pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0221708**
Facility Type	**Municipal**	APS ID	**1039735**
Major / Minor	**Minor**	Authorization ID	**1356009**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Chicora Borough Sewer Authority**	Facility Name	**Chicora Borough STP**
Applicant Address	PO Box 35, 110 Firehouse Cartway	Facility Address	219 Chicora-Fenelton Road
	Chicora, PA 16025		Chicora, PA 16025
Applicant Contact	Timothy McGregor	Facility Contact	Timothy McGregor
Applicant Phone	(724) 355-4905	Facility Phone	(724) 355-4905
Client ID	44842	Site ID	251178
Ch 94 Load Status	Not Overloaded	Municipality	Chicora Borough
Connection Status	No Limitations	County	Butler County
Date Application Received	May 28, 2021	EPA Waived?	Yes
Date Application Accepted	June 1, 2021	If No, Reason	-
Purpose of Application	Renewal of the NPDES Permit for an existing discharge of treated sanitary wastewater from a municipal sewer system.		

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. Limited Assimilative Capacity/Dilution
E. Batch discharge

SPECIAL CONDITIONS:

II. Solids Management

There is 1 open violation in efacts associated with the subject Client ID (44842) as of 3/17/2022 (see Attachment 3).

Approve	Deny	Signatures	Date
X		Stephen A. McCauley Stephen A. McCauley, E.I.T. / Environmental Engineering Specialist	3/17/2022
X		Justin C. Dickey Justin C. Dickey, P.E. / Environmental Engineer Manager	3/18/2022

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.201
Latitude	40º 56' 30.00"	Longitude	-79º 44' 1.00"
Quad Name	-	Quad Code	-
Wastewater Description:	Sewage Effluent		
Receiving Waters	Buffalo Creek (HQ-CWF)	Stream Code	42557
NHD Com ID	123970926	RMI	33.5
Drainage Area	7.36	Yield (cfs/mi^2)	0.047
Q_{7-10} Flow (cfs)	0.34	Q_{7-10} Basis	calculated
Elevation (ft)	1133	Slope (ft/ft)	0.0037
Watershed No.	18-F	Chapter 93 Class.	HQ-CWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired*		
Cause(s) of Impairment	Nutrients, Siltation		
Source(s) of Impairment	Municipal Point Source Discharges, On-site Treatment Systems (Septic Systems and Similar Decentralized Systems), Urban Runoff/Storm Sewers		
TMDL Status	-	Name	-

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

Nearest Downstream Public Water Supply Intake		At the discharge point (HQ stream)	
PWS Waters	Buffalo Creek	Flow at Intake (cfs)	
PWS RMI	33.5	Distance from Outfall (mi)	

* - The receiving stream is impaired for Nutrients and Siltation. This discharge is not expected to be contributing to the impairment as the eDMR data shows that the Total Phosphorus is less than 1.0 mg/l and the Total Nitrogen is less than 9.7 mg/l in the discharge.

Sludge use and disposal description and location(s): Sludge is transported by Daltons Service company, LLC to the Waste Management 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 0.201 MGD of treated sewage from an existing Publicly Owned Treatment Works (POTW) in Chicora Borough, Butler County.

Permitted treatment consists of: (WQM Permit no. 106405) A pump station, grit and bar screen, two SBRs, and a decant tank with ultraviolet (UV) light disinfection. Sludge management consists of two aerobic digesters and sand drying beds.

1. Streamflow:

Buffalo Creek at Freeport, PA (1976-1996) - used for most Connoquenessing Creek discharges:

Drainage Area:	137	sq. mi.	from StreamStats
Q_{7-10}:	6.37	cfs	from StreamStats
Yieldrate:	0.047	cfsm	calculated

Buffalo Creek at Outfall 001:

Yieldrate:	0.047	cfsm	calculated above
Drainage Area:	7.36	sq. mi.	from StreamStats
% of stream allocated:	100%	Basis:	no nearby discharges
Q_{7-10}:	0.34	cfs	calculated

2. Wasteflow:

Maximum discharge: 0.201 MGD = 0.311 cfs

Runoff flow period: 24 hours Basis: Runoff flow for a Municipal STP

There is less than 3 parts stream flow (Q7-10) to 1 part effluent (design flow). However, since this is an existing discharge, the more stringent treatment requirements cannot be achieved, and the receiving stream is not impaired by the discharge, the standards in DEP guidance (391-2000-014) will not be applied. Flow will be required to be monitored as authorized under Chapter 92a.61, and as recommended in the SOP.

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, Phosphorus, NH_3-N, $CBOD_5$, Dissolved Oxygen, and Total Residual Chlorine.

a. pH

Between 6.0 and 9.0 at all times

Basis: Application of Chapter 93.7 technology-based limits.

The measurement frequency was previously set to 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), which will be retained.

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

☒ Limit necessary due to:

☐ Discharge to lake, pond, or impoundment
☒ Discharge to stream

Basis: The basin-wide limit of 2.0 mg/l for the Connoquenessing Creek (nutrient impaired) will be retained with this renewal.

☐ Limit not necessary

Basis: N/A

f. Total Nitrogen

Monitoring for Total Nitrogen will be retained with this renewal in accordance with the SOP, based on Chapter 92a.61.

g. Ammonia-Nitrogen (NH_3-N)

Median discharge pH to be used: 7.6 Standard Units (S.U.)

Basis: Average pH value from DMR summary

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: 20˚C (default value used for HQ-CWF modeling)

Background NH_3-N concentration: 0.1 mg/l

Basis: Default value.

Calculated NH_3-N Summer limits: 3.9 mg/l (monthly average)
7.8 mg/l (instantaneous maximum)

Calculated NH_3-N Winter limits: 11.7 mg/l (monthly average)
23.4 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the calculated summer limits above (see Attachment 1), which are less stringent than the previous NPDES Permit. The winter limits are calculated as three times the summer limits per the SOP. Since the previous more restrictive limits are being attained, they will be retained with this renewal.

h. $CBOD_5$

Median discharge pH to be used: 7.6 Standard Units (S.U.)

Basis: Average pH value from DMR summary

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: 20˚C (default value used for HQ-CWF modeling)

Background $CBOD_5$ concentration: 2.0 mg/l

Basis: Default value

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

Calculated $CBOD_5$ 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 1). The winter limits are calculated as three times the summer limits, but since the technology-based limits would govern, they will be used. Since the previous more restrictive limits are being attained, they will be retained with this renewal. Per the SOP, the year-round limits for CBOD5 will be retained with this renewal.

i. Influent Total Suspended Solids and BOD5

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)

☐ 4.0 mg/l - minimum desired in effluent to protect all aquatic life.
☐ 5.0 mg/l - required in effluent for CWF, WWF, or TSF based on WQ Model.
☒ 6.0 mg/l - required in effluent for CWF, WWF, or TSF based on WQ Model.
☐ 7.0 mg/l - minimum required due to discharge going to a High-Quality stream

☐ 8.0 mg/l - required due to discharge going to a naturally reproducing salmonid stream

Discussion: A Dissolved Oxygen technology-based minimum of 6.0 mg/l is recommended by the WQ Model (see Attachment 1), and the SOP, based on Chapter 93.7, under the authority of Chapter 92a.61. The previous minimum of 7.0 mg/l from the previous permit will be retained.

The measurement frequency was previously set to 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), which will be retained.

k. Total Residual Chlorine (TRC)

☒ No limit necessary

Basis: Since Ultraviolet (UV) light is used for disinfection, limits for TRC are not necessary. UV Intensity (µw/cm²) reporting will be added with this renewal, per the SOP.

The measurement frequency will be set to 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).

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

Basis: N/A

4. Reasonable Potential Analysis:

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

Result: No reasonable potential was calculated, so no WQBELs are necessary for this renewal.

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

The Reasonable Potential Analysis performed above does not calculate limits for parameters that are based on PWS criteria (TDS, Chloride, Bromide, and Sulfate). However, since the sample data was provided, mass-balance calculations were performed (see below).

Nearest Downstream potable water supply (PWS): At the discharge point (HQ stream)
Distance downstream from the point of discharge: 0.0 miles

PWS Evaluation:

Stream flow (sf) at the PWS intake = 0.34 cfs
Waste flow (wf) from the STP = 0.201 MGD = 0.311 cfs
Total flow = 0.651 cfs
Background Concentrations: No data available (assumed zero)

Mass balance for TDS at the PWS intake:

(sf @ PWS)(bkrd. conc.) + (wf)(x) = (tot. flow)(criteria)
(0.34 cfs)(0 mg/l) + (0.311 cfs)(x) = (0.651 cfs)(500 mg/l)
x = 1,046 mg/l (renewal application maximum was 531 mg/l - ok)

Mass balance for Chlorides at the PWS intake:

(sf @ PWS)(bkrd. conc.) + (wf)(x) = (tot. flow)(criteria)

(0.34 cfs)(0 mg/l) + (0.311 cfs)(x) = (0.651 cfs)(250 mg/l)

x = 523 mg/l (renewal application maximum was 188 mg/l - ok)

Mass balance for Bromide at the PWS intake:

(sf @ PWS)(bkrd. conc.) + (wf)(x) = (tot. flow)(criteria)

(0.34 cfs)(0 mg/l) + (0.311 cfs)(x) = (0.651 cfs)(1 mg/l)

x = 2.0 mg/l (renewal application maximum was 0.106 mg/l - ok)

Bromide has been linked to the formation of disinfection byproducts at increased levels in public water systems. Where the concentration of Bromide in a discharge exceeds 1 mg/L, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitoring and reporting for bromide. The permitted discharge flow is greater than 0.1 MGD (0.201 MGD), but since the maximum reported sample data for Bromide was 0.106 mg/l, monitoring will not be added to this renewal permit.

Mass balance for Sulfates at the PWS intake:

(sf @ PWS)(bkrd. conc.) + (wf)(x) = (tot. flow)(criteria)

(0.34 cfs)(0 mg/l) + (0.311 cfs)(x) = (0.651 cfs)(250 mg/l)

x = 523 mg/l (renewal application maximum was 57.1 mg/l - ok)

☒ No limits necessary
☐ Limits needed

Basis: Significant dilution available.

6. Flow Information:

The Chicora Borough STP receives 74.14% of its flow from the Chicora Borough, 22.13% from the Donegal Township, and 3.73% from the Fairview Township.

The Chicora Borough, the Donegal Township, and the Fairview Township are all 100% separate sewer systems.

7. Anti-Backsliding:

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 - WQ Modeling Printouts
Attachment 2 - Toxics Management Spreadsheet
Attachment 3 - WMS Open Violations by Client

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

Compliance History

DMR Data for Outfall 001 (from February 1, 2021 to January 31, 2022)

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Flow (MGD) Average Monthly	0.109	0.113	0.101	0.106	0.108	0.114	0.139	0.111	0.120	0.102	0.114	0.121
Flow (MGD) Weekly Average	0.117	0.127	0.104	0.123	0.128	0.129	0.189	0.140	0.170	0.104	0.139	0.127
pH (S.U.) Minimum	7.6	7.4	7.4	7.4	7.2	7.3	7.2	7.3	7.4	7.4	7.3	7.7
pH (S.U.) Maximum	8.8	8.5	8.4	8.2	8.2	7.9	8.1	8.1	8.5	8.3	8.2	8.3
DO (mg/L) Minimum	7.7	7.1	7.2	7.1	7.2	7.1	7.1	7.3	7.1	7.4	9.5	9.9
CBOD5 (lbs/day) Average Monthly	5.8	6.0	< 3.3	< 1.9	3.9	3.6	10.3	8.7	< 4.5	3.8	5.5	9.1
CBOD5 (lbs/day) Weekly Average	9.4	8.6	6.3	2.8	6.2	5.2	14.8	11.8	6.4	5.0	7.4	14.5
CBOD5 (mg/L) Average Monthly	8	7	< 4	< 2	5	5	9	10	< 5	6	6	9
CBOD5 (mg/L) Weekly Average	12	10	7	3	6	7	13	12	8	9	9	15
BOD5 (lbs/day) Influent Average Monthly	161	140	193	144	150	165	230	234	163	122	203	230
BOD5 (mg/L) Influent Average Monthly	194	171	229	184	188	206	205	259	203	187	203	225
TSS (lbs/day) Average Monthly	7.8	10.1	7.6	6.7	< 9.8	< 4.7	10.6	16.4	< 5.6	4.6	< 7.5	13.6
TSS (lbs/day) Influent Average Monthly	176	128	135	114	151	169	203	168	147	85	116	140
TSS (lbs/day) Weekly Average	12.9	17.4	13.7	8.3	22.8	6.4	13.9	39.7	9.8	4.7	9.5	29.2
TSS (mg/L) Average Monthly	10	12	9	8	< 12	< 6	10	17	< 7	7	< 9	13
TSS (mg/L) Influent Average Monthly	223	164	159	147	194	210	167	182	183	129	119	139
TSS (mg/L) Weekly Average	13	18	16	11	23	8	16	40	11	8	18	25
Fecal Coliform (No./100 ml) Geometric Mean	< 24	88	< 10	< 30	28	< 10	< 12	< 6	< 7	< 7	< 10	< 32
Fecal Coliform (No./100 ml) Instantaneous Maximum	380	2100	90	3244	586	38	31	8	16	20	26	762

Total Nitrogen (mg/L) Average Monthly		2.13			4.62			9.7			1.85	
Ammonia (lbs/day) Average Monthly	< 0.6	< 0.8	< 0.7	< 0.6	< 0.6	< 5.2	12.4	< 7.3	< 4.2	6.5	< 3.2	< 0.8
Ammonia (mg/L) Average Monthly	< 0.8	< 1.0	< 0.8	< 0.8	< 0.8	< 6.6	10.0	< 8.0	< 5.0	10.2	< 3.2	< 0.8
Total Phosphorus (lbs/day) Average Monthly	0.2	0.5	0.3	0.3	0.5	0.2	0.7	0.8	0.4	0.5	0.3	0.3
Total Phosphorus (mg/L) Average Monthly	0.3	0.5	0.4	0.3	0.7	0.3	0.5	0.9	0.5	0.7	0.3	0.3

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	7.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5	16.8	25.1	XXX	10.0	15.0	20	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	50.3	76.4	XXX	30.0	45.0	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	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 (µw/cm²)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/day	Metered
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	7.5	XXX	XXX	4.5	XXX	9	1/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	2.5	XXX	XXX	1.5	XXX	3	1/week	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		
Total Phosphorus	3.4	XXX	XXX	2.0	XXX	4	1/week	24-Hr Composite

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 $CBOD_5$, Total Suspended Solids, and Fecal Coliforms are technology-based on Chapter 92a.47. Monitoring for influent BOD5 and Total Suspended Solids is based on Chapter 92a.61. Monitoring for E. Coli, UV Intensity, and Total Nitrogen is based on Chapter 92a.61. The limits for Ammonia-Nitrogen are water quality-based on Chapter 93.7. The limits for Total Phosphorus are technology-based on Chapter 96.5.

Attachment 1

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
18F	42557	BUFFALO CREEK

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)
33.500	Chicora	PA0024571a	0.201	CBOD5	25		
				NH3-N	3.9	7.8	
				Dissolved Oxygen			6

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
18F	42557	BUFFALO CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
33.500	0.201	22.367	7.190
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
13.027	0.483	26.952	0.104
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
12.89	1.229	1.85	0.840
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.181	19.379	Owens	7
Reach Travel Time (days)			
0.996			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.100	11.24	1.70	7.17
0.199	9.81	1.56	7.33
0.299	8.56	1.44	7.50
0.398	7.47	1.32	7.65
0.498	6.51	1.21	7.78
0.597	5.68	1.12	7.89
0.697	4.96	1.03	7.89
0.797	4.32	0.95	7.89
0.896	3.77	0.87	7.89
0.996	3.29	0.80	7.89

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	7		

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
18F	42557	BUFFALO CREEK	**33.500**	1133.00	7.36	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	0.047	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	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
Chicora	PA0024571a	0.2010	0.0000	0.0000	0.000	25.00	7.60

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	8.24	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
18F	42557	BUFFALO CREEK	**31.800**	1100.00	10.00	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	0.047	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	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 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
18F	42557	BUFFALO CREEK

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
33.500	Chicora	10.16	17.4	10.16	17.4	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
33.500	Chicora	1.55	3.9	1.55	3.9	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)		
33.50	Chicora	25	25	3.9	3.9	6	6	0	0

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
18F	42557	BUFFALO CREEK

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												
33.500	0.35	0.00	0.35	.3109	0.00368	.483	13.03	26.95	0.10	0.996	22.37	7.19
Q1-10 Flow												
33.500	0.22	0.00	0.22	.3109	0.00368	NA	NA	NA	0.09	1.120	22.92	7.25
Q30-10 Flow												
33.500	0.47	0.00	0.47	.3109	0.00368	NA	NA	NA	0.11	0.904	21.99	7.15

Attachment 2

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Chicora Borough STP** NPDES Permit No.: **PA0221708** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **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
0.201	100	7.6						

					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		531									
	Chloride (PWS)	mg/L		188									
	Bromide	mg/L		0.106									
	Sulfate (PWS)	mg/L		57.1									
	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	<	1									
	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		26									
	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 1.3, March 2021

Stream / Surface Water Information

Chicora Borough STP, NPDES Permit No. PA0221708, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Buffalo Creek**

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	042557	33.5	1133	7.36			Yes
End of Reach 1	035482	31.8	1100	10			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	33.5	0.047										100	7.3		
End of Reach 1	31.8	0.047													

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	33.5														
End of Reach 1	31.8														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Chicora Borough STP, NPDES Permit No. PA0221708, 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)
33.5	0.35		0.35	0.311	0.004	0.483	13.027	26.952	0.104	0.996	3.166
31.8	0.47		0.47								

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)
33.5	2.94		2.94	0.311	0.004	0.977	13.027	13.339	0.255	0.407	3.25
31.8	3.841		3.84								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 3.166 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.42

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	29.6	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	172	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	253	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 3.166 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.42

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	8.956	9.33	19.7	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	6.72	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	253	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 3.166 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	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	

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
Total Copper	Report	Report	Report	Report	Report	µg/L	19.0	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	162	AFC	Discharge Conc > 10% WQBEL (no RP)

☑ ***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 Lead	N/A	N/A	Discharge Conc < TQL

Attachment 3

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WATER MANAGEMENT SYSTEM
OPEN VIOLATIONS BY CLIENT

Client ID: 44842
Client: All

Open Violations: 1

CLIENT ID	CLIENT	PF ID	FACILITY	PF KIND	PF STATUS	INSP PROGRAM
44842	CHICORA BORO SEW AUTH BUTLER CNTY	259130	CHICORA BORO SEWER AUTHORITY	Sewage Publicly Owned (Muni)	Active	WPC NPDES

PROGRAM SPECIFIC ID	INSP ID	VIOLATION ID	INSPECTION CATEGORY	VIOLATION DATE	VIOLATION CODE	VIOLATION	PF INSPECTOR	INSP REGION
PA0221708	3279741	935835	PF	11/09/2021	92A.44	NPDES - Violation of effluent limits in Part A of permit	LEIDY,BRUCE	NWRO