminum, iron, and manganese.

5.3.3 Whole Effluent Toxicity (WET)

The facility is not subject to WET.

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 does not discharge into a local TMDL.

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 discharger that includes 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.

At this time, there are approximately 850 Phase 4 and 5 sewage facilities, approximately 715 small flow sewage treatment facilities covered by a statewide General Permit, and approximately 300 non-significant IW facilities.

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.

Since the facility generates minimal nitrogen and phosphorus, this facility is not subject to Sector C monitoring requirements.

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 122.1.1 and 40 CFR 122.1.2). 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 and (b) Toxics.

6.1.1 Conventional Pollutants and Disinfection

Summary of Proposed NPDES Parameter Details for Conventional Pollutants and Disinfection MA of the Borough of Bedford; PA0087971			
Parameter	Permit Limitation Required by ¹ :	Recommendation	
pH	DEP Guidance Document-Water Treatment Plant Wastes	Monitoring:	The monitoring frequency shall be 1x/day as a grab sample (Table 6-4).
		Effluent Limit:	The performance effluent limit shall range from 6 -9.
		Rationale:	Effluent limits are defined by DEP Guidance Document- Technology-Based Control Requirements for Water Treatment Plant Wastes- Waste Water from Treatment of WTP Sludges and Filter Backwash
TSS	DEP Guidance Document-Water Treatment Plant Wastes	Monitoring:	The monitoring frequency shall be 2x/mo as an 8-hr composite sample (Table 6-4).
		Effluent Limit:	The performance effluent limit shall not exceed 30 mg/l as a monthly average.
		Rationale:	Effluent limits are defined by DEP Guidance Document- Technology-Based Control Requirements for Water Treatment Plant Wastes- Waste Water from Treatment of WTP Sludges and Filter Backwash
TRC	TBEL	Monitoring:	The monitoring frequency shall be on a daily basis as a grab sample (Table 6-4).
		Effluent Limit:	The average monthly limit should not exceed 0.5 mg/l and/or 1.25 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. However, since the discharge will be diluted by 45 Million Gallons in the Todd reservoir, it is unlikely that there is a water quality concern for TRC in this case. Thus, the existing TBEL limit shall continue to the proposed permit.
Notes:			
1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other			
2 Monitoring frequency based on flow rate of 0.200 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 Toxics

Summary of Proposed NPDES Parameter Details for Toxics			
MA of the Borough of Bedford; PA0087971			
Parameter	Permit Limitation Required by ¹ :	Recommendation	
Aluminum	DEP Guidance Document-Water Treatment Plant Wastes	Monitoring:	The monitoring frequency shall be 2x/mo as an 8-hr composite sample (Table 6-4).
		Effluent Limit:	The performance effluent limit shall not exceed 4.0 mg/l as a monthly average.
		Rationale:	Effluent limits are defined by DEP Guidance Document- Technology-Based Control Requirements for Water Treatment Plant Wastes- Waste Water from Treatment of WTP Sludges and Filter Backwash
Iron	DEP Guidance Document-Water Treatment Plant Wastes	Monitoring:	The monitoring frequency shall be 2x/mo as an 8-hr composite sample (Table 6-4).
		Effluent Limit:	The performance effluent limit shall not exceed 2.0 mg/l as a monthly average.
		Rationale:	Effluent limits are defined by DEP Guidance Document- Technology-Based Control Requirements for Water Treatment Plant Wastes- Waste Water from Treatment of WTP Sludges and Filter Backwash
Manganese	DEP Guidance Document-Water Treatment Plant Wastes	Monitoring:	The monitoring frequency shall be 2x/mo as an 8-hr composite sample (Table 6-4).
		Effluent Limit:	The performance effluent limit shall not exceed 1 mg/l as a monthly average.
		Rationale:	Effluent limits are defined by DEP Guidance Document- Technology-Based Control Requirements for Water Treatment Plant Wastes- Waste Water from Treatment of WTP Sludges and Filter Backwash
Notes:			
1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other			
2 Monitoring frequency based on flow rate of 0.200 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 and permit limits.

6.2.1 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° 1' 22.57", Longitude 78° 31' 25.90", River Mile Index 0.8, Stream Code 15069

Receiving Waters: Unnamed Tributary to Raystown Branch Juniata River (WWF)

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	8.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	1.0	1.25	1/day	Grab
Total Suspended Solids	Report	Report	XXX	30	60	75	2/month	8-Hr Composite
Aluminum, Total	Report	Report	XXX	4.0	8.0	10	2/month	8-Hr Composite
Iron, Total	Report	Report	XXX	2.0	4.0	5	2/month	8-Hr Composite
Manganese, Total	Report	Report	XXX	1.0	2.0	2.5	2/month	8-Hr Composite

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

at Outfall 001

6.3.2 Summary of Proposed Permit Part C Conditions

The subject facility has the following Part C conditions.

- Chlorine Minimization
- Sedimentation Basin Cleaning

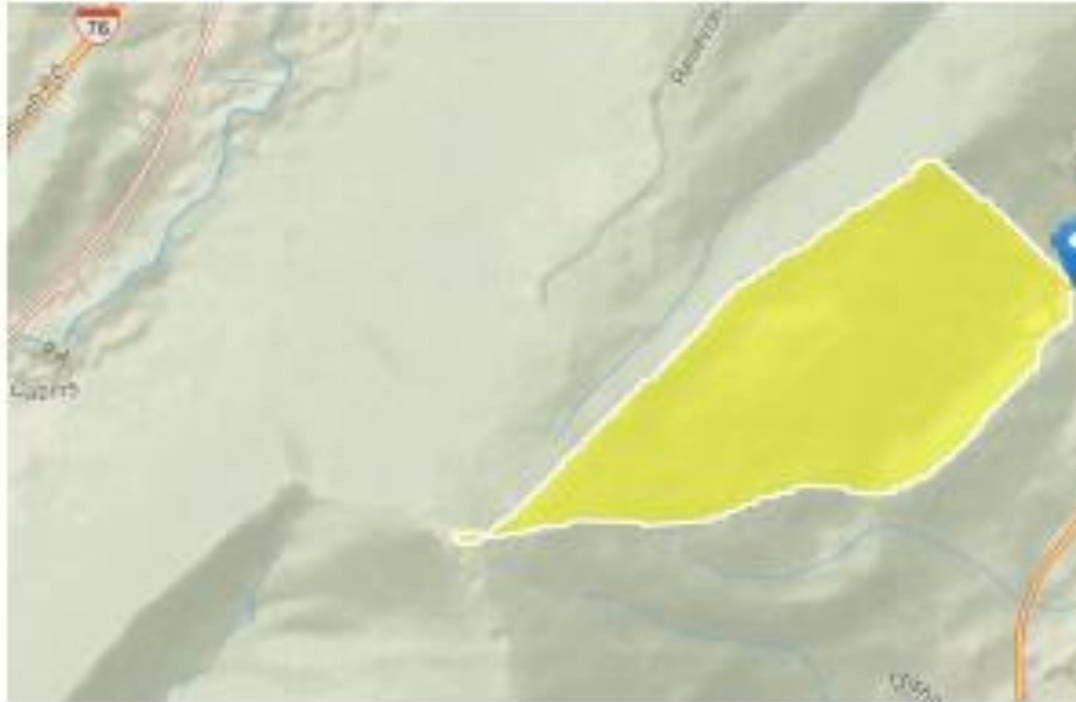
Tools and References Used to Develop Permit	
<input type="checkbox"/>	WQM for Windows Model (see Attachment [redacted])
<input checked="" type="checkbox"/>	PENTOXSD for Windows Model (see Attachment [redacted])
<input type="checkbox"/>	TRC Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Toxics Screening Analysis Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 385-2000-011, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
<input type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Design Stream Flows, 391-2000-023, 9/98.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	SOP: New and Reissuance Industrial Waste and Industrial Stormwater, revised October 31, 2013
<input type="checkbox"/>	Other: [redacted]

Attachment A

Stream Stats/Gauge Data

StreamStats Report

Region ID: PA
Workspace ID: PA20200811173620921000
Clicked Point (Latitude, Longitude): 40.02264, -78.52405
Time: 2020-08-11 13:36:39 -0400



MA of Borough of Bedford PA0087971 Modeling Point #1 August 2020

Basin Characteristics			
Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.72	square miles
ELEV	Mean Basin Elevation	1740.7	feet
CARBON	Percentage of area of carbonate rock	0	percent

Parameter Code	Parameter Description	Value	Unit
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	1	percent
PRECIP	Mean Annual Precipitation	38	inches
STRDEN	Stream Density – total length of streams divided by drainage area	0.21	miles per square mile
ROCKDEP	Depth to rock	4.8	feet

Low-Flow Statistics Parameters (Low Flow Region 2)

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.72	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	38	inches	35	50.4
STRDEN	Stream Density	0.21	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.8	feet	3.32	5.65
CARBON	Percent Carbonate	0	percent	0	99

Low-Flow Statistics Disclaimers (Low Flow Region 2)

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report (Low Flow Region 2)

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.338	ft ³ /s
30 Day 2 Year Low Flow	0.423	ft ³ /s
7 Day 10 Year Low Flow	0.174	ft ³ /s
30 Day 10 Year Low Flow	0.22	ft ³ /s

Statistic	Value	Unit
90 Day 10 Year Low Flow	0.98	ft ³ /s

Low-Flow Statistics Citations

Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

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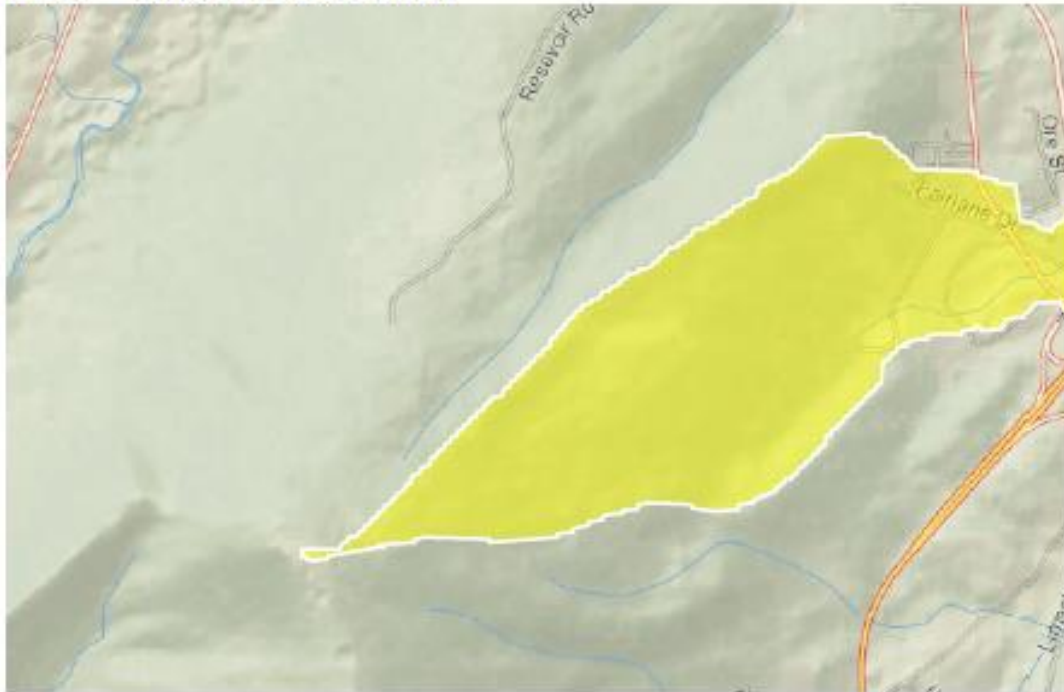
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Application Version: 4.4.0

StreamStats Report

Region ID: PA
 Workspace ID: PA20200811174224968000
 Clicked Point (Latitude, Longitude): 40.02410, -78.50977
 Time: 2020-08-11 13:42:43 -0400



MA of Borough of Bedford PA0087971 Modeling Point #2 August 2020

Basin Characteristics			
Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1	square miles
PRECIP	Mean Annual Precipitation	38	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.02	miles per square mile

Parameter Code	Parameter Description	Value	Unit
ROCKDEP	Depth to rock	4.6	feet
CARBON	Percentage of area of carbonate rock	0	percent

Low-Flow Statistics Parameters^[Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	38	inches	35	50.4
STRDEN	Stream Density	1.02	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.6	feet	3.32	5.65
CARBON	Percent Carbonate	0	percent	0	99

Low-Flow Statistics Disclaimers^[Low Flow Region 2]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report^[Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.105	ft ³ /s
30 Day 2 Year Low Flow	0.146	ft ³ /s
7 Day 10 Year Low Flow	0.0449	ft ³ /s
30 Day 10 Year Low Flow	0.0623	ft ³ /s
90 Day 10 Year Low Flow	0.11	ft ³ /s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

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Application Version: 4.4.0

14 Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania

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 (mi ²)	Regulated ¹
01561000	Brush Creek at Gapsville, Pa.	39.956	-78.254	36.8	N
01562000	Raystown Branch Juniata River at Saxton, Pa.	40.216	-78.265	756	N
01562500	Great Trough Creek near Marklesburg, Pa.	40.350	-78.130	84.6	N
01563200	Raystown Branch Juniata River below Rays Dam nr Huntingdon, Pa.	40.429	-77.991	960	Y
01563500	Juniata River at Mapleton Depot, Pa.	40.392	-77.935	2,030	Y
01564500	Aughwick Creek near Three Springs, Pa.	40.213	-77.925	205	N
01565000	Kishacoquillas Creek at Reedsville, Pa.	40.655	-77.583	164	N
01565700	Little Lost Creek at Oakland Mills, Pa.	40.605	-77.311	6.52	N
01566000	Tuscarora Creek near Port Royal, Pa.	40.515	-77.419	214	N
01566500	Cocolamus Creek near Millerstown, Pa.	40.566	-77.118	57.2	N
01567000	Juniata River at Newport, Pa.	40.478	-77.129	3,354	Y
01567500	Bixler Run near Loysville, Pa.	40.371	-77.402	15.0	N
01568000	Sherman Creek at Shermans Dale, Pa.	40.323	-77.169	207	N
01568500	Clark Creek near Carsonville, Pa.	40.460	-76.751	22.5	LF
01569000	Stony Creek nr Dauphin, Pa.	40.380	-76.907	33.2	N
01569800	Letort Spring Run near Carlisle, Pa.	40.235	-77.139	21.6	N
01570000	Conodoguinet Creek near Hogestown, Pa.	40.252	-77.021	470	LF
01570500	Susquehanna River at Harrisburg, Pa.	40.255	-76.886	24,100	Y
01571000	Paxton Creek near Penbrook, Pa.	40.308	-76.850	11.2	N
01571500	Yellow Breeches Creek near Camp Hill, Pa.	40.225	-76.898	213	N
01572000	Lower Little Swatara Creek at Pine Grove, Pa.	40.538	-76.377	34.3	N
01572025	Swatara Creek near Pine Grove, Pa.	40.533	-76.402	116	N
01572190	Swatara Creek near Inwood, Pa.	40.479	-76.531	167	N
01573000	Swatara Creek at Harper Tavern, Pa.	40.403	-76.577	337	N
01573086	Beck Creek near Cleona, Pa.	40.323	-76.483	7.87	N
01573160	Quittapahilla Creek near Belle Grove, Pa.	40.343	-76.562	74.2	N
01573500	Manada Creek at Manada Gap, Pa.	40.397	-76.709	13.5	N
01573560	Swatara Creek near Hershey, Pa.	40.298	-76.668	483	N
01574000	West Conewago Creek near Manchester, Pa.	40.082	-76.720	510	N
01574500	Codorus Creek at Spring Grove, Pa.	39.879	-76.853	75.5	Y
01575000	South Branch Codorus Creek near York, Pa.	39.921	-76.749	117	Y
01575500	Codorus Creek near York, Pa.	39.946	-76.755	222	Y
01576000	Susquehanna River at Marietta, Pa.	40.055	-76.531	25,990	Y
01576085	Little Conestoga Creek near Churchtown, Pa.	40.145	-75.989	5.82	N
01576500	Conestoga River at Lancaster, Pa.	40.050	-76.277	324	N
01576754	Conestoga River at Conestoga, Pa.	39.946	-76.368	470	N
01578310	Susquehanna River at Conowingo, Md.	39.658	-76.174	27,100	Y
01578400	Bowery Run near Quarryville, Pa.	39.895	-76.114	5.98	N
01580000	Deer Creek at Rocks, Md.	39.630	-76.403	94.4	N
01581500	Bynum Run at Bel Air, Md.	39.541	-76.330	8.52	N
01581700	Winters Run near Benson, Md.	39.520	-76.373	34.8	N
01582000	Little Falls at Blue Mount, Md.	39.604	-76.620	52.9	N
01582500	Gunpowder Falls at Glencoe, Md.	39.550	-76.636	160	Y
01583000	Slade Run near Glyndon, Md.	39.495	-76.795	2.09	N
01583100	Piney Run at Dover, Md.	39.521	-76.767	12.3	N

26 Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania

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 (ft ³ /s)	7-day, 10-year (ft ³ /s)	7-day, 2-year (ft ³ /s)	30-day, 10-year (ft ³ /s)	30-day, 2-year (ft ³ /s)	90-day, 10-year (ft ³ /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

MA of Bedford Borough
PA0087971

April 2021

1A	B	C	D	E	F	G
2	TRC EVALUATION					
3	Input appropriate values in B4:B8 and E4:E7					
4	0.064	= Qstream (cfs)		0.5	= CV Daily	
5	0.2	= 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/BJP 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 = 0.085	1.3.2.iii	WLA_cfc = 0.075	
12	PENTOKSD TRG	5.1a	LTAMULT_afc = 0.373	5.1c	LTAMULT_cfc = 0.581	
13	PENTOKSD TRG	5.1b	LTA_afc = 0.032	5.1d	LTA_cfc = 0.044	
14						
15	Source	Effluent Limit Calculations				
16	PENTOKSD TRG	5.1f	AML MULT = 1.231			
17	PENTOKSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.039	AFC		
18			INST MAX LIMIT (mg/l) = 0.127			
	WLA_afc	$(.019/e^{-k^*AFC_tc}) + [(AFC_Yc^*Qs^*.019/Qd^*e^{-k^*AFC_tc}) \dots + Xd + (AFC_Yc^*Qs^*Xs/Qd)]^{*(1-FOS/100)}$				
	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	$(.011/e^{-k^*CFC_tc}) + [(CFC_Yc^*Qs^*.011/Qd^*e^{-k^*CFC_tc}) \dots + Xd + (CFC_Yc^*Qs^*Xs/Qd)]^{*(1-FOS/100)}$				
	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	$MIN(BAT_BJP, MIN(LTA_afc, LTA_cfc)^*AML_MULT)$				
	INST MAX LIMIT	$1.5^*(av_mon_limi/AML_MULT)/LTAMULT_afc$				