

Application Type Renewal
Facility Type Municipal
Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. PA0052078
APS ID 1095171
Authorization ID 1451455

Applicant and Facility Information

Applicant Name	<u>Municipal Authority Of The Borough Of Elverson Chester County</u>	Facility Name	<u>Elverson Borough Municipal Authority STP & Sewer System</u>
Applicant Address	<u>101 South Chestnut Street P.O Box 266 Elverson, PA 19520-0266</u>	Facility Address	<u>40 N Chestnut Street (Route 82) Elverson, PA 19520</u>
Applicant Contact	<u>Charlotte Gehman</u>	Facility Contact	<u>Charlotte Gehman</u>
Applicant Phone	<u>(610) 286-8876</u>	Facility Phone	<u>(610) 942-3000</u>
Client ID	<u>64503</u>	Site ID	<u>256139</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>Elverson Borough</u>
Connection Status	<u>No Limitations</u>	County	<u>Chester</u>
Date Application Received	<u>July 26, 2023</u>	EPA Waived?	<u>No</u>
Date Application Accepted	<u></u>	If No, Reason	<u>TMDL, DEP Discretion</u>
Purpose of Application	<u>Renewal</u>		

Summary of Review

The applicant is requesting the renewal of a National Pollutant Discharge Elimination System (NPDES) individual permit to discharge 0.125 mgd of treated sewage from Elverson Borough Municipal Authority Sewage Treatment Plant (STP) to an unnamed tributary to East Branch Conestoga River in watershed 7J, in the Chesapeake Bay Watershed.

The plant consists of an extended aeration treatment system. Influent flow enters the equalization basin then the flow is split between two Pure Stream BESST process trains. The discharge from the process tanks flows through a tertiary disk filter then through one of the two UV disinfection units before being metered and discharged to the receiving stream.

Existing effluent limits for CBOD₅, Total Suspended Solids, Ammonia, Phosphorus, Dissolved Oxygen, pH, Total Residual Chlorine, and the average monthly limits for Fecal Coliform are continued with the same basis from the previous permit.

The receiving stream is in the Conestoga River Basin, a tributary to the Susquehanna River which flows to the Chesapeake Bay. This facility is among the Phase 5, smaller discharges (average annual design flow less than 0.2 mgd, and greater than 0.002 mgd) as described in the Pennsylvania DEP latest supplement to Phase II Watershed Implementation Plan (WIP) dated September 6, 2017. During 2013 renewal, the facility has completed its requirement of monitoring Total Nitrogen (TN) and Total Phosphorus (TP) as a Phase 5 facility under the WIP. And a summary of the monitoring results was included in 2013 fact sheet. The facility is not planning any changes to the discharge flow.

The existing TN monitoring requirement and TP limit will be continued in the new permit.

DMR review shows non-compliance occurrences a few times during last year.

Existing effluent limits for CBOD₅, Total Suspended Solids, Ammonia, Phosphorus, Dissolved Oxygen, pH, Total Residual Chlorine, and the average monthly limits for Fecal Coliform are continued with the same basis from the previous permit.

Approve	Deny	Signatures	Date
x		<i>Vasantha</i> Vasantha Palakurti / Environmental Engineering Specialist	August 21, 2023
X		<i>Pravin Patel</i> Pravin C. Patel, P.E. / Environmental Engineer Manager	08/23/2023

Summary of Review

Approximately 17.03 tons of sludge is generated by the plant and is collected in a dedicated sludge holding tank. The municipal authority has contracted Ink's Disposal Service Inc. to remove the collected sludge and dispose in accordance with PADEP regulations.

Quarterly monitoring for Total Copper, Total Zinc and Total Hardness has been added for this renewal.

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.	<u>001</u>	Design Flow (MGD)	<u>.125</u>
Latitude	<u>40° 9' 40.38"</u>	Longitude	<u>-75° 49' 58.66"</u>
Quad Name	<u></u>	Quad Code	<u></u>
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>East Branch Conestoga River (WWF, MF)</u>	Stream Code	<u>07817</u>
NHD Com ID	<u>57461623</u>	RMI	<u>0.32</u>
Drainage Area	<u>0.43 mi²</u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u>0.0467</u>	Q ₇₋₁₀ Basis	<u>usgs streamstats</u>
Elevation (ft)	<u></u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>7-J</u>	Chapter 93 Class.	<u>WWF, MF</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>NUTRIENTS, NUTRIENTS, ORGANIC ENRICHMENT</u>		
Source(s) of Impairment	<u>AGRICULTURE, SOURCE UNKNOWN, SOURCE UNKNOWN</u>		
TMDL Status	<u>Final</u>	Name	<u>Conestoga Headwaters TMDL</u>

Changes Since Last Permit Issuance: No changes since last renewal

Treatment Facility Summary				
Treatment Facility Name: Elverson Borough Municipal Authority STP				
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration With Solids Removal	Ultraviolet	0.125
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.166	287	Not Overloaded	Anaerobic Digestion	Landfill

Compliance History

DMR Data for Outfall 001 (from July 1, 2022 to June 30, 2023)

Parameter	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22
Flow (MGD) Average Monthly	0.077	0.077	0.072	0.077	0.076	0.076	0.086	0.072	0.077	0.076	0.074	0.069
Flow (MGD) Daily Maximum	0.119	0.105	0.157	0.122	0.167	0.139	0.207	0.093	0.149	0.133	0.108	0.104
pH (S.U.) Instantaneous Minimum	6.20	6.1	6.32	6.01	6.19	6.15	6.14	6.37	6.12	6.03	6.24	6.2
pH (S.U.) Instantaneous Maximum	7.01	6.91	8.17	6.85	6.78	6.87	7.16	6.96	6.81	7.57	7.55	7.8
DO (mg/L) Instantaneous Minimum	6.25	5.51	6.23	5.61	5.18	5.74	5.35	5.86	5.41	5.19	5.1	5.02
CBOD5 (lbs/day) Average Monthly	7	6	9	8	8	6	6	5	4	< 5	4.0	5
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly	180	149	305	135	122	107	155	154	< 156	123	144	145
CBOD5 (lbs/day) Weekly Average	11	10	13	10	10	8	10	5	6	10	5.0	6
CBOD5 (mg/L) Average Monthly	12.3	9.5	13.9	13	15.5	11.1	8.4	8	5.2	< 7.1	6.8	8
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	327	227	482	210	212	188	239	244	< 258.7	168.3	236	218
CBOD5 (mg/L) Weekly Average	19	14	22	17	18	14	14	9	6	15	7	9
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	148	161	275	158	163	121	170	149	179	191	190	138
BOD5 (mg/L) Raw Sewage Influent Average Monthly	275	273	569	298	281	205	251	236	277	198	225	224

**NPDES Permit Fact Sheet
Elverson Borough Municipal Authority STP & Sewer System**

NPDES Permit No. PA0052078

TSS (lbs/day) Average Monthly	4	6	9	11	9	12	14	10	9	6	7	< 6
TSS (lbs/day) Raw Sewage Influent Average Monthly	171	114	144	73	119	71	104	95	268	120	111	204
TSS (lbs/day) Weekly Average	4	8	14	27	18	29	35	18	24	11	10	10
TSS (mg/L) Average Monthly	7	9	14	16	16	22	22	16	11	9	10	< 10
TSS (mg/L) Raw Sewage Influent Average Monthly	318	190	312	132	206	120	158	150	407	132	129	301
TSS (mg/L) Weekly Average	8	13	23	38	31	52	51	29	23	14	18	19
Fecal Coliform (No./100 ml) Geometric Mean	< 2	< 2	< 4	3	< 9	< 124	12	89	< 2	40	5	< 8
Fecal Coliform (No./100 ml) Instantaneous Maximum	24	6	11	16	45	20000	519	16100	24	11300	43	300
UV Intensity (mW/cm ²) Daily Minimum	0.01	0.01	0.01	0.001	0.01	0.01	0.01	0.01	2.4	0.01	0.01	0.01
Total Nitrogen (lbs/day) Average Monthly	24	21	22	27	19	24	38	31	37	42	34	37
Total Nitrogen (mg/L) Average Monthly	44.2	31.9	34.3	42.2	33.3	43.3	54.9	49.4	53.2	59.2	54.3	58
Ammonia (lbs/day) Average Monthly	< 0.05	< 0.6	< 0.08	< 0.07	0.7	< 1.0	< 0.7	< 0.06	< 0.5	< 0.6	< 0.06	< 0.1
Ammonia (mg/L) Average Monthly	< 0.1	< 0.8	< 0.12	< 0.11	1.37	< 1.78	< 0.1	< 0.1	< 0.52	< 0.76	< 0.1	< 0.1
Total Phosphorus (lbs/day) Average Monthly	< 0.4	0.2	1.4	1.4	0.7	0.7	1.3	< 0.3	< 1.1	2.4	2.1	0.9
Total Phosphorus (mg/L) Average Monthly	< 0.83	0.36	2.16	2.22	1.2	1.22	1.93	< 0.58	< 1.2	3.45	3.36	1.3
Total Lead (lbs/day) Average Quarterly	0.0007			< 0.0007			< 0.0005			< 0.0006		
Total Lead (mg/L) Average Quarterly	0.001			< 0.001			< 0.001			< 0.001		

Compliance History

Effluent Violations for Outfall 001, from: August 1, 2022 To: June 30, 2023

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TSS	12/31/22	Wkly Avg	51	mg/L	45	mg/L
TSS	01/31/23	Wkly Avg	52	mg/L	45	mg/L
Fecal Coliform	09/30/22	IMAX	11300	No./100 ml	1000	No./100 ml
Fecal Coliform	11/30/22	IMAX	16100	No./100 ml	10000	No./100 ml
Fecal Coliform	01/31/23	IMAX	20000	No./100 ml	10000	No./100 ml
Total Phosphorus	09/30/22	Avg Mo	2.4	lbs/day	2.1	lbs/day
Total Phosphorus	03/31/23	Avg Mo	2.22	mg/L	2.0	mg/L
Total Phosphorus	04/30/23	Avg Mo	2.16	mg/L	2.0	mg/L
Total Phosphorus	09/30/22	Avg Mo	3.45	mg/L	2.0	mg/L
Total Phosphorus	08/31/22	Avg Mo	3.36	mg/L	2.0	mg/L

Development of Effluent Limitations

Outfall No. 001 Design Flow (MGD) .125
 Latitude 40° 9' 34.00" Longitude -75° 50' 8.00"
 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	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
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)
Fecal Coliform (5/1 – 9/30)	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)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

The following limitations are proposed:

Parameter	Limit (mg/l)	SBC	Basis
CBOD ₅ (05/01 to 10/31)	15	Average Monthly	WQM model
CBOD ₅ (11/01 to 04/30)	25	Average Monthly	Seasonal limit
TSS	30	Average Monthly	Secondary treatment / existing
NH ₃ -N (05/01 to 10/31)	1.5	Average Monthly	WQM model
NH ₃ -N (11/01 to 04/30)	4.5	Average Monthly	Seasonal limit
Total Phosphorus	2.0	Average Monthly	Existing limit/WIP/chapter 96.5
Dissolved Oxygen	5.0	Inst.Minimum	WQM model
pH	6.0 to 9.0 STU at all times		Chapter 93
Fecal Coliform (05/01 to 09/30)	200/1000	Avg. Mon./Inst.Max.	Chapter 93 & 92
Fecal Coliform (10/01 to 04/30)	2,000/10,000	Avg. Mon./Inst.Max.	Chapter 93 & 92
Total Nitrogen	Monitor	Average Monthly	Existing/WIP
UV intensity	Monitor	Daily Minimum	SOP

Water Quality-Based Limitations

A “Reasonable Potential Analysis” (Attachment A) determined the following parameters were candidates for limitations:

Pollutants	Mass Limits		Concentration Limits			Units	Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX				
Total Copper	0.012	0.019	0.011	0.018	0.029	mg/L	0.011	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	0.12	0.15	0.12	0.15	0.15	mg/L	0.12	AFC	Discharge Conc ≥ 50% WQBEL (RP)

Total Copper, Total Zinc: TMS recommends limits for Total Zinc and Total Copper. Since there is not enough data, quarterly monitoring is added to this permit. The data will be reviewed at the next renewal and will determine if a limit is required.

Total Hardness: A default discharge hardness of 100 mg/l is used for TMS modeling. Quarterly monitoring is added for Hardness as well.

Total Lead: Quarterly monitoring is continued for this renewal.

Water quality modeling is performed using Department’s WQM. No changes to assumptions, flow, etc., so effluent limits for CBOD₅, NH₃-N and D.O remain unchanged. Current limit for phosphorus, Total Nitrogen remain unchanged for this renewal.

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	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
CBOD5 Nov 1 - Apr 30	26	40	XXX	25	38	50	1/week	24-Hr Composite
CBOD5 May 1 - Oct 31	16	24	XXX	15	23	30	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
TSS	31	47	XXX	30	45	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
UV Intensity (mW/cm ²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Metered

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	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	4.7	XXX	XXX	4.5	XXX	9	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	1.6	XXX	XXX	1.5	XXX	3	1/week	24-Hr Composite
Total Phosphorus	2.1	XXX	XXX	2.0	XXX	4	1/week	24-Hr Composite
Total Lead	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Copper	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Zinc	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Hardness	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite



Discharge Information

Instructions Discharge Stream

Facility: Elverson Borough STP NPDES Permit No.: PA0052078 Outfall No.: 001
 Evaluation Type: Custom / Additives Wastewater Description: Treated Sewage Effluent

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
0.125	100	8.4						

Discharge Pollutant	Units	Max Discharge Conc	0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
			Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Total Copper	mg/L	0.02									
Total Lead	mg/L	< 0.001									
Total Zinc	mg/L	0.076									



Stream / Surface Water Information

Elverson Borough STP, NPDES Permit No. PA0052078, Outfall 001

- Instructions
- Discharge
- Stream

Receiving Surface Water Name: _____

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	007817	0.32	624.5	0.43			Yes
End of Reach 1	007817	0	619.24	0.52			Yes

Q₇₋₁₀

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	0.32	0.1										100	7		
End of Reach 1	0	0.1													

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	0.32														
End of Reach 1	0														

CRL CCT (min): PMF: Analysis Hardness (mg/l): Analysis pH:

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 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:

Pollutants	Mass Limits		Concentration Limits				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			
Total Copper	0.012	0.019	0.011	0.018	0.029	mg/L	0.011	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	0.12	0.15	0.12	0.15	0.15	mg/L	0.12	AFC	Discharge Conc ≥ 50% WQBEL (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 Lead	N/A	N/A	Discharge Conc < TQL

Analysis Results WQM 7.0

Hydrodynamics | NH3-N Allocations | D.O. Allocations | D.O. Simulation | **Effluent Limitations**

RMI	Discharge Name	Permit Number	Disc Flow (mgd)
0.32	Elverson Bo STP	PA0052078	0.0000

Parameter	Effluent Limit 30 Day Average (mg/L)	Effluent Limit Maximum (mg/L)	Effluent Limit Minimum (mg/L)
CBOD5	15		
NH3-N	1.5	3	
Dissolved Oxygen			5

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Approve	Deny	Signatures	Date
x		<i>Vasantha</i> Vasantha Palakurti / Environmental Engineering Specialist	August 21, 2023
X		<i>Pravin Patel</i> Pravin C. Patel, P.E. / Environmental Engineer Manager	08/23/2023