pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0052094**
Facility Type	**Non-Municipal**	APS ID	**1096191**
Major / Minor	**Minor**	Authorization ID	**1453693**

Applicant and Facility Information

Applicant Name	**Montgomery Sewer Co. Inc.**	Facility Name	**The Orchard Development STP**
Applicant Address	PO Box 851	Facility Address	P O Box 308
	Montgomeryville, PA 18936-0851		Revere, PA 18953
Applicant Contact	Anne Hassan	Facility Contact	Thomas Hall
Applicant Phone	(215) 368-3178	Facility Phone	(610) 847-5037
Client ID	80278	Site ID	453001
Ch 94 Load Status	Not Overloaded	Municipality	Montgomery Township
Connection Status		County	Montgomery
Date Application Received	August 10, 2023	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: Renewal of the NPDES permit for treated sewage.

Summary of Review

The permittee has submitted a renewal application for the discharge of the treated sewage from their facility into Little Neshaminy Creek (WWF, MF) through Outfall 001.

The facility is serving Orchard Development subsidiary. Annual flow for 2022 is 0.069 MGD.

The STP consist of: One Fermentation Tank – 1st Stage Anoxic Tank, 2 (two) aeration carousel (oxidation ditches) - 2nd and 3rd stage anoxic tanks; reaeration tank; 2 (two) circular final clarifiers, two chlorine tanks, 1 (one) scum holding tank and a sludge holding tank. Gas chlorination is used for disinfection and Liquid Sodium Bisulfite is used for dichlorination.

DEP has conducted the site visits on 05/03/2024 and 01/11/2023.
No violations were voted.

No change of quality or quantity of the discharge since last renewal, therefore, all previously established effluent limits and monitoring requirements (as indicated in pps. 6 and 7) will be proposed except quarterly monitoring for E.Coli that is required to collect statewide data.

Sludge use and disposal description and location(s): Hatfield TWP Water Auth.

Act 14 Notification: Montgomery Twp Sewer Auth and Montgomery County Environment Planning Commission received a note on 6/20/2023.

Public Participation

Approve	Deny	Signatures	Date
X		Begay Omuralieva Begay Omuralieva / Environmental Engineering Specialist	June 7, 2024
X		Pravin Patel Pravin C. Patel, P.E. / Environmental Engineer Manager	06/11/2024

Summary of Review
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)	.15
Latitude	40Âº 14' 10.19"	Longitude	-75Âº 13' 40.46"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Little Neshaminy Creek (WWF, MF)	Stream Code	
NHD Com ID	25473876	RMI	
Drainage Area	1.57 sq. mi	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	0.0361	Q_{7-10} Basis	
Elevation (ft)	345	Slope (ft/ft)	
Watershed No.	2-F	Chapter 93 Class.	WWF, MF
Existing Use	**Same as designated use**	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	FLOW REGIME MODIFICATION, NUTRIENTS, ORGANIC ENRICHMENT, PATHOGENS, PATHOGENS, POLYCHLORINATED BIPHENYLS (PCBS), SILTATION		
Source(s) of Impairment	MUNICIPAL POINT SOURCE DISCHARGES, MUNICIPAL POINT SOURCE DISCHARGES, SOURCE UNKNOWN, SOURCE UNKNOWN, SOURCE UNKNOWN, URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS		
TMDL Status	Final*	Name	Neshaminy Creek
Nearest Downstream Public Water Supply Intake	Neshaminy Creek		
PWS Waters	Aqua PA Southeast Division	Flow at Intake (cfs)	
PWS RMI	24.7	Distance from Outfall (mi)	24.7

(*) Nutrient portion of the Neshaminy Creek TMDL was withdrawn in 2007

Changes Since Last Permit Issuance: none

Compliance History

DMR Data for Outfall 001 (from May 1, 2023 to April 30, 2024)

Parameter	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23
Flow (MGD) Average Monthly	0.078	0.083	0.065	0.081	0.096	0.068	0.060	0.069	0.071	0.076	0.077	0.067
Flow (MGD) Daily Maximum	0.284	0.250	0.089	0.138	0.308	0.137	0.080	0.119	0.097	0.130	0.180	0.110
pH (S.U.) Instantaneous Minimum	7.0	6.9	6.8	6.1	6.4	6.8	6.9	7.0	6.8	7.0	7.0	6.7
pH (S.U.) Instantaneous Maximum	7.3	7.4	7.4	7.3	7.2	7.3	7.4	7.5	7.2	7.3	7.7	7.4
DO (mg/L) Daily Minimum	7.5	7.0	8.4	7.6	6.1	7.1	7.2	6.5	6.2	5.9	7.0	6.9
TRC (mg/L) Average Monthly	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
CBOD5 (lbs/day) Average Monthly	2	1	1	1	11	2	1.3	1.0	1.3	1.4	1.4	1.1
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly	265	105	150	566	175	154	87	84	177	240	198	140
CBOD5 (mg/L) Average Monthly	2	2	2	3	14	3	3	2	2	2.0	2	2
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	314	191	275	211	262	241	181	165	279	183	321	258
TSS (lbs/day) Average Monthly	3.7	5.3	1.0	1.3	10.7	1.0	1.6	3.8	9.3	1.8	1.4	1.8
TSS (lbs/day) Raw Sewage Influent Average Monthly	161	86	92	353	170	127	75	77	177	183	167	114
TSS (mg/L) Average Monthly	4	10	2	4	15	2	3	7	12	2.5	2	3

TSS (mg/L) Raw Sewage Influent Average Monthly	168	153	170	162	248	198	152	150	277	282	274	212
Fecal Coliform (No./100 ml) Geometric Mean	4	8	2	6	5	4	6	5	16	21	15	26
Fecal Coliform (No./100 ml) Instantaneous Maximum	20	15	6	600	12	17	31	10	120	110	67	56
Nitrate-Nitrite (lbs/day) Average Monthly							1.8	2.6	2.9	2.4		
Nitrate-Nitrite (mg/L) Average Monthly							3.7	5.0	4.4	4.0		
Total Nitrogen (lbs/day) Average Monthly	6.0	3.7	2.6	6.0	5.3	3.2	2.1	2.9	3.2	2.8	2.5	2.1
Total Nitrogen (mg/L) Average Monthly	6.6	6.4	4.9	6.4	7.6	5.4	4.4	5.7	5.0	4.4	4.0	3.8
Ammonia (lbs/day) Average Monthly	0.03	0.03	0.04	0.03	0.04	0.03	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.03
Ammonia (mg/L) Average Monthly	< 0.1	0.1	0.1	0.1	0.1	< 0.1	< 0.1	0.1	0.1	< 0.1	0.1	0.1
Total Phosphorus (lbs/day) Average Monthly	0.12	0.06	0.05	0.04	0.1	0.05	< 0.1	0.1	0.1	0.1	0.2	0.2
Total Phosphorus (mg/L) Average Monthly	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.3	0.3

Compliance History

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .15
Latitude 40º 14' 9.46" **Longitude** -75º 13' 40.34"
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)

Comments: n/a

Water Quality-Based Limitations

Based on previous permit's (dated 2019) established effluent limits and monitoring requirements:

DEP's biologist has suggested to reevaluate the receiving stream (Little Neshaminy Creek) for low-flow statistics. The low-flow statistics have been computed using EPA's U.S. Geological Survey software tool: StreamStat. Streamstat report is attached.

DO and NH3

Based on the newly computed low-flow statistics WQM modeling is done for protection of Little Neshaminy Creek Chapter 93 water quality standards for DO and NH3-N toxicity:

The modeled limits for Orchard Development STP are same as in current permit:

CBOD5:10 mg/l (5/1 – 10/31), 20 mg/l (11/1 – 4/30)
NH3-N: 2.0 mg/l (5/1 – 10/31), 6.0 mg/l (11/1 – 4/30)
DO: 5.0 mg/l (minimum)

Therefore, current limits are protective of the stream criteria for DO and ammonia and will remain in the proposed permit.

Phosphorous

The nutrient TMDL for Neshaminy Creek was withdrawn and the EPA is expected to develop a new TMDL to include stringent limits for total phosphorus. Since there is no increase in permitted flow, the same effluent limits that are established previously are included in the draft permit (0.8 mg/l during summer and 1.6 mg/l during winter season).

Nitrogen Limits (nitrite-nitrate as N and Total Nitrogen)

The facility has an existing nitrite-nitrate as N limit of 9.0 mg/l, effective July thru October. The nitrite-nitrate limit is based on protection of the PWS use of Neshaminy Creek during the critical period of July thru October.
Total Nitrogen year-round monitoring is established in previous permit.

TRC

The Departments TRC model was run (newly computed low-flow statistics were used) in order to determine the maximum allowable discharge concentration of TRC is 0.07 mg/l average monthly and 0.22 mg/l instantaneous maximum. Copy of model results are attached to this factsheet:

TRC_CALC-latest version

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0361	= Q stream (cfs)	0.5	= CV Daily
0.15	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.8	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.146	1.3.2.iii	WLA cfc = 0.137
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.055	5.1d	LTA_cfc = 0.080

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.067	AFC
		INST MAX LIMIT (mg/l) = 0.220	

WLA afc	(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...
	...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...
	...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)

Since the facilities annual summary demonstrate that highest results (0.2 mg/l) are excessive of proposed limits (0.07 mg/l) the compliance period of 1 (one) year from issuance date is given.

Compliance for TRC limits is confirmed (based on summary data on p. 4 of this factsheet.

Influent Monitoring for CBOD5 and TSS

The CBOD5 and TSS influent monitoring to check with secondary treatment requirements.

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	Minimum	Average Monthly	Maximum	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 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.07	XXX	0.22	1/day	Grab
CBOD5 Nov 1 - Apr 30	25	XXX	XXX	20	XXX	40	1/week	24-Hr Composite
CBOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
CBOD5 May 1 - Oct 31	12.5	XXX	XXX	10	XXX	20	1/week	24-Hr Composite
TSS	37.5	XXX	XXX	30	XXX	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)	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
Nitrate-Nitrite Jul 1 - Oct 31	11.0	XXX	XXX	9.0	XXX	18	1/week	24-Hr Composite
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/week	Calculation

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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Ammonia Nov 1 - Apr 30	7.5	XXX	XXX	6.0	XXX	12	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	2.5	XXX	XXX	2.0	XXX	4	1/week	24-Hr Composite
Total Phosphorus Nov 1 - Mar 31	2.0	XXX	XXX	1.6	XXX	3.2	1/week	24-Hr Composite
Total Phosphorus Apr 1 - Oct 31	1.0	XXX	XXX	0.8	XXX	1.6	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 001

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Approve	Deny	Signatures	Date
X		Begay Omuralieva Begay Omuralieva / Environmental Engineering Specialist	June 7, 2024
X		Pravin Patel Pravin C. Patel, P.E. / Environmental Engineer Manager	06/11/2024