

Application Type Renewal
Facility Type Municipal
Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

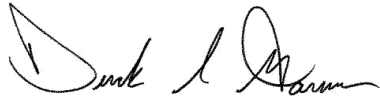

Application No. PA0228621
APS ID 1088787
Authorization ID 1440283

Applicant and Facility Information

Applicant Name	<u>Smithfield Township Board of Supervisors</u>	Facility Name	<u>Smithfield Township Wastewater Treatment Facility</u>
Applicant Address	<u>PO Box 102</u> <u>East Smithfield, PA 18817-0102</u>	Facility Address	<u>235 Park Lane</u> <u>East Smithfield, PA 18817</u>
Applicant Contact	<u>Raychel Boggs</u>	Facility Contact	<u>Douglas Williams</u>
Applicant Phone	<u>(570) 596-7770</u>	Facility Phone	<u>(570) 596-7216</u>
Client ID	<u>94250</u>	Site ID	<u>604634</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>Smithfield Township</u>
Connection Status	<u>No Limitations</u>	County	<u>Bradford</u>
Date Application Received	<u>May 15, 2023</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>May 30, 2023</u>	If No, Reason	<u></u>
Purpose of Application	<u>Renewal of an existing NPDES permit for the discharge of treated sewage.</u>		

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.

Approve	Deny	Signatures	Date
X		 Derek S. Garner / Project Manager	April 18, 2024
X		 Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	April 18, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No. 001 Design Flow (MGD) 0.06
 Latitude 41° 51' 31.95" Longitude -76° 37' 46.24"
 Quad Name East Troy Quad Code 0432
 Wastewater Description: Sewage Effluent

Receiving Waters Tomjack Creek Stream Code 30702
 NHD Com ID 66397929 RMI 7.43
 Drainage Area 4.7 Yield (cfs/mi²) 0.01
 Q₇₋₁₀ Flow (cfs) 0.06 Q₇₋₁₀ Basis Streamgage No. 01517000
 Elevation (ft) 1182 Slope (ft/ft) 0.019
 Watershed No. 4-C Chapter 93 Class. TSF
 Existing Use n/a Existing Use Qualifier n/a
 Exceptions to Use n/a Exceptions to Criteria n/a
 Assessment Status Attaining Use(s)
 Cause(s) of Impairment n/a
 Source(s) of Impairment n/a
 TMDL Status n/a Name n/a

Nearest Downstream Public Water Supply Intake Danville Municipal Water Authority
 PWS Waters Susquehanna River Flow at Intake (cfs) 1,120
 PWS RMI 138 Distance from Outfall (mi) 144

Treatment Facility Summary

The Smithfield Township Wastewater Treatment Facility was constructed and operates under WQM Permit No. 0802403, issued March 19, 2003. The permit approved the construction and operation of the following treatment facilities: one comminutor, one manually cleaned bar screen, one equalization tank, two aeration tanks, two settling tanks, one chlorine contact tank with sodium hypochlorite disinfection, and one aerobic digestion/sludge holding tank. The permit was amended on April 20, 2015 to replace the chlorine disinfection system with ultraviolet disinfection.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Activated Sludge	Ultraviolet	0.06
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.06	136.2	Not Overloaded	Aerobic Digestion	Other WWTP

Compliance Review

The facility was most recently inspected by DEP on March 25, 2020. The associated report indicated that no violations were identified during the inspection.

The following eDMR violations occurred during the existing permit's term:

- The December 2021 monitoring period DMR was submitted late.
- April 24, 2022 capacity of the plant was exceeded. A flow of 0.071 MGD was reported, exceeding the permitted limit of 0.06 MGD.

The following open violation is associated with the permittee:

Program	Program Specific ID	Inspection ID	Violation ID	Inspection Category	Violation Date	Violation Code	Violation
WRM Water Obstructions & Encroachments	94250	3058831	889438	Clnt	7/22/2020	691.402COMPL	Failure to comply with permit conditions

Development of Effluent Limitations

Outfall No. 001 Design Flow (MGD) 0.06
 Latitude 41° 51' 31.95" Longitude -76° 37' 46.24"
 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	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)

Water Quality-Based Limitations

DEP models in-stream conditions to determine if water quality-based effluent limitations (“WQBELs”) are appropriate. A model was created using WQM 7.0 v1.1 to determine if the existing limits for CBOD₅, ammonia-N and dissolved oxygen are appropriate or if more stringent limits are necessary.

The water quality model WQM 7.0 v1.1 is used to determine the WQBELs for dissolved oxygen, CBOD₅ and ammonia-n (NH₃-N) based on a multiple-discharge analysis, if applicable. The model assumes complete and instantaneous mixing with the receiving surface water. The reach chosen to model the in-stream characteristics is appropriate as a recovery in dissolved oxygen levels is demonstrated. The modeling output is as follows:

Parameter	Discharge Conc. (mg/l)	Effluent Limitations		
		30 Day Average (mg/l)	Maximum (mg/l)	Minimum (mg/l)
CBOD ₅	25	25	-	-
NH ₃ -N	3	2.99	5.98	-
Dissolved Oxygen	5	-	-	5

The input concentration for CBOD₅ is the technology-based concentration limit in the existing permit and the input concentrations for ammonia-N and dissolved oxygen are the water quality-based concentration limits in the existing permit. Based on the model output, the existing limits are protective of the receiving surface water.

Best Professional Judgment (BPJ) Limitations

Influent monitoring for BOD₅ and TSS based on Chapter 94 requirements are proposed to remain in the permit.

Since the facility uses ultraviolet light for disinfection, monitoring for UV intensity is proposed to remain in the permit.

A quarterly reporting requirement for E. Coli is proposed per the 2017 Triennial Review of Water Quality Standards, published in the PA Bulletin on July 11, 2020.

Chesapeake Bay

From 2014 to 2018 the facility conducted annual monitoring for total nitrogen and total phosphorus. The results are summarized as follows:

Monitoring Period	Total Nitrogen		Total Phosphorus	
	Load (lbs/day)	Conc. (mg/l)	Load (lbs/day)	Conc. (mg/l)
2014	2.20	20.70	0.28	2.66
2015	3.42	15.20	0.76	3.36
2016	4.10	17.10	0.86	2.70
2017	5.32	23.62	0.62	2.76
2018	6.09	14.61	0.62	1.49
AVG	4.23	18.25	0.63	2.59

Since this Phase 5 facility has completed five years of monitoring, per Pennsylvania's Chesapeake Bay Watershed Implementation Plan (WIP) nutrient monitoring is no longer necessary and was removed during the permit's most recent renewal in 2018.

Anti-Backsliding

No limits are proposed to be made less stringent. Anti-backsliding should not impact the permit renewal.

Existing Effluent Limitations and Monitoring Requirements

The existing effluent limitations and monitoring requirements are as follows:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instantaneous 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	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	12	20	XXX	25.0	40.0	50	2/month	8-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
Total Suspended Solids	15	22	XXX	30.0	45.0	60	2/month	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Ultraviolet light intensity (mW/cm ²)	XXX	XXX	Report	XXX	XXX	XXX	Continuous	Metered
Ammonia-Nitrogen Nov 1 - Apr 30	4.5	6.5	XXX	9.0	13.0	18	2/month	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	1.5	2.0	XXX	3.0	4.5	6	2/month	8-Hr Composite

Compliance Sampling Location: Outfall 001

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)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instantaneous 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	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
CBOD5	12	20	XXX	25.0	40.0	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
TSS	15	22	XXX	30.0	45.0	60	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
UV Intensity (mW/cm ²)	XXX	XXX	Report	XXX	XXX	XXX	Continuous	Metered
Ammonia Nov 1 - Apr 30	4.5	6.5	XXX	9.0	13.0	18	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	1.5	2.0	XXX	3.0	4.5	6	2/month	8-Hr Composite

Compliance Sampling Location: Outfall 001

Input Data WQM 7.0

	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
	30702	TOMJACK CREEK	7.430	1182.00	4.70	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.100	0.00	0.06	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
Smithfield WWTP	PA0228621	0.0600	0.0600	0.0600	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	6.00	0.00	0.00	0.70

Input Data WQM 7.0

	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
	30702	TOMJACK CREEK	6.490	1088.00	6.74	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.100	0.00	0.09	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 Hydrodynamic Outputs

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
04C		30702				TOMJACK CREEK						
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)	
Q7-10 Flow												
7.430	0.06	0.00	0.06	.0928	0.01894	.386	6.8	17.64	0.06	0.985	23.04	7.00
Q1-10 Flow												
7.430	0.05	0.00	0.05	.0928	0.01894	NA	NA	NA	0.06	1.022	23.24	7.00
Q30-10 Flow												
7.430	0.08	0.00	0.08	.0928	0.01894	NA	NA	NA	0.06	0.915	22.66	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.84	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
04C	30702	TOMJACK 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
7.430	Smithfield WWTP	12.81	12	12.81	12	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
7.430	Smithfield WWTP	1.59	2.99	1.59	2.99	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
7.43	Smithfield WWTP	25	25	2.99	2.99	3	3	0	0

WQM 7.0 D.O. Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
04C	30702	TOMJACK CREEK		
<hr/>				
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>		<u>Analysis pH</u>
7.430	0.060	23.037		7.000
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>		<u>Reach Velocity (fps)</u>
6.799	0.386	17.637		0.058
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>		<u>Reach Kn (1/days)</u>
15.97	1.325	1.81		0.884
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>		<u>Reach DO Goal (mg/L)</u>
5.058	20.259	Owens		5
<u>Reach Travel Time (days)</u>	Subreach Results			
0.985	<u>TravTime</u>	<u>CBOD5</u>	<u>NH3-N</u>	<u>D.O.</u>
	(days)	(mg/L)	(mg/L)	(mg/L)
	0.099	13.74	1.66	6.47
	0.197	11.83	1.52	6.88
	0.296	10.18	1.40	7.13
	0.394	8.76	1.28	7.33
	0.493	7.54	1.17	7.50
	0.591	6.49	1.08	7.65
	0.690	5.59	0.99	7.78
	0.788	4.81	0.90	7.80
	0.887	4.14	0.83	7.80
	0.985	3.56	0.76	7.80

WQM 7.0 Effluent Limits

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>					
04C	30702	TOMJACK 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)
7.430	Smithfield WWTP	PA0228621	0.060	CBOD5	25		
				NH3-N	2.99	5.98	
				Dissolved Oxygen			3