Pennsylvania Department of Environmental Protection

Southeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0053279**
Facility Type	**Non-Municipal**	APS ID	**1125498**
Major / Minor	**Minor**	Authorization ID	**1506111**

Applicant and Facility Information

Applicant Name	**Buckingham Village Ltd**	Facility Name	**Buckingham Springs Village**
Applicant Address	1490 Durham Road New Hope, PA 18938	Facility Address	Village Of Buckingham Springs 2490 Durham Road New Hope, PA 18938
Applicant Contact	Amy Grzywinski	Facility Contact	Kent Jaggers
Applicant Phone	(215) 598-7600	Facility Phone	(215) 598-7600
Client ID	62996	Site ID	240632
Ch 94 Load Status	Not Overloaded	Municipality	Buckingham Township
Connection Status		County	Bucks
Date Application Received	September 26, 2024	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: Permit Renewal.

Summary of Review

The applicant requests renewal of an NPDES permit to discharge treated sewage from Buckingham Springs STP that serves a residential community known as Buckingham Springs Village.

Sewage enters the plant via gravity, passing through a bar screen and influent metering before entering the EQ tank. Sewage is pumped into one of two SBR trains for treatment. Poly-aluminum chloride is added to the SBRs. Treated effluent decants to a post EQ tank. From post EQ the effluent is disinfected and filtered before discharging to the effluent pump station. Effluent sampling is conducted at the filter.

Sludge from the sludge holding tank is sent to Reed Beds (4) and ultimately hauled away by contractors.

Based on the review of the DMRs, the discharge is in compliance with limits most of the time.
There are no changes in the flow, treatment units, influent characteristics, stream designation etc., the current permit limits are recommended for the new permit. The only new parameter is quarterly E. Coli monitoring per SOP.

Review shows that the discharge is to an unnamed, intermittent tributary to Mill Creek approximately 1000 ft prior to the confluence with perennial stream.

DRBC docket No. D-2009-040 CP-3 was approved on March 13, 2019 for this project. Permittee had issues with the elevated TDS concentrations in the effluent. DRBC determined that the information submitted by the permittee, supported their claim that the elevated TDS levels in the effluent are not caused by the plant operations/processes and may be a result of elevated hardness in the public water supply and water softeners regeneration backwash. A request from the permittee for the TDS variance was granted and included an average monthly TDS effluent limit of 1500 mg/l in this docket.

Approve	Deny	Signatures	Date
X		Christian French Christian French / Environmental Engineering Specialist	12/04/2024
X		Pravin Patel Pravin Patel / Environmental Engineer Manager	12/04/2024

Summary of Review

Neshaminy Creek Watershed Total Maximum Daily Load (TMDL):
A TMDL for Neshaminy Creek Watershed was finalized on April 9, 2003 which was revised on December 2003. The Neshaminy Creek is located in state watershed 2-F, in Bucks and Montgomery Counties. It has approximately 418.3 miles of streams. Since 1996, 203.3 miles of these streams have been included on Pennsylvania's 303(d) list of streams having aquatic life use impairments. The watershed as a whole is very much a point source-dominated system. On an annual basis, the municipal wastewater treatment plants in the watershed contribute about 25% of the total phosphorus load. During critical low-flow periods, effluent discharges comprise over 90% of the total stream flow in many reaches. Upland erosion from developing areas and agriculture, and streambank erosion are other major sources of phosphorus, as well as sediment. However, in September 6, 2007, the nutrients portion of the TMDL was withdrawn by PADEP and approved by USEPA on January 31, 2008. No sediment WLA was assigned for this facility other than urban BMPs.

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.

Act 14 Notification:

Buckingham Township - September 5, 2024
Bucks County - September 5, 2024

Permits Conditions:

A. No Stormwater
B. Acquire Necessary Property Rights
C. Proper Sludge Disposal
D. Abandon STP when Municipal Sewers Available
E. Operator Notification
F. UV Disinfection Requirement
G. Fecal Coliform Requirement
H. Small Stream Discharge
I. Solids Management

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.1
Latitude	40º 18' 1.36"	Longitude	-75º 2' 31.05"
Quad Name	Buckingham	Quad Code	1645
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Mill Creek (WWF, MF)	Stream Code	02623
NHD Com ID	25475538	RMI	0.25
Drainage Area	0.24 mi^2	Yield (cfs/mi^2)	0.07
Q_{7-10} Flow (cfs)	<0.1	Q_{7-10} Basis	Previous Fact Sheet
Elevation (ft)		Slope (ft/ft)	
Watershed No.	2-F	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	**PFOS**		
Source(s) of Impairment	**Unknown**		
TMDL Status	Final	Name	Neshaminy Creek
Nearest Downstream Public Water Supply Intake	Aqua PA – Trevose, PA		
PWS Waters	Neshaminy Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

* Neshaminy Creek TMDL was issued in April 2003 for nutrients and sediment. Neshaminy Creek nutrient TMDL was subsequently withdrawn and will be revised in the future. Neshaminy Creek sediment TMDL is still in effect, but the sediment TMDL does not apply to sewage treatment plants.

At the confluence of the unnamed tributary, Mill Creek has a drainage area of 12.3 mi^2 and a Q_{7-10} of 0.87 cfs.

Treatment Facility Summary

Treatment Facility Name: Buckingham Springs STP

WQM Permit No.	Issuance Date
0921406	3/14/2022

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Sequencing Batch Reactor W/Sol Removal	Ultraviolet	0.1

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.1	184	Not Overloaded	Holding Tank	Reed Beds and Hauling Out

Compliance History

DMR Data for Outfall 001 (from October 1, 2023 to September 30, 2024)

Parameter	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23
Flow (MGD) Average Monthly	0.04307	0.046693	0.044666	0.045457	0.045979	0.04873	0.050632	0.04566	0.051318	0.048607	0.0444	0.046452
Flow (MGD) Daily Maximum	0.048804	0.054303	0.046864	0.049816	0.048053	0.05597	0.056442	0.05805	0.067337	0.048742	0.0467	0.064184
pH (S.U.) Instantaneous Minimum	7.2	7.3	7.3	7.2	7.3	7.3	7.3	7.4	7.3	7.4	7.4	7.3
pH (S.U.) Instantaneous Maximum	7.6	7.6	7.7	7.7	7.7	7.7	7.7	7.9	7.8	7.7	7.7	7.8
DO (mg/L) Instantaneous Minimum	6.3	6.1	6.1	6.2	6.3	6.6	7.3	8.2	8.2	7.8	7.5	7.4
CBOD5 (lbs/day) Average Monthly	< 0.7	< 1.0	< 0.8	< 0.8	0.9	2	2	2	1	0.8	1	1.0
CBOD5 (mg/L) Average Monthly	< 2	< 3	< 2	< 2	2	4	4	4	3	2	3	3.0
TSS (lbs/day) Average Monthly	6	5	5	4	5	7	8	6	6	5	4	6
TSS (mg/L) Average Monthly	16	12	13	10	12	19	19	17	14	14	11	15
Total Dissolved Solids (lbs/day) Average Monthly	368.0	591.0	383.0	419.0	358	343.0	317.0	356	325.0	289	327	364
Total Dissolved Solids (mg/L) Average Monthly	1047.0	1454.0	1039.0	1075.0	980.0	850.0	754.0	940.0	780.0	749.0	944.0	940.0
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	< 1	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 1	< 35
Fecal Coliform (No./100 ml) Instantaneous Maximum	2	< 1	< 1	< 1	< 1	6	1	3	< 1	25	< 1	330
UV Intensity (mW/cm²) Daily Minimum	9.3	GG	9.8	9.4	9.0	5.7	7.3	7.4	5.8	7.6	6.8	2.8

Nitrate-Nitrite (lbs/day) Average Monthly	0.4	0.6	0.5	0.2	0.4	0.5	1.6	1.7	2.1	2.2	0.8	0.8
Nitrate-Nitrite (mg/L) Average Monthly	1.3	1.5	1.5	0.6	1.2	1.4	3.7	4.7	5.2	5.6	2.2	2.1
Total Nitrogen (lbs/day) Average Monthly	0.9	1	1	0.9	1	1	3	2	3	3	1	1
Total Nitrogen (mg/L) Average Monthly	2.66	3.42	3.27	2.25	2.88	3.22	6.35	6.45	7.29	7.39	3.4	3.35
Ammonia (lbs/day) Average Monthly	0.08	< 0.3	0.2	0.08	0.02	< 0.2	0.2	0.06	< 0.2	< 0.3	0.02	0.05
Ammonia (mg/L) Average Monthly	0.2	< 0.8	0.5	0.2	0.1	< 0.7	0.6	0.2	< 0.6	< 0.8	0.04	0.1
Total Phosphorus (lbs/day) Average Monthly	0.1	0.09	0.1	0.09	0.08	0.08	0.2	0.1	0.1	< 0.1	0.08	0.1
Total Phosphorus (mg/L) Average Monthly	0.3	0.2	0.3	0.2	0.2	0.2	0.4	0.3	0.3	< 0.3	0.2	0.3

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .1
Latitude 40º 18' 0.64" **Longitude** -75º 2' 30.86"
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)
E. Coli	Report	IMAX	-	92a.61

Water Quality-Based Limitations

Parameter	Limit (mg/l)	SBC	Basis
CBOD5 (May 1-Oct 31)	10	Average Monthly	WQM 6.3
CBOD5 (Nov 1- Apr 30)	15	Average Monthly	seasonal
Total Suspended Solids	30	Average Monthly	DRBC
Total Dissolved Solids	1,500	Average Monthly	DRBC
NH3-N (May 1- Oct 31)	3.0	Average Monthly	WQM 6.3
NH3-N (Nov 1 – Apr 30)	7.0	Average Monthly	seasonal
DO	5.0	Inst.Min.	WQM 6.3
pH	6.0 to 9.0 std at all times		Ch. 93
Fecal Coliform	200/1000	Geo.mean/Imax	Ch.93 and DRBC
Total Phosphorus (April 1 – Oct 31)	1.5	Average Monthly	Previous calculation/existing*
Total Phosphorus (Nov 1 – Mar 31)	2.0	Average Monthly	
Total Nitrogen	Report	Average Monthly	Data Collection/SOP
Nitrate-Nitrite as N (July 1 – Oct 31)	8.0	Average Monthly	Neshaminy Creek Basin requirement**
Nitrate-Nitrite as N (Nov 1 – Jun 30)	Report	Average Monthly	

All limits are existing except E. Coli.
* Phosphorus limit was developed based on the existing loading at the 2009 permit renewal.

** Neshaminy Creek has a policy to limit ammonia + nitrate + nitrate concentration to a maximum of 11 mg/l to protect an existing public water supply use. Therefore, the permit includes numerical limits for nitrite/nitrate of 8.0 mg/l during a four-month seasonal period.

*** The discharge from this facility was modeled in1994 using WQM 6.3. Since there have been no substantial changes the effluent limits are still valid.

Anti-Backsliding

N/A

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	Average Weekly	Daily Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	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	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5 Nov 1 - Apr 30	13	XXX	XXX	15	XXX	30	1/week	8-Hr Composite
CBOD5 May 1 - Oct 31	8.3	XXX	XXX	10	XXX	20	1/week	8-Hr Composite
TSS	25	XXX	XXX	30	XXX	60	1/week	8-Hr Composite
Total Dissolved Solids	1251	XXX	XXX	1500.0	XXX	XXX	1/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	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/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Nitrate-Nitrite Nov 1 - Jun 30	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite

Outfall 001, Continued (from December 1, 2024 through November 30, 2029)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Daily Minimum	Average Monthly	Maximum	Instant. Maximum		
Nitrate-Nitrite Jul 1 - Oct 31	6.7	XXX	XXX	8.0	XXX	16	1/week	8-Hr Composite
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/week	Calculation
Ammonia Nov 1 - Apr 30	5.8	XXX	XXX	7.0	XXX	14	1/week	8-Hr Composite
Ammonia May 1 - Oct 31	2.5	XXX	XXX	3.0	XXX	6	1/week	8-Hr Composite
Total Phosphorus Nov 1 - Mar 31	1.7	XXX	XXX	2.0	XXX	4	1/week	8-Hr Composite
Total Phosphorus Apr 1 - Oct 31	1.1	XXX	XXX	1.5	XXX	3	1/week	8-Hr Composite