pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0031127**
Facility Type	**Municipal**	APS ID	**590797**
Major / Minor	**Major**	Authorization ID	**1386129**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Northampton Borough**	Facility Name	**Northampton Borough WWTP**
Applicant Address	1401 Laubach Avenue	Facility Address	2 Lerchenmiller Drive
	Northampton, PA 18067-0070		Northampton, PA 18067
Applicant Contact	Leroy Brobst	Facility Contact	Scott Gillespie
Applicant Phone	(610) 262-2576	Facility Phone	(610) 262-6131
Client ID	83468	Site ID	269226
Ch 94 Load Status	Not Overloaded	Municipality	Northampton Borough
Connection Status	No Prohibitions	County	Northampton
Date Application Received	March 3, 2022	EPA Waived?	No
Date Application Accepted	March 3, 2022	If No, Reason	Major Facility

Purpose of Application: Renewal of NPDES permit.

Summary of Review

The applicant is requesting renewal of an NPDES permit to discharge up to 1.5 MGD of treated sewage to Hokendauqua Creek, a Cold Water and Migratory Fish (CWF, MF) receiving stream in state water plan basin 2-C (Lower Lehigh River). As per the Department's current existing use list, the receiving stream doesn't have an existing use classification that's more protective than its designated use. This segment of Hokendauqua Creek is considered impaired for aquatic life from Total Suspended Solids (TSS) with municipal point sources as the cause.

The $Q_{7\text{-}10}$ used to model the discharge was obtained from the nearest downstream gage (01453000 – Lehigh River at Bethlehem, PA). For modeling inputs, RMI values were obtained using the "PA Historic Streams" feature of eMapPA as well as the "measure" tool. Drainage areas were delineated using USGS's StreamStats Interactive Map and elevations were obtained using the elevation profile feature of StreamStats (see Watershed Information attachment).

The $CBOD_5$, TSS, Fecal Coliform and pH limitations are technology-based and carried over from the previous permit. The Dissolved Oxygen limitation is water quality-based and carried over from the previous permit

WQM 7.0 modeling recommended slightly lower summertime effluent limitations for Ammonia-N. The new limitations will come into effect 3 years after the permit effective date and yearly milestones for coming into compliance with the new limitations is included in Part C of the permit.

The permittee utilizes ultraviolet radiation for disinfection and must sample for TRC on days where chlorine is utilized for backup disinfection, cleaning, or other purposes (see Part C.I.D). The monthly average limitation is removed from the permit. The TRC calculation spreadsheet didn't recommend a more stringent IMAX limitation. The permittee shall report operation of the ultraviolet (UV) disinfection system daily using the Daily Effluent Monitoring supplemental DMR form (see Part C.I.E.).

Approve	Deny	Signatures	Date
X		Brian Burden, E.I.T. / Project Manager	July 30, 2024
X		Amy M. Bellanca (signed) Amy M. Bellanca, P.E. / Acting Environmental Engineer Manager	8-12-24

Summary of Review

DEP's Toxics Management Spreadsheet (TMS) recommended the following:

Pollutants	*Mass Limits* AML (lbs/day)	*Mass Limits* MDL (lbs/day)	*Concentration Limits* AML	*Concentration Limits* MDL	*Concentration Limits* IMAX	*Concentration Limits* Units	Governing WQBEL	WQBEL Basis
Total Aluminum	Report	Report	Report	Report	Report	µg/L	1,868	AFC
Total Copper	0.47	0.74	37.8	59.0	94.5	µg/L	37.8	AFC
Total Lead	Report	Report	Report	Report	Report	µg/L	18.0	CFC
Total Nickel	Report	Report	Report	Report	Report	µg/L	288	CFC
Total Zinc	Report	Report	Report	Report	Report	µg/L	321	AFC

Total Aluminum, Total Lead, Total Nickel and Total Zinc are to be monitored/reported on a quarterly basis. The Total Copper limitations will come into effect three years after the permit effective date. Yearly milestones for meeting the final limitations are included in Part C of the permit. The minimum monitoring frequency for Total Copper is 1/month until the limitations come into effect, and then 1/week thereafter.

The TMS was used to model the discharge in relation to the nearest downstream public water supply intake since its downstream location is relatively close to the discharge at Outfall 001. No limitations or monitoring requirements were recommended for the pollutants of concern.

The 1,000 mg/L monthly average Total Dissolved Solids limitation and monitoring/reporting requirements for Total Phosphorus, Total Nitrogen, and Nitrate+Nitrite-N originate from Delaware River Basin Commission's (DRBC) Docket No. D-1987-046 CP-2 and are carried over in this renewal. Docket No. D-1987-046 CP-3 includes the following additional requirements to be added to the NPDES permit:

EFFLUENT TABLE C-2: DRBC Parameters Not Included in NPDES Permit

OUTFALL 001 (Discharging to Hokendauqua Creek)		
PARAMETER	**LIMIT**	**MONITORING**
$CBOD_5$ (at 20° C)	Monitor & Report Percent Removal	Monthly
$CBOD_5$ (at 20° C) Influent	Monitor & Report	Monthly

Monthly monitoring/reporting for E. Coli is added to the permit as per DEP guidance.

The template Part C special condition for Whole Effluent Toxicity is carried over from the previous renewal. No failures were reported during the previous permit term. The dilution series and target in-stream waste concentration have been updated as a result of the revised acute partial mixing factor determined by the TMS.

An Act 537 planning revision letter was sent to the borough (and Allen Township) on December 2, 2022 approving the joint Act 537 Plan for Northampton Borough and Allen Township. The Plan consists of separate alternatives for the borough and township. The borough will renovate two pump stations, reduce inflow and infiltration throughout the collection system, and expand/upgrade the existing WWTP from 1.5 MGD to 2.0 MGD annual average flow. A separate letter containing preliminary effluent limitations for the proposed 2.0 MGD discharge will be sent with this draft permit.

The permit renewal application indicates the Northampton Borough Municipal Authority water treatment plant discharges an average of 37,983 gpd (32,283 gpd process + 5,700 gpd sanitary) to the wastewater treatment plant. As per the application, "The IU has overloaded the POTW with solids. The Borough is in the process of evaluating and determine the best way to manage the issue."

Stormwater monitoring requirements for Outfalls 002 & 003 are updated to be in conformance with the requirements in Appendix J of the most recently issued PAG-03 permit. Semi-annual monitoring/reporting is required for TSS, Oil & Grease, pH, Chemical Oxygen Demand (COD), Total Nitrogen and Total Phosphorus.

Summary of Review

Sludge use and disposal description and location(s): The permit renewal application indicates 392 dry tons of sludge was hauled to Grand Central Sanitary Landfill in the previous year.

WQM Modeling.pdf
TRC Calculation.pdf
TMS PA0031127.pdf
TMS PA0031127 PWS.pdf
Watershed Information.pdf
WET Dilution Series.pdf
1987-046 CP-3.pdf

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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	1.5
Latitude	40º 40' 51"	Longitude	-75º 29' 24"
Quad Name	Catasauqua	Quad Code	1342
Wastewater Description:	Sewage Effluent		

Receiving Waters	Hokendauqua Creek (CWF, MF)	Stream Code	3660
NHD Com ID	26293929	RMI	0.35
Drainage Area	40.8 mi^2	Yield (cfs/mi^2)	0.24
Q_{7-10} Flow (cfs)	9.79	Q_{7-10} Basis	Gage 01453000
Elevation (ft)	282	Slope (ft/ft)	0.006
Watershed No.	2-C	Chapter 93 Class.	CWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired		
Cause(s) of Impairment	TSS		
Source(s) of Impairment	Municipal point sources		
TMDL Status	-	Name	-

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

Nearest Downstream Public Water Supply Intake	LCA Allentown		
PWS Waters	Lehigh River	Flow at Intake (cfs)	215 (StreamStats Q_{7-10})
PWS RMI	17.5	Distance from Outfall (mi)	~5

Treatment Facility Summary

Treatment Facility Name: Northampton Boro/ Sewer

WQM Permit No.	Issuance Date
4013404	3/3/2014

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	ICEAS basins	Ultraviolet	1.5

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
1.65	2,409	Not Overloaded	Aerobic Digestion	Landfill

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 1.5
Latitude 40º 40' 51" **Longitude** -75º 29' 24"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25.0	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40.0	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
	50.0	IMAX	-	-
Total Suspended Solids	30.0	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45.0	Average Weekly	133.102(b)(2)	92a.47(a)(2)
	60.0	IMAX	-	-
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 mL	Geo Mean	-	92a.47(a)(4)
	1,000 / 100 mL	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 mL	Geo Mean	-	92a.47(a)(5)
	10,000 / 100 mL	IMAX	-	92a.47(a)(5)

Water Quality-Based Limitations

The following limitations were determined through water quality modeling:

Parameter	Limit (mg/L)	SBC	Model / Basis
Dissolved Oxygen	5.0	Minimum	Previous modeling
Total Residual Chlorine	1.17	IMAX	Previous modeling
Ammonia-Nitrogen (5/1 – 10/31)	12.2	Average Monthly	2024 WQM 7.0
	24.4	IMAX	
Total Dissolved Solids	1,000	Average Monthly	DRBC Docket No. D-1987-046 CP-2
Total Copper	0.037	Average Monthly	2024 TMS
	0.059	Daily Maximum	

Comments: The revised summertime Ammonia-Nitrogen limitations will come into effect 3 years from the permit effective date.

Whole Effluent Toxicity (WET)

For Outfall 001, ☐ **Acute** ☒ **Chronic** WET Testing was completed:

☐ For the permit renewal application (4 tests).
☐ Quarterly throughout the permit term.
☐ Quarterly throughout the permit term and a TIE/TRE was conducted.
☒ Other: **Annually throughout the permit term.**

The dilution series used for the tests was: 100%, 66%, 17%, 8%, and 4%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 17%.

Summary of Four Most Recent Test Results

TST Data Analysis

(NOTE – In lieu of recording information below, the application manager may attach the DEP WET Analysis Spreadsheet).

Test Date	*Ceriodaphnia* Results (Pass/Fail)		*Pimephales* Results (Pass/Fail)	
	Survival	Reproduction	Survival	Growth
8/15/2023	Pass	Pass	Pass	Pass
11/1/2022	Pass	Pass	Pass	Pass
7/14/2020	Pass	Pass	Pass	Pass
11/26/2019	Pass	Pass	Pass	Pass

***** *A "passing" result is that in which the replicate data for the TIWC is not statistically significant from the control condition. This is exhibited when the calculated t value ("T-Test Result") is greater than the critical t value. A "failing" result is exhibited when the calculated t value ("T-Test Result") is less than the critical t value.*

Is there reasonable potential for an excursion above water quality standards based on the results of these tests? (*NOTE – In general, reasonable potential is determined anytime there is at least one test failure in the previous four tests).*

☐ **YES** ☒ **NO**

Comments: Results of the 2021 test were not included on the DEP biologist's review spreadsheet. The results will be confirmed before issuance of the final permit. The permit renewal application indicates the 2021 tests all passed.

Evaluation of Test Type, IWC and Dilution Series for Renewed Permit

Acute Partial Mix Factor (PMFa): **0.684** Chronic Partial Mix Factor (PMFc): **1**

1. Determine IWC – Acute (IWCa):

$(Q_d \times 1.547) / ((Q_{7\text{-}10} \times PMFa) + (Q_d \times 1.547))$

[(1.5 MGD x 1.547) / ((9.79 cfs x 0.684) + (1.5 MGD x 1.547))] x 100 = **26%**

Is IWCa < 1%? ☐ **YES** ☒ **NO**

Type of Test for Permit Renewal: **Chronic**

2b. Determine Target IWCc (If Chronic Tests Required)

$(Q_d \times 1.547) / (Q_{7\text{-}10} \times PMFc) + (Q_d \times 1.547)$

[(1.5 MGD x 1.547) / ((9.79 cfs x 1) + (1.5 MGD x 1.547))] x 100 = **19%**

3. Determine Dilution Series

(NOTE – check Attachment C of WET SOP for dilution series based on TIWCa or TIWCc, whichever applies).

Dilution Series = 100%, 60%, 19%, 10%, and 5%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

Will WET limits be established in the permit? ☐ YES ☒ NO