pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0103373**
Facility Type	**Municipal**	APS ID	**1090683**
Major / Minor	**Minor**	Authorization ID	**1443651**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Foxburg Borough Area Water & Sewer Authority**	Facility Name	**Foxburg STP**
Applicant Address	PO Box 2 Foxburg, PA 16036-0002	Facility Address	End of River Road Foxburg, PA 16036-0002
Applicant Contact	Elizabeth Lander, Chairman (elander3433@gmail.com)	Facility Contact	Thomas Thompson, Gannett Fleming, Inc. (tthompson@gfnet.com)
Applicant Phone	(724) 659-3433	Facility Phone	(724) 269-5168
Client ID	65293	Site ID	547946
Ch 94 Load Status	Not Overloaded	Municipality	Foxburg Borough
Connection Status	No Limitations	County	Clarion
Date Application Received	May 30, 2023	EPA Waived?	Yes
Date Application Accepted	June 13, 2023	If No, Reason	-
Purpose of Application	Renewal of an NPDES Permit for an existing discharge of treated sanitary wastewater from an existing municipal STP.		

Summary of Review

Act 14 - Proof of Notification was submitted and received.

A Part II Water Quality Management permit is not required at this time.

The applicant should be able to meet the limits of this permit, which will protect the uses of the receiving stream.

I. OTHER REQUIREMENTS:

A. Stormwater into Sewers
B. Right of Way
C. Solids Handling
D. SBR Batch Discharges

SPECIAL CONDITIONS:

II. Solids Management

There are 16 open violations in efacts associated with the subject Client ID (65293) as of 5/9/2024 (see Attachment 1).

Approve	Deny	Signatures	Date
X		Stephen A. McCauley Stephen A. McCauley, E.I.T. / Environmental Engineering Specialist	5/9/2024
X		Jason Roessing, P.E. Jason Roessing, P.E. / Environmental Engineer Manager	5/20/2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.16
Latitude	41º 8' 13.78"	Longitude	-79º 40' 43.11"
Quad Name	-	Quad Code	-
Wastewater Description:	Sewage Effluent		

Receiving Waters	Allegheny River (WWF)	Stream Code	42122
NHD Com ID	100480095	RMI	86.0
Drainage Area	6,410	Yield (cfs/mi^2)	0.24
Q_{7-10} Flow (cfs)	1,538	Q_{7-10} Basis	calculated
Elevation (ft)	884	Slope (ft/ft)	0.0015
Watershed No.	17-C	Chapter 93 Class.	WWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	-		
Source(s) of Impairment	-		
TMDL Status	-	Name	-

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

Nearest Downstream Public Water Supply Intake	Parker Area Water Authority		
PWS Waters	Allegheny River	Flow at Intake (cfs)	951
PWS RMI	85.0	Distance from Outfall (mi)	2.0

Sludge use and disposal description and location(s): All sludge is disposed of at an approved landfill.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the Pennsylvania Bulletin in accordance with 25 Pa. Code § 92a.82. Upon publication in the Pennsylvania Bulletin, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the Pennsylvania Bulletin at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Narrative: This Fact Sheet details the determination of draft NPDES permit limits for an existing discharge of 0.16 MGD of treated sewage from an existing Publicly Owned Treatment Works (POTW) in Foxburg Borough, Clarion County.

Treatment permitted under WQM Permit 1608402 consists of the following: An influent pump station, a head works building, a dual train concrete Sequential Batch Reactor (SBR) treatment plant, ultraviolet (UV) disinfection, sludge storage, and a sludge dewatering press.

1. Streamflow:

Allegheny River at Franklin, PA - USGS Stream Gage No. 03025500 (1967-2008)

Q_{7-10}:	5,982	cfs	(USGS StreamStats)
Drainage Area:	1,450	sq. mi.	(USGS StreamStats)
Yieldrate:	0.24	cfsm	calculated

Allegheny River at Outfall 001:

Yieldrate:	0.24	cfsm	calculated above
Drainage Area:	6,410	sq. mi.	(USGS StreamStats)
% of stream allocated:	100%	Basis:	No nearby discharges
Q_{7-10}:	1,538	cfs	calculated

2. Wasteflow:

Maximum discharge: 0.16 MGD = 0.24 cfs

Runoff flow period: 24 hours Basis: Runoff flow for municipal STPs

The calculated stream flow (Q7-10) is greater than 3 times the permitted discharge flow. In accordance with the SOP, since this is an existing discharge, the treatment requirements in document number 391-2000-014, titled, "Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers", dated April 12, 2008, were not evaluated for this facility.

Flow will be required to be monitored as authorized under Chapter 92a.61, and as recommended in the SOP.

3. Parameters:

The following parameters were evaluated: pH, Total Suspended Solids, Fecal Coliform, E. Coli, Total Phosphorus, Total Nitrogen, NH_3-N, $CBOD_5$, Dissolved Oxygen, and Disinfection.

a. pH

Between 6.0 and 9.0 at all times

Basis: Application of Chapter 93.7 technology-based limits.

The measurement frequency will remain as 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

b. Total Suspended Solids

Limits are 30.0 mg/l as a monthly average and 60.0 as an instantaneous maximum.

Basis: Application of Chapter 92a47 technology-based limits.

c. Fecal Coliform

05/01 - 09/30:	200/100ml	(monthly average geometric mean)
	1,000/100ml	(instantaneous maximum)
10/01 - 04/30:	2,000/100ml	(monthly average geometric mean)
	10,000/100ml	(instantaneous maximum)

Basis: Application of Chapter 92a47 technology-based limits

d. E. Coli

Monitoring was added for E. Coli at a frequency of 1/quarter.

Basis: Application of Chapter 92a.61 as recommended by the SOP for flows greater than 0.05 MGD and less than 1.0 MGD.

e. Total Phosphorus

Chapter 96.5 does not apply. The previous monitoring for Total Phosphorus will be retained in accordance with the SOP, based on Chapter 92a.61.

f. Total Nitrogen

The previous monitoring for Total Nitrogen will be retained in accordance with the SOP, based on Chapter 92a.61.

g. Ammonia-Nitrogen (NH_3-N)

Median discharge pH to be used:	7.0	Standard Units (S.U.)
		Basis: eDMR data from previous 12 months
Discharge temperature:	25°C	(default value used in the absence of data)
Median stream pH to be used:	7.0	Standard Units (S.U.)
		Basis: default value used in the absence of data
Stream Temperature:	25˚C	(default value used for WWF modeling)
Background NH_3-N concentration:	0.1	mg/l
		Basis: Default value
Calculated NH_3-N Summer limits:	25.0	mg/l (monthly average)
	50.0	mg/l (instantaneous maximum)
Calculated NH_3-N Winter limits:	25.0	mg/l (monthly average)
	50.0	mg/l (instantaneous maximum)

Result: WQ modeling resulted in the summer limits above (see Attachment 2). The winter limits are calculated as three times the summer limits, but since the technology-based limits would govern, they will be used. The calculated limits are the same as the previous permit and per the SOP, since the technology-based limits are recommended for NH3-N, the previous year long monitoring will be retained.

h. $CBOD_5$

Median discharge pH to be used: 7.0 Standard Units (S.U.)

Basis: eDMR data from previous 12 months

Discharge temperature: 25°C (default value used in the absence of data)

Median stream pH to be used: 7.0 Standard Units (S.U.)

Basis: default value used in the absence of data

Stream Temperature: 25˚C (default value used for WWF modeling)

Background $CBOD_5$ concentration: 2.0 mg/l

Basis: Default value

Calculated $CBOD_5$ limits: 25.0 mg/l (monthly average)
50.0 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the summer limits above (see Attachment 2). The calculated limits are the same as the previous permit and will be retained.

i. Influent Total Suspended Solids and BOD_5

Monitoring for these two parameters will be retained as recommended in the SOP for POTWs, as authorized under Chapter 92a.61.

j. Dissolved Oxygen (DO)

The technology-based minimum of 4.0 mg/l is recommended by the WQ Model (see Attachment 2) and the SOP based on Chapter 93.7, under the authority of Chapter 92a.61. This is the same as the previous permit and will be retained.

The measurement frequency will remain as 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

k. Disinfection

☒ Ultraviolet (UV) light monitoring

☐ TRC limits: _____ mg/l (monthly average)
_____ mg/l (instantaneous maximum)

Basis: Monitoring for UV light intensity (mW/cm^2) will be retained with this renewal.

The measurement frequency will remain as 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

4. Reasonable Potential Analysis for Receiving Stream:

A Reasonable Potential Analysis was performed in accordance with State practices for Outfall 001 using the Department's Toxics Management Spreadsheet (see Attachment 2).

Result: None of the parameters sampled were found to have discharge values greater than 10% of the calculated WQBELs.

5. Reasonable Potential for Downstream Public Water Supply (PWS):

The Department's Toxics Management Spreadsheet does not calculate limits for parameters that are based on PWS criteria (TDS, Chloride, Bromide, and Sulfate).

Nearest Downstream potable water supply (PWS): Parker Area Water Authority

Distance downstream from the point of discharge: 2.0 miles

Parameter	PWS Criteria (mg/l)	Discharge Maximum (mg/l)
TDS	500	283
Chloride	250	63.7
Bromide	1.0	0.103
Sulfate	250	36.1

Result: Since none of the parameters are discharged at a concentration greater than the criteria at the PWS, no limits or monitoring are necessary as significant dilution is available.

6. Flow Information:

The Foxburg STP receives 56% of its flow from the Foxburg Borough and 44% of its flow from the Richland Township. Both of the municipalities are 100% separate sewer systems.

7. Antibacksliding:

Since all the permit limits in this renewal are the same or more restrictive than the previous NPDES Permit, anti-backsliding is not applicable.

8. Attachment List:

Attachment 1 - Open Violations by Client

Attachment 2 - WQ Modeling Printouts

Attachment 3 - Toxics Management Spreadsheet

Attachment 4 - Mussel Impact Evaluation Spreadsheet

(The Attachments above can be found at the end of this document)

Compliance History

DMR Data for Outfall 001 (from February 1, 2023 to January 31, 2024)

Parameter	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23
Flow (MGD) Average Monthly	0.088	0.045	0.039	0.038	0.042	0.040	0.047	0.033	0.040	0.050	0.078	0.047
pH (S.U.) Instantaneous Minimum	6.9	7.0	7.0	6.8	6.6	6.8	6.9	6.8	6.6	6.5	6.6	6.7
pH (S.U.) Instantaneous Maximum	7.4	7.4	7.4	7.3	7.4	7.3	7.5	7.3	7.2	7.0	7.1	7.8
DO (mg/L) Instantaneous Minimum	7.3	5.9	5.7	6.1	5.3	5.8	4.1	4.2	4.3	4.3	4.9	5.9
CBOD5 (lbs/day) Average Monthly	1	2	1	1	1	3	< 1	2	2	7	< 1	< 1
CBOD5 (lbs/day) Weekly Average	2	2	1	2	2	3	< 1	2	2	10	< 2	< 1
CBOD5 (mg/L) Average Monthly	2.4	3.5	3.4	4.9	3.0	8.0	< 2.0	8.2	4.7	15.6	< 2.0	< 2.0
CBOD5 (mg/L) Weekly Average	2.8	4.8	3.6	5.5	3.7	10.1	< 2.0	8.8	5.4	25.7	< 2.0	< 2.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	46	64	49	54	54	43	68	51	84	84	51	48
BOD5 (mg/L) Raw Sewage Influent Average Monthly	100	139	136	195	145	133	165	213	230	187	97	154
TSS (lbs/day) Average Monthly	< 4	< 3	< 2	1	< 2	< 3	4	< 1	< 2	< 7	< 3	< 2
TSS (lbs/day) Raw Sewage Influent Average Monthly	41	61	56	62	66	34	45	41	68	94	76	50
TSS (lbs/day) Weekly Average	4	< 3	< 2	2	2	3	4	2	< 2	12	< 4	< 2
TSS (mg/L) Average Monthly	< 6.0	< 5.0	< 5.0	4.9	< 5.5	< 7.5	10.0	< 5.5	< 5.0	< 17.5	< 5.0	< 5.0
TSS (mg/L) Raw Sewage Influent Average Monthly	89	134	161	223	177	107	109	174	185	204	153	163
TSS (mg/L) Weekly Average	7.0	< 5.0	< 5.0	5.5	6.0	10.0	10.0	6.0	< 5.0	30.0	< 5.0	< 5.0
Fecal Coliform (No./100 ml) Geometric Mean	15	< 6	6	88	26	30	11	< 21	< 20	< 96	< 7	< 1

Fecal Coliform (No./100 ml) Instantaneous Maximum	2420	32	23	2897	53	199	304	112	306	2420	2420	1
UV Intensity (mW/cm²) Average Monthly	14	14	14	14	14	14	14	14	14	14	14	14
Total Nitrogen (mg/L) Average Quarterly		13.2			16.5			4.23			14.5	
Ammonia (mg/L) Average Monthly	< 0.4	< 0.4	< 0.4	< 0.4	0.4	< 0.4	< 0.8	< 4.5	< 0.4	< 3.31	< 0.8	< 0.8
Total Phosphorus (mg/L) Average Quarterly		8.3			2.1			0.92			0.43	
Total Nickel (ug/L) Average Quarterly		0.008			0.005			0.005			< 0.005	
Chloride (mg/L) Average Monthly	51.9	56.0	70.6	93.6	81.2	73.4	51.6	90.2	84.2	39.9	44.4	63.7

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5	33.0	53.0	XXX	25.0	40.0	50	2/month	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TSS	40.0	60.0	XXX	30.0	45.0	60	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
UV Intensity (mW/cm^2)	XXX	XXX	XXX	Report	XXX	XXX	1/day	Measured
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite

Outfall 001, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Dissolved ZInc (ug/L)	XXX	XXX	XXX	Report Avg Qrtly	Report Daily Max	XXX	1/quarter	Grab

Compliance Sampling Location: at Outfall 001, after ultraviolet (UV) light disinfection.

Flow is monitor only based on Chapter 92a.61. The limits for pH and Dissolved Oxygen are technology-based on Chapter 93.7. The limits for CBOD5, Total Suspended Solids, and Fecal Coliform are technology based on Chapter 92a.47. Monitoring for influent BOD5 and influent Total Suspended Solids is based on Chapter 92a.61. Monitoring for E. Coli, UV Intensity, Total Nitrogen, Ammonia, Total Phosphorus, and Dissolved Zinc is based on Chapter 92a.61.

Threatened and Endangered Mussel Species Concerns and Considerations

The Allegheny River is known to contain state and federally listed threatened and endangered mussel species. Due to this being a direct discharge to the Allegheny River, potential impacts were evaluated.

The USFWS has indicated that to protect threatened and endangered mussel species, wastewater discharges containing Ammonia-Nitrogen (NH_3-N), Chloride (Cl^-), Dissolved Nickel, and Dissolved Zinc, where mussels or their habitat exist, can be no more than 1.9 mg/l, 78 mg/l, 7.3 µg/l, and 13.18 µg/l, respectively.

Since this facility was previously identified, the sampling below was collected for Ammonia-Nitrogen, Chloride, and Nickel.

Sampling Data for USFWS Parameters of Concern	
Parameter	Sampling Data
Ammonia-Nitrogen (NH_3-N) (mg/L)	1.35 avg. / 4.5 max. (24 samples - eDMR)
Chloride (mg/L)	66.3 avg. / 96.3 max. (24 samples - eDMR)
Total Nickel (µg/L)	0.0055 avg. / 0.008 max. (8 samples - eDMR)
Total Zinc (µg/L)	61.0 max. (1 sample - Renewal Application 6/20/2023)

The Department required monitoring during the previous NPDES Permit period for Ammonia-Nitrogen, Chloride, and Total Nickel to determine the discharge concentrations for each parameter.

Based on the reported sampling data, and the Mussel Impact Evaluation Spreadsheet calculations (see Attachment 4), the Department has determined that the discharge concentrations of Ammonia-Nitrogen, Chloride, and Total Nickel do not show a reasonable potential to cause harm to mussels in the receiving stream. This discharge consists of only treated sewage, and the Department doesn't anticipate any significant changes or variations in the wastestream in the upcoming permit cycle. In addition, any planned changes to the wastestream must be coordinate with DEP. Therefore, mussel-related monitoring for Ammonia-Nitrogen, Chloride, and Total Nickel will be removed with this renewal. Per the SOP, Ammonia-Nitrogen monitoring will continue per the SOP since this is a municipal sewage discharge.

The only data available for Total Zinc was from 1 sample submitted with the NPDES Permit renewal. Since Zinc was not required to be monitored in the previous NPDES Permit, the Department has decided to require quarterly monitoring with this renewal. In addition, the monitoring will be for Dissolved Zinc since that is the parameter of concern for mussels as indicated by the USFWS.

Attachment 1

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

WATER MANAGEMENT SYSTEM
OPEN VIOLATIONS BY CLIENT

Client ID: 65293
Client: All

Open Violations: 16

	CLIENT ID	CLIENT	PF ID	FACILITY	PF KIND	PF STATUS	INSP PROGRAM	PROGRAM SPECIFIC ID
1	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
2	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
3	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
4	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
5	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
6	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
7	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
8	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
9	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
10	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
11	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
12	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
13	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
14	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
15	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004
16	65293	FOXBURG BORO AREA WATER & SEW AUTH	282926	FOXBURG AREA WATER & SEWER AUTH	Community	Active	Safe Drinking Water	6160004

	INSP ID	VIOLATION ID	INSPECTION CATEGORY	VIOLATION DATE	VIOLATION CODE	VIOLATION	PF INSPECTOR	INSP REGION
1	3494964	983154	PF	01/26/2023	C4A	FAILURE TO OPERATE AND MAINTAIN THE WATER SYSTEM	MUMFORD, MIRANDA	NWRO
2	3494964	983155	PF	01/26/2023	C1A	FAILURE TO MEET DESIGN AND CONSTRUCTION STANDARDS	MUMFORD, MIRANDA	NWRO
3	3494964	983156	PF	01/26/2023	D6E	FAILURE OF A CWS TO DEVELOP AND/OR UPDATE AN EMERGENCY RESPONSE PLAN	MUMFORD, MIRANDA	NWRO
4	3494964	983157	PF	01/26/2023	C1A	FAILURE TO MEET DESIGN AND CONSTRUCTION STANDARDS	MUMFORD, MIRANDA	NWRO
5	3494964	983158	PF	01/26/2023	B6A	OTHER VIOLATIONS DEEMED TO BE SIGNIFICANT DEFICIENCIES	MUMFORD, MIRANDA	NWRO
6	3494964	983159	PF	01/26/2023	C1A	FAILURE TO MEET DESIGN AND CONSTRUCTION STANDARDS	MUMFORD, MIRANDA	NWRO
7	3494964	983160	PF	01/26/2023	C1A	FAILURE TO MEET DESIGN AND CONSTRUCTION STANDARDS	MUMFORD, MIRANDA	NWRO
8	3494964	983161	PF	01/26/2023	C4A	FAILURE TO OPERATE AND MAINTAIN THE WATER SYSTEM	MUMFORD, MIRANDA	NWRO
9	3494964	983163	PF	01/26/2023	B6A	OTHER VIOLATIONS DEEMED TO BE SIGNIFICANT DEFICIENCIES	MUMFORD, MIRANDA	NWRO
10	3494964	983164	PF	01/26/2023	C4A	FAILURE TO OPERATE AND MAINTAIN THE WATER SYSTEM	MUMFORD, MIRANDA	NWRO
11	3494964	983165	PF	01/26/2023	B6A	OTHER VIOLATIONS DEEMED TO BE SIGNIFICANT DEFICIENCIES	MUMFORD, MIRANDA	NWRO
12	3494964	983166	PF	01/26/2023	B6A	OTHER VIOLATIONS DEEMED TO BE SIGNIFICANT DEFICIENCIES	MUMFORD, MIRANDA	NWRO
13	3494964	983167	PF	01/26/2023	C4A	FAILURE TO OPERATE AND MAINTAIN THE WATER SYSTEM	MUMFORD, MIRANDA	NWRO
14	3494964	983168	PF	01/26/2023	B6A	OTHER VIOLATIONS DEEMED TO BE SIGNIFICANT DEFICIENCIES	MUMFORD, MIRANDA	NWRO
15	3751048	8184370	PF	04/24/2024	C6A	FAILURE TO PROVIDE REASONABLE NOTICE TO AFFECTED CUSTOMERS PRIOR TO A PLANNED SERVICE INTERRUPTION OR FAILURE TO NOTIFY THE DEPARTMENT OF PLANNED INTERRUPTIONS EXCEEDING 8 HOURS AND AFFECTING 15 OR MORE SERVICE CONNECTIONS.	MUMFORD, MIRANDA	NWRO
16	3751048	8184371	PF	04/24/2024	B6A	OTHER VIOLATIONS DEEMED TO BE SIGNIFICANT DEFICIENCIES	MUMFORD, MIRANDA	NWRO

Attachment 2

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
18A	42122	ALLEGHENY RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
86.000	Foxburg STP	PA0103373	0.160	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
18A	42122	ALLEGHENY RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
86.000	0.160	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
882.408	1.000	882.633	1.744
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.00	0.003	0.00	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.539	5.338	Tsivoglou	5
Reach Travel Time (days)			
0.046			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.005	2.00	0.00	7.54
0.009	2.00	0.00	7.54
0.014	2.00	0.00	7.54
0.018	2.00	0.00	7.54
0.023	2.00	0.00	7.54
0.027	2.00	0.00	7.54
0.032	2.00	0.00	7.54
0.036	2.00	0.00	7.54
0.041	2.00	0.00	7.54
0.046	2.00	0.00	7.54

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
18A	42122	ALLEGHENY RIVER	**86.000**	855.00	6410.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.240	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Foxburg STP	PA0103373	0.1600	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	7.54	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
18A	42122	ALLEGHENY RIVER	**84.700**	851.00	6410.10	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.240	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
18A	42122	ALLEGHENY RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
86.000	1538.40	0.00	1538.40	.2475	0.00058	1	882.41	882.63	1.74	0.046	25.00	7.00
Q1-10 Flow												
86.000	984.58	0.00	984.58	.2475	0.00058	NA	NA	NA	1.36	0.058	25.00	7.00
Q30-10 Flow												
86.000	2092.22	0.00	2092.22	.2475	0.00058	NA	NA	NA	2.07	0.038	25.00	7.00

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
18A	42122	ALLEGHENY RIVER

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
86.000	Foxburg STP	11.07	50	11.07	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
86.000	Foxburg STP	1.37	25	1.37	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
86.00	Foxburg STP	25	25	25	25	4	4	0	0

Attachment 3

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Foxburg STP** NPDES Permit No.: **PA0103373** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Minor Municipal Sewage**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.16	100	7						

					0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		283									
	Chloride (PWS)	mg/L		63.7									
	Bromide	mg/L		0.103									
	Sulfate (PWS)	mg/L		36.1									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L											
	Total Antimony	µg/L	<										
	Total Arsenic	µg/L	<										
	Total Barium	µg/L											
	Total Beryllium	µg/L	<										
	Total Boron	µg/L											
	Total Cadmium	µg/L	<										
	Total Chromium (III)	µg/L	<										
	Hexavalent Chromium	µg/L	<										
	Total Cobalt	µg/L											
	Total Copper	µg/L	<	5									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L	<	5									
	Total Manganese	µg/L											
	Total Mercury	µg/L	<										
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L	<										
	Total Silver	µg/L	<										
	Total Thallium	µg/L	<										
	Total Zinc	µg/L		61									
	Total Molybdenum	µg/L	<										
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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

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

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Foxburg STP, NPDES Permit No. PA0103373, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Allegheny River**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	042122	86	855	6410			Yes
End of Reach 1	042122	84.7	851	6410.1			Yes

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

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	86	0.24										100	7		
End of Reach 1	84.7	0.24													

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	86														
End of Reach 1	84.7														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Foxburg STP, NPDES Permit No. PA0103373, Outfall 001

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

☑ ***Hydrodynamics***

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

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
86	1538.40		1538.40	0.248	0.00058	1.	882.408	882.633	1.744	0.046	44213.15
84.7	1538.42		1538.424								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
86	4534.06		4534.06	0.248	0.00058	1.608	882.408	548.601	3.195	0.025	21669.97
84.7	4534.123		4534.12								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.018 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	13.439	14.0	1,617	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	9,428	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	13,836	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 720 PMF: 0.128 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc	Stream	Trib Conc	Fate	WQC	WQ Obj	WLA (ug/L)	Comments

Pollutants	Conc (µg/L)	CV	(µg/L)	Coef	(µg/L)	(µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	8.956	9.33	7,408	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	2,527	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	95,151	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 720 PMF: 0.128 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 720 PMF: 0.182 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

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

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Copper	1,036	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	2,527	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	8,869	µg/L	Discharge Conc ≤ 10% WQBEL

Attachment 4

Facility:	Foxburg STP		
Permit Number:	PA0103373	Effective: N/A	Expiration: N/A
Outfall No:	001		
Location:	Foxburg Borough, Clarion County		
Discharge to:	Allegheny River		
Site Specific Mussel Survey Completed:	Yes (2013 survey determined no impact)		

Discharge and Stream Characteristics			Comments
Q_S	Stream Flow	414 MGD / 641 cfs	Fact Sheet
Q_D	Discharge Flow	0.16 MGD / 0.24759 cfs	Fact Sheet
$C_{S(Cl^-)}$	Instream chloride Concentration	17.37 mg/L	WQN #867 (3/2005 - 10/2016)
$C_{E(Cl^-)}$	Discharge chloride (existing)	96.3 mg/L	From renewal application - Max of 24 samples
$C_{P(Cl^-)}$	Discharge chloride (proposed)	96.3 mg/L	From renewal application - Max of 24 samples
$C_{S(Ni)}$	Instream nickel Concentration	0.03 µg/L	Assumed - No WQN data below the criteria of 7.3 µg/L (reported at < 50)
$C_{E(Ni)}$	Discharge nickel (existing)	0.008 µg/L	From renewal application - Max of 8 samples
$C_{P(Ni)}$	Discharge nickel (proposed)	0.008 µg/L	From renewal application - Max of 8 samples
$C_{S(Zn)}$	Instream zinc Concentration	0 µg/L	No data
$C_{E(Zn)}$	Discharge zinc (existing)	61 µg/L	From renewal application - Max of 24 samples
$Zn_{P(Cl^-)}$	Discharge zinc (proposed)	61 µg/L	From renewal application - Max of 24 samples
$C_{S(NH3-N)}$	Instream NH^3-N	0.03 mg/L	WQN #867 (3/2005 - 10/2016)
$C_{E(NH3-N)}$	Discharge NH^3-N (existing)	4.5 mg/L	From renewal application - Max of 24 samples
$C_{P(NH3-N)}$	Discharge NH^3-N (proposed)	4.5 mg/L	From renewal application - Max of 24 samples
pH_S	Instream pH	7.93 S.U.	WQN #867 (3/2005 - 10/2016) - Field Data
T_S	Instream Temp.	25 °C	Default value for a WWF
$C_{C(NH3-N)}$	Ammonia criteria	0.621 mg/L	From ammonia criteria comparison spreadsheet -using instream pH and Temp
$C_{C(Cl^-)}$	Chloride criteria	78 mg/L	USFWS criteria
$C_{C(Ni)}$	Nickel criteria	7.3 µg/L	USFWS criteria
$C_{C(Zn)}$	Zinc criteria	13.18 µg/L	USFWS criteria
W_S	Stream width	185 meters	Google Earth

Ammonia Criteria Calculations:

	pH_S	7.93	S.U.	*(Default value is 7.0)*
	T_S	25	°C	*(Default value is 20 °)*

Acute Criteria

	METHOD and UNITS	CRITERIA	Comments	
	Old CMC (mg TAN/L) =	2.103		
	EPA 2013 CMC (mg TAN/L) =	2.941	Oncorhynchus present	* formula on pg. 41 (plateaus at 15.7 C)
		2.941	Oncorhynchus absent	* formula on pg. 42 (plateaus at 10.2 C)

Chronic Criteria

	METHOD and UNITS	CRITERIA	COMMENTS
	Old CMC (mg TAN/L) =	0.541	
$C_{C(NH3-N)}$	EPA 2013 CMC (mg TAN/L) =	0.621	* formula on pg. 46 (plateaus at 7 C)

Endangered Mussel Species Impact Area Calculations:

Existing Area of Impact

☑ N/A - No Site Specific Mussel Survey Completed for this Discharger

Approximate Area of Impact Determined from Survey =	N/A m^2	(Enter N/A if no site specific survey has been completed)
Existing Mussel Density within Area of Impact =		
Rabbitsfoot *(Quadrula cylindrical)*	N/A per m^2	
Northern Riffleshell *(Epioblasma torulosa rangiana)*	N/A per m^2	
Rayed Bean *(Villosa fabalis)*	N/A per m^2	
Clubshell *(Pleurobema clava)*	N/A per m^2	
Sheepnose *(Plethobasus cyphyus)*	N/A per m^2	
Snuffbox *(Epioblasma triquetra)*	N/A per m^2	
TOTAL	0 per m^2	

Method 1 - Utilizing Site Specific Mussel Survey Information

☑ N/A - No Site Specific Mussel Survey Completed for this Discharger

This method utilizes a simple comparison of the size of the existing area of impact as determined from a site specific mussel survey and the chlorides in the existing discharge compared to the chlorides in the proposed discharge after the facility upgrades treatment technologies. This method is only applicable to where the stream impairment is caused by TDS and/or chlorides as the plume has been delineated through conductivity measurements.

A.	Area of Impact Determined from Survey:	N/A	m^2
B.	Chlorides in Existing Discharge:		96 mg/L
C.	Chlorides in Proposed Discharge after Treatment Facility Upgrades:		96.3 mg/L
D.	Approximate Area of Impact after Treatment Facility Upgrades:		N/A m^2

A/B = D/C Therefore, D = (A*C)/B

Endangered Mussel Species Impact Area Calculations: (continued…)

Method 2 - Mass Balance Relationship of Loading and Assimilative Capacity of Stream

Chloride (Cl⁻)	$L_{S(Cl^-)}$ = Available Chloride Loading in Stream = $C_{C(Cl^-)}$ - $C_{S(Cl^-)}$ X Q_S(MGD) X 8.34 =	209,341 lbs/Day
	$L_{D\text{-}MAX(Cl^-)}$ = Current Maximium Discharge Chloride Loading exceeding criteria = ($C_{E(CL^-)}$ - $C_{E(CL^-)}$) X Q_D(MGD) X 8.34 =	24 lbs/Day
	$\%_{E(C^-)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Cl^-)}$ / $L_{S(C^-)}$ =	0% of Stream Capacity
	$L_{D(Cl^-)}$ = Proposed Discharge Cl^- Loading exceeding criteria after Treatment Facility Upgrades = ($C_{P(Cl^-)}$ - $C_{P(Cl^-)}$) X Q_D(MGD) X 8.34 =	24.41952 lbs/Day
	$\%_{P(C^-)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Cl^-)}$ / $L_{S(Cl^-)}$ =	0.01% of Stream Capacity
	Proposed Area of Impact due to Chloride * = $(\%_{P(C^-)} X W_S)^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.0002 m^2
Nickel(Ni)	$L_{S(Ni)}$ = Available Nickel Loading in Stream = $C_{C(Ni)}$ - $C_{S(Ni)}$ X Q_S(MGD) X 8.34 =	25,102 lbs/Day
	$L_{D\text{-}MAX(Ni)}$ = Current Maximium Discharge Nickel Loading exceeding criteria = ($C_{E(Ni)}$ - $C_{E(Ni)}$) X Q_D(MGD) X 8.34 =	-10 lbs/Day
	$\%_{E(Ni)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Ni)}$ / $L_{S(Ni)}$ =	0% of Stream Capacity
	$L_{D(Ni)}$ = Proposed Discharge Ni Loading exceeding criteria after Treatment Facility Upgrades = ($C_{P(Ni)}$ - $C_{P(Ni)}$) X Q_D(MGD) X 8.34 =	-9.7304448 lbs/Day
	$\%_{P(Ni)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Ni)}$ / $L_{S(Ni)}$ =	-0.04% of Stream Capacity
	Proposed Area of Impact due to Nickel * = $(\%_{P(Ni)} X W_S)^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.0026 m^2
Zinc (Zn)	$L_{S(Zn)}$ = Available Zinc Loading in Stream = $C_{C(Zn)}$ - $C_{S(Zn)}$ X Q_S(MGD) X 8.34 =	45,507 lbs/Day
	$L_{D\text{-}MAX(Zn)}$ = Current Maximium Discharge Zinc Loading exceeding criteria = ($C_{E(Zn)}$ - $C_{E(Zn)}$) X Q_D(MGD) X 8.34 =	64 lbs/Day
	$\%_{E(Zn)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Zn)}$ / $L_{S(Zn)}$ =	0% of Stream Capacity
	$L_{D(Zn)}$ = Proposed Discharge Zn Loading exceeding criteria after Treatment Facility Upgrades = ($C_{P(Zn)}$ - $C_{P(Zn)}$) X Q_D(MGD) X 8.34 =	63.811008 lbs/Day
	$\%_{P(Zn)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Zn)}$ / $L_{S(Zn)}$ =	0.14% of Stream Capacity
	Proposed Area of Impact due to Zinc * = $(\%_{P(Zn)} X W_S)^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.0336 m^2
Ammonia-Nitrogen (NH3-N)	$L_{S(NH3\text{-}N)}$ = Available NH3-N Loading in Stream = $C_{C(NH3\text{-}N)}$ - $C_{S(NH3\text{-}N)}$ X Q_S(MGD) X 8.34 =	2,041 lbs/Day
	$L_{D\text{-}MAX(NH3\text{-}N)}$ = Current Maximium Discharge NH3-N Loading = $C_{E(NH3\text{-}N)}$ X Q_D(MGD) X 8.34 =	6 lbs/Day
	$\%_{E(NH3\text{-}N)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(NH3\text{-}N)}$ / $L_{S(NH3\text{-}N)}$ =	0% of Stream Capacity
	$L_{D(N\text{-}H3\text{-}N)}$ = Proposed Discharge NH3-N Loading after Treatment Facility Upgrades = $C_{P(NH3\text{-}N)}$ - $C_{C(N\text{-}H3\text{-}N)}$ X Q_D(MGD) X 8.34 =	5 lbs/Day
	$\%_{P(NH3\text{-}N)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(NH3\text{-}N)}$ / $L_{S(NH3\text{-}N)}$ =	0.24% of Stream Capacity
	Proposed Area of Impact due to NH3-N * = $(\%_{P(NH3\text{-}N)} X W_S)^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.1027 m^2

Endangered Mussel Species Impact Area Calculations: (continued…)

Method 3 - Mass Balance Relationship of Stream Flow, Proposed Effluent Quality, and Mussel Protection Criteria

Chloride (Cl⁻)	$Q_{A(C^-)}C_{S(Cl^-)} + Q_DC_{P(C^-)} = Q_TC_{C(Cl^-)}$	
	$Q_{A(Cl^-)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(C^-)}C_{S(Cl^-)} + Q_DC_{P(C^-)} = (Q_D+Q_S)C_{C(Cl^-)}$	
	SOLVING FOR $\mathbf{Q_{A(Cl^-)}} = [(Q_DC_{P(C^-)} / C_{C(Cl^-)}) - Q_D)] / (1 - C_{S(C^-)}/C_{C(Cl^-)}) =$	0.07473028 cfs
	$\%_{P(C^-)}$ = Percent of Stream Width Required to Assimilate Chlorides to Criteria Concentration = $Q_{A(Cl^-)} / Q_S$ (cfs) =	0.0117%
	$W_{I(C^-)}$ = Proposed Width of Stream required to Assimilate Chlorides to Criteria Concentration = $W_S X \%_{P(Cl^-)}$	0.021568 meters
	Proposed Area of Impact due to Chloride * = $(W_{I(Cl^-)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.0002 m^2
Nickel (Ni)	$Q_{A(Ni)}C_{S(Ni)} + Q_DC_{P(Ni)} = Q_TC_{C(Ni)}$	
	$Q_{A(Ni)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Ni)}C_{S(Ni)} + Q_DC_{P(Ni)} = (Q_D+Q_S)C_{C(Ni)}$	
	SOLVING FOR $\mathbf{Q_{A(Ni)}} = [(Q_DC_{P(Ni)} / C_{C(Ni)}) - Q_D)] / (1 - C_{S(Ni)}/C_{C(Ni)}) =$	-0.2483392 cfs
	$\%_{P(C^-)}$ = Percent of Stream Width Required to Assimilate Nickel to Criteria Concentration = $Q_{A(Ni)} / Q_S$ (cfs) =	-0.0387%
	$W_{I(Ni)}$ = Proposed Width of Stream required to Assimilate Nickel to Criteria Concentration = $W_S X \%_{P(Ni)}$	-0.071674 meters
	Proposed Area of Impact due to Nickel * = $(W_{I(Ni)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.0026 m^2
Zinc (Zn)	$Q_{A(Zn)}C_{S(Zn)} + Q_DC_{P(Zn)} = Q_TC_{C(Zn)}$	
	$Q_{A(Zn)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Zn)}C_{S(Zn)} + Q_DC_{P(Zn)} = (Q_D+Q_S)C_{C(Zn)}$	
	SOLVING FOR $\mathbf{Q_{A(Zn)}} = [(Q_DC_{P(Zn)} / C_{C(Zn)}) - Q_D)] / (1 - C_{S(Zn)}/C_{C(Zn)}) =$	0.89831212 cfs
	$\%_{P(C^-)}$ = Percent of Stream Width Required to Assimilate Zinc to Criteria Concentration = $Q_{A(Zn)} / Q_S$ (cfs) =	0.1401%
	$W_{I(Zn)}$ = Proposed Width of Stream required to Assimilate Zinc to Criteria Concentration = $W_S X \%_{PZn)}$	0.259263 meters
	Proposed Area of Impact due to Chloride * = $(W_{I(Cl^-)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.0336 m^2

Ammonia-Nitrogen (NH3-N)	$Q_{A(NH3\text{-}N)}C_{S(NH3\text{-}N)} + Q_D C_{P(NH3\text{-}N)} = Q_T C_{C(NH3\text{-}N)}$	
	$Q_{A(NH3\text{-}N)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(NH3\text{-}N)}C_{S(NH3\text{-}N)} + Q_D C_{P(NH3\text{-}N)} = (Q_D+Q_S)C_{C(NH3\text{-}N)}$	
	SOLVING FOR $\mathbf{Q_{A(NH3\text{-}N)}} = [(Q_D C_{P(NH3\text{-}N)} / C_{C(NH3\text{-}N)}) - Q_D)] / (1 - C_{S(NH3\text{-}N)}/C_{C(NH3\text{-}N)})$ =	1.625045 cfs
	$\%_{P(NH3\text{-}N)}$ = Percent of Stream Width Required to Assimilate NH3-N to Criteria Concentration = $Q_{A(NH3\text{-}N)} / Q_S$ (cfs) =	0.2535%
	$W_{I(NH3\text{-}N)}$ = Proposed Width of Stream required to Assimilate NH3-N to Criteria Concentration = $W_S \times \%_{P(NH3\text{-}N)}$	0.469007 meters
	Proposed Area of Impact due to NH3-N * = $(W_{I(NH3\text{-}N)})^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.1100 m^2