pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0084212**
Facility Type	**Municipal**	APS ID	**274825**
Major / Minor	**Minor**	Authorization ID	**1315695**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Leacock Township Sewer Authority**	Facility Name	**Leacock Township WWTP**
Applicant Address	PO Box 558	Facility Address	3545 West Newport Road
	Intercourse, PA 17534-0558		Intercourse, PA 17534-0558
Applicant Contact	Frank Howe	Facility Contact	Bruce Ammon
Applicant Phone	(717) 768-8585	Facility Phone	(717) 768-8585
Client ID	116	Site ID	237697
Ch 94 Load Status	Not Overloaded	Municipality	Leacock Township
Connection Status	No Limitations	County	Lancaster
Date Application Received	May 5, 2020	EPA Waived?	No
Date Application Accepted	June 11, 2020	If No, Reason	Significant CB Discharge
Purpose of Application	NPDES Renewal.		

Summary of Review

On behalf of the Leacock Township Sewer Authority (LTSA), ARRO Consulting, Inc. has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of an NPDES permit. The permit was last reissued on November 17, 2015 and became effective on December 1, 2015. The permit expired on November 30, 2020 but the terms and conditions have been administratively extended since that time.

Based on the review, it is recommended that the permit be drafted.

Sludge use and disposal description and location(s): Sludge is treated onsite via three (3) aerobic digestors prior to hauled off site for land application (permit nos. 897401 & 532812) or to another treatment plant (Manheim WWTP) for ultimate treatment/disposal.

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		*Jinsu Kim* Jinsu Kim / Environmental Engineering Specialist	September 13, 2021
X		Maria D. Bebenek for Daniel W. Martin Daniel W. Martin, P.E. / Environmental Engineer Manager	September 15, 2021
X		Maria D. Bebenek Maria D. Bebenek, P.E. / Program Manager	September 15, 2021

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.45
Latitude	40° 2’ 40.1”	Longitude	76° 6’ 48.9”
Quad Name	New Holland	Quad Code	1837
Wastewater Description:	Treated Sewage		
Receiving Waters	Muddy Run	Stream Code	07613
NHD Com ID	57463297	RMI	3.95
Drainage Area	2.92 mi^2	Yield (cfs/mi^2)	0.12
Q_{7-10} Flow (cfs)	0.34	Q_{7-10} Basis	USGS gage 01576500
Elevation (ft)	376	Slope (ft/ft)	N/A
Watershed No.	7-J	Chapter 93 Class.	WWF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	Nutrients, Siltation		
Source(s) of Impairment	Agriculture		
TMDL Status	Final, 04/09/2001	Name	Muddy Run Watershed
Nearest Downstream Water Supply Intake	Safe Harbor Water Corporation (Hydroelectric Power Station)		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	0.31
PWS RMI	16.9	Distance from Outfall (mi)	41

Drainage Area
The discharge is to Muddy Run at RM 3.95. A drainage area upstream of the point of discharge is estimated to be 2.92 sq.mi according to USGS StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
USGS StreamStats produced a Q7-10 of 0.0646 cfs. However, the estimated drainage area of 2.92 sq.mi. is lower than the minimum required value to be used in a regression equation; as a result, unknown errors occurred when producing low flow statistics. Previously, USGS gage station on the Conestoga River at Lancaster (#01576500) is used to estimate the Q7-10. Using this gage station flow measurement (i.e., Q_{7-10} of 38.6 cfs and a drainage area of 324 sq.mi), a Q7-10 flow is calculated to be (38.6 cfs/324 sq.mi) x 2.92 sq.mi. = **0.347 cfs.** This is slightly different from the Q7-10 flow of 0.34 cfs used in the last permit renewal.

Muddy Run
Under 25 Pa Code §93.9o, Muddy Run from Muddy Run dam to the mouth is designated as warm water fishes and supports migratory fishes. No special protection water is impacted by this discharge. DEP’s latest integrated water quality report finalized in 2020 indicates that Muddy Run is impaired for nutrients and siltation as a result of agricultural activities. A Total Maximum Daily Loads (TMDL) report was finalized on 4/9/2001 to address these impairments. No wasteload allocation is listed in the TMDL report for the discharge from this facility as the TMDL focused on excess nutrients and suspended solids loads from agriculture. While the TMDL excludes the discharge from this facility, the facility has consistently been monitoring for nutrients as well as total suspended solids as part of permit requirements which should provide enough monitoring data available in the future to re-evaluate the TMDL for this watershed.

Public Water Supply
The fact sheet developed for this last permit renewal indicates that the nearest downstream water supply intake is Safe Harbor Water Corporation located on the Susquehanna River, approximately 41 miles from the discharge. Based on dilution and distance from the intake, the discharge is not expected to impact the downstream water supply.

Treatment Facility Summary				
Treatment Facility Name: Leacock Township STP				
WQM Permit No.	**Issuance Date**			
3608406	3/24/2009			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Total Nitrogen Reduction	Sequencing Batch Reactor	Ultraviolet	0.45
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.54	2252	Not Overloaded	Aerobic Digestion	Land Application

LTSA owns and operates a sanitary wastewater treatment facility located at 3545 West Newport Road, Intercourse PA 17534. The facility serves the area of Leacock Township only and all sewer systems are 100% separated. With an annual average design flow of 0.45 MGD and hydraulic design capacity of 0.54 MGD, the facility utilizes a Sequencing Batch Reactor (SBR) activated sludge treatment process consisting of a grinder chamber, influent pump station, SBRs (3), UV disinfection, post aeration basin, and outfall structure.

A number of industrial/commercial users are currently connected to the sewer system. These users are as follows:

Industrial / Commercial User	Type of Business	Average Wastewater Flow (MGD)
Brigadoon	RV Park	0.0014
Plain & Fancy	Theater	0.0259
Kauffman & Sons	Fruit Farm	0.0024
Amish Barn	Tourist Attraction	0.0030
Smucker Assoc.	Restaurant	0.0236
Fisher (Machine Shop)	Machine Shop	0.0002
Hoober Mill	Animal Feed	0.0001
Revere Tavern	Restaurant / Hotel	0.0169
Harvest Drive Family Inn	Hotel	0.0028
Thomas Doyle		0.0046
Pequa Valley School	School	0.0003
Travelers Rest Motel	Hotel	0.0031
Schuit	Bed and Breakfast	0.0003
King Car Wash	Car Wash	0.0039
Stoltzfus Restaurant	Restaurant	0.0008
Stoltzfus Meat Market	Food Manufacture / Retail	0.0013
Rhoades Service	Car Garage	0.0001
Auntie Anne's	Fast Food	0.0001
Florence Reaver	Retail Store	0.0001
Hoober Feed	Animal Feed	0.0003
Kitchen Kettle	Retail / Hotel	0.0082
Zook Dry Goods	Retail	0.0004
Hurst	Retail	0.0004
Clark Assoc.	Service / Supply	0.0004
Zimmerman & Sons	Retail	0.0002
Getty Mart	Gas Station / Convenience Store	0.0036
Watson Run Clubhouse	Misc / Homeowners Assoc	0.0003
ICC Foods	Food Products Manufacturing	0.0045
Univest Bank	Bank	0.0001
Paradise Motors	Used Car Dealer	0.0001
Esh Foods	Food Products Supplier	0.0008

Based on the review, no process wastewater generated from these users is being discharged to the facility. The application also states that the facility currently does not have an EPA-approved pretreatment program; therefore, Whole Effluent Toxicity (WET) Test is not required since the facility does not meet any of criteria specified in 40 CFR § 122.21(j)(5)(ii) and 25 Pa Code § 92a.27(a)(1) and (2).

Sludge is treated onsite via three (3) aerobic digestors prior to hauled off site for land application (permit nos. 897401 & 532812) or to another treatment plant (Manheim WWTP) for ultimate treatment/disposal.

Compliance History	
Summary of DMRs:	A summary of past 12-month DMR data is presented on the next page.
Summary of Inspections:	02/25/2021: Tracy Tomtishen, DEP Water Quality Specialist, conducted a Chesapeake Bay Cap Load Compliance Evaluation and noted that a revision is recommended for a number of monthly DMR submissions to correctly address sample results and to include daily effluent supplemental forms. No violations were identified at the time of evaluation. 06/09/2020: Tracy Tomtishen conducted an administrative inspection to determine current status of operations. No issues were noted at the time of inspection. 01/06/2020: Tracy Tomtishen conducted a routine inspection. No issues were noted at the time of inspection, but a heavy algae accumulation was noted on rocks prior to entering stream. 01/03/2020: Tracy Tomtishen conducted a Chesapeake Bay Cap Load Compliance Evaluation and noted that some calculations were incorrectly done. No violations were noted at the time of inspection. 01/09/2019: Tracy Tomtishen conducted a routine inspection. No violation was noted at the time of inspection.
Other Comments:	DEP's database revealed that there is no open violation associated with the permittee or facility. No previous violations have been identified through DEP's database.

Effluent Data

DMR Data for Outfall 001 (from August 1, 2020 to July 31, 2021)

Parameter	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20
Flow (MGD) Average Monthly	0.2467	0.2445	0.228	0.2300	0.2326	0.209	0.2128	0.211835	0.2120	0.244454	0.252430	0.273390
Flow (MGD) Daily Maximum	0.2942	0.2560	0.282	0.2751	0.2886	0.2527	0.2440	0.286000	0.2620	0.285900	0.3047	0.4680
pH (S.U.) Minimum	7.36	7.28	7.22	7.16	7.04	7.05	7.05	7.06	7.28	7.27	7.33	7.30
pH (S.U.) Maximum	7.46	7.45	7.38	7.33	7.23	7.19	7.22	7.33	7.43	7.48	7.53	7.64
DO (mg/L) Minimum	5.7	5.7	5.9	5.9	6.0	6.0	5.9	6.0	6.27	5.9	5.7	5.8
CBOD5 (lbs/day) Average Monthly	4	4	4	4	4.27	4.40	4	3.98	< 3.54	5.89	4.77	4.50
CBOD5 (lbs/day) Weekly Average	5	4	4	4	5.66	5.16	5	4.56	< 3.76	6.95	6.64	4.71
CBOD5 (mg/L) Average Monthly	< 2	2	< 2	2.1	2	2.5	2.23	< 2	< 2	2.9	< 2	< 2
CBOD5 (mg/L) Weekly Average	< 2	2	< 2	2.3	2.9	2.9	2.8	< 2	< 2	3.5	< 2	< 2
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	417	421	334	367	470	325	347	506	554	702	1394	346
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	503	546	471	443	740	507	481	606	962	983	4208	442
BOD5 (mg/L) Raw Sewage Influent Average Monthly	200	219	184	199	247	189	203	297	344	354	747	162
TSS (lbs/day) Average Monthly	10	8	7	9	8	8.17	9	9.13	7.09	19.36	11.89	9.0
TSS (lbs/day) Raw Sewage Influent Average Monthly	306	350	262	326	365	288	293	292	325	450	928	314
TSS (lbs/day) Raw Sewage Influent Daily Maximum	401	431	302	452	539	443	522	358	402	578	2703	380
TSS (lbs/day) Weekly Average	13	9	7	11	10	10.12	10	13.70	7.53	26.13	22.53	9.42
TSS (mg/L) Average Monthly	4.6	4.1	< 4	4.7	4.10	4.5	4.8	4.20	< 4	9.4	4.72	< 4

Parameter	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20
TSS (mg/L) Raw Sewage Influent Average Monthly	147	182	145	177	190	168	175	170	199	232	496	147
TSS (mg/L) Weekly Average	6.3	4.4	< 4	5.6	4.5	5.2	6	5	< 4	12.5	11.2	< 4
Total Dissolved Solids (lbs/day) Average Monthly	4407	3664	3290	3779	3341	3407	3040	3599	3608	3339	4429	4247
Total Dissolved Solids (lbs/day) Raw Sewage Influent Average Monthly	5490	2511	2429	2087	1487	1871	2292	1638	2650	3061	3743	3177
Total Dissolved Solids (lbs/day) Daily Maximum	5030	4641	3817	4341	3560	4763	3602	3959	4198	4755	5813	4406
Total Dissolved Solids (lbs/day) Raw Sewage Influent Daily Maximum	14446	2918	3236	3791	1665	2554	3736	1866	3883	4070	6281	4568
Total Dissolved Solids (mg/L) Average Monthly	2060	1792	1825	1950	1804	1860	1628	1862	2035	1628	2078	1895
Total Dissolved Solids (mg/L) Raw Sewage Influent Average Monthly	2652	1301	1340	1151	774	1089	1313	956	1450	1520	1868	1476
Fecal Coliform (CFU/100 ml) Geometric Mean	33	9	11	37	54	78	66	33	69	90	7	31
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	132	69	80	247	331	365	285	700	100	220	32	124
UV Transmittance (%) Minimum	61	61	61	61	61	62	61	61	60	59	58	58
Nitrate-Nitrite (mg/L) Average Monthly	3.99	5.31	4.19	4.58	4.19	8.52	5.05	3.31	2.32	1.86	2.95	2.57
Nitrate-Nitrite (lbs) Total Monthly	256	317	236	258	245	418	269	211.4	125	116	189	179.49
Total Nitrogen (mg/L) Average Monthly	5	6	4.63	5.10	4.7	9.10	5.68	4.28	3.13	3.19	4.80	4.77
Total Nitrogen (lbs) Effluent Net Total Monthly	279	360	261	287	273	447	305	237	168	205	311	338

Parameter	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20
Total Nitrogen (lbs) Total Monthly	279	360	261	287	273	447	305	237	153	205	311	338
Total Nitrogen (lbs) Effluent Net Total Annual											3272	
Total Nitrogen (lbs) Total Annual											3272	
Ammonia (lbs/day) Average Monthly	0.2	0.2	0.2	0.20	0.20	0.18	0.20	0.18	0.17	0.22	0.21	0.22
Ammonia (mg/L) Average Monthly	0.10	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.11	< 0.10	< 0.10
Ammonia (lbs) Total Monthly	7	6	6	6	6	4.93	6	5.71	5.29	6.75	6.30	6.82
Ammonia (lbs) Total Annual											95	
TKN (mg/L) Average Monthly	0.50	0.50	0.50	0.51	0.59	0.59	0.63	0.50	0.58	0.79	0.57	0.68
TKN (lbs) Total Monthly	33	30	28	29	34	28.86	35	28.66	30.5	48.4	35	47.12
Total Phosphorus (lbs/day) Average Monthly	2.2	1.8	1.9	1.3	1.31	1.15	1.30	1.32	1.23	1.35	1.54	1.90
Total Phosphorus (mg/L) Average Monthly	1.02	0.92	1.03	0.69	0.68	0.65	0.71	0.73	0.73	0.67	0.75	0.86
Total Phosphorus (lbs) Effluent Net Total Monthly	67	55.4	57.5	38.9	40.3	32.11	39.4	40.9	37.4	41.9	42.3	58.8
Total Phosphorus (lbs) Total Monthly	67	55.4	57.5	38.9	40.3	32.11	39.4	40.9	37.38	41.9	42.3	58.8
Total Phosphorus (lbs) Effluent Net Total Annual											483	
Total Phosphorus (lbs) Total Annual											483	
Sulfate (lbs/day) Average Monthly	128	107	98	116	106	91	82	109	125	86	111	128
Sulfate (lbs/day) Daily Maximum	155	163	144	129	123	128	106	164	148	152	124	191
Sulfate (mg/L) Average Monthly	60.5	52.2	54.5	59.8	56.5	50	44	56	70	41	52	56
Chloride (lbs/day) Average Monthly	2190	2192	1987	1642	1605	1610	1452	1824	2112	1677	2426	2536

Parameter	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20
Chloride (lbs/day) Daily Maximum	2720	2797	2130	2114	1817	2360	1737	2146	2266	2546	3056	3016
Chloride (mg/L) Average Monthly	1024	1065	1105	856	853	877	777	939	1193	801	1140	1128
Bromide (lbs/day) Average Monthly	2	9	2	2	2	1.80	2	1.94	1.77	2.06	2.12	2.32
Bromide (lbs/day) Daily Maximum	4	21	2	2	2	2.11	2	2.28	1.88	2.18	2.26	2.36
Bromide (mg/L) Average Monthly	1.12	5	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00

Existing Effluent Limits and Monitoring Requirements

These tables shown below summarize effluent limits and monitoring requirements specified in the current permit.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
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
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
CBOD5	67	101 Wkly Avg	XXX	18	27	36	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids	113	169 Wkly Avg	XXX	30	45	60	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
Ammonia-Nitrogen May 1 - Oct 31	9.4	XXX	XXX	2.5	XXX	5.0	2/week	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	28	XXX	XXX	7.5	XXX	15	2/week	8-Hr Composite
Total Phosphorus	7.5	XXX	XXX	2.0	XXX	4.0	2/week	8-Hr Composite
Total Dissolved Solids	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Dissolved Solids Influent (3)	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Sulfate	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Chloride	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Bromide	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite

Parameter (1)	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)			Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	2/week	8-Hr Composite
Kjeldahl---N	Report	XXX	XXX	Report	XXX	2/week	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/week	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	8-Hr Composite
Net Total Nitrogen	Report	7,306	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	974	XXX	XXX	XXX	1/month	Calculation

Development of Effluent Limitations and Monitoring Requirements

Outfall No. 001 **Design Flow (MGD)** .45
Latitude 40º 2' 40.06" **Longitude** -76º 6' 48.91"
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: The facility utilizes UV disinfection; therefore, total residual chlorine (TRC) effluent limitation is not applicable. These limitations apply, subject to water quality analysis and BPJ where applicable.

Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen
WQM 7.0 is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's technical guidance no. 391-2000-007 describes the technical methods contained in the model for conducting wasteload allocation analyses and for determining recommended limits for point source discharges. DEP recently updated this model (ver. 1.1) to include new ammonia criteria that has been approved by US EPA as part of the 2017 Triennial Review. A model output indicates that existing limits are still protective of water quality. No changes are therefore recommended.

Toxics
As the facility is considered a minor sewage facility, a limited toxic data is required to be reported in the application. DEP's Toxics Management Spreadsheet was still utilized for those toxics that have been reported in the application. The spreadsheet recommends a routine monitoring for Total Zinc as the effluent concentration is greater than 10% of the WQBEL recommended by the spreadsheet.

Best Professional Judgment (BPJ) Limitations

A minimum DO limit of 5.0 mg/L is a DO water quality criterion found in 25 Pa. Code § 93.7(a). This limit is included in the existing NPDES permit based BPJ. It is still recommended to include this limit in the draft permit to ensure that the facility continues to achieve compliance with DEP water quality standards.

Historically, an average monthly Total Phosphorus limit of 2.0 mg/L was recommended in NPDES permits, per DEP phosphorus guidance 391-2000-018, to control phosphorus effluent levels for any facilities that are expected to contribute 0.25% or more of the total phosphorus loading of the entire basin. DEP has previously determined that this facility meets the criteria and the limit has been continuously imposed in the permit (i.e., 0.45 MGD x 10 mg/L (without treatment) x 8.34

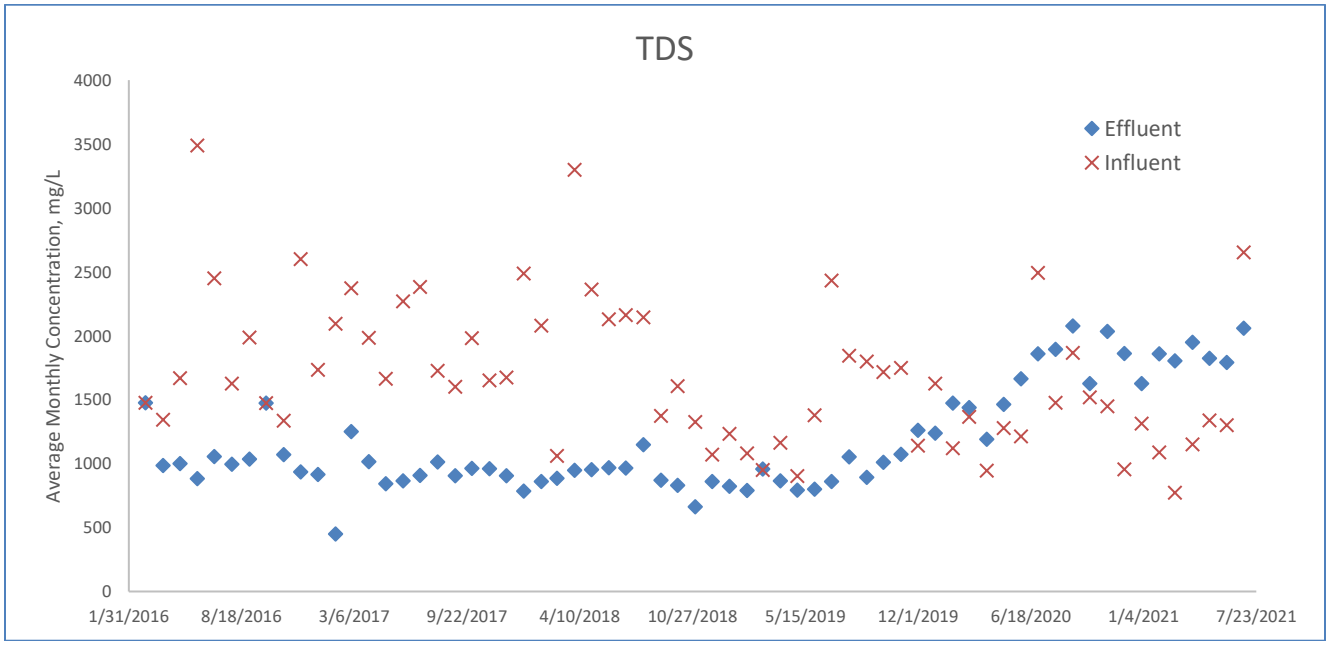
= 37.7 lbs/day; 37.7 lbs/day / 3,814 lbs/day x 100 = 0.59%). Considering this assumption and current conditions of the receiving stream which is significantly degraded as a result of agricultural activities, it is still recommended to maintain this limit in the draft permit to ensure that this facility does not contribute to adverse water quality impacts. Also, the existing average monthly mass loading limit is based on the formula: design flow (MGD) x concentration limit (mg/L) x conversion factor (8.34).

DEP's Standard Operating Procedure (SOP no. BPNPSM-PMT-033) recommends a routine monitoring of Ultraviolet (UV) transmittance or intensity when the facility is utilizing an UV disinfection system in lieu of chlorination. Presumably, this recommendation was implemented as a part of the proper operation and maintenance requirement specified in Part B of the NPDES permit, requesting permittees to demonstrate the effectiveness of UV disinfection system. This is a reasonable approach and has been assigned to other facilities equipped with similar technology. Accordingly, UV monitoring is recommended for this permit renewal.

Additional Consideration

Total Dissolved Solids
The facility receives wastewater from a water treatment system operated by LTSA. This water treatment system was proposed in 2003 as a result of groundwater being contaminated with trichloroethylene (TCE). Two (2) wells are utilized for water supply and water is treated using an ion-exchange softening treatment process as well as nitrate removal process. Backwash is first stored in an equalization tank prior to being discharged into the sewer system. The flow rate is being controlled. When wastewater from the water treatment system was first introduced into the sewer system, LTSA was required to collect not only effluent TDS but also influent TDS to examine both effluent and influent characteristics. The data has been summarized below.

TDS (Average Monthly Concentrations, mg/L) from Mar 2016 to Jul 2021		
	Effluent	Influent
MEDIAN	1001	1627
AVERAGE	1178	1693
MAXIMUM	2078	3490
MINIMUM	451	774



While effluent level has fairly been consistent, influent level has varied significantly. A TDS level has been reduced throughout the treatment process most of the time but not always (i.e., 18 times out of 65 datasets). This could be because average monthly concentrations were reviewed. The requirement to monitor for effluent and influent is still recommended. This approach is also supported by the following guidance recommended by DEP Bureau of Clean Water:

For point source discharges and upon issuance or reissuance of an individual NPDES permit:

- *Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.*

- *Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.*

Based on this information, the requirement to monitor TDS, Sulfate, Chloride, and Bromide is still recommended. Given the fact that the facility has no history of effluent violations and effluent levels have been fairly consistent, it is recommended that the monitoring frequency be changed from 1/week to 2/month for these parameters.

E. Coli Monitoring
DEP's SOP No. BCW-PMT-033 recommends under 25 Pa Code §92a.61 a routine monitoring for E. Coli in all new and reissued permits. Since the facility has the design flow of 0.45 MGD, a quarterly monitoring will be included in the permit.

Muddy Run Watershed Total Maximum Daily Load (TMDL)
Muddy Run Watershed TMDL (Lancaster) was prepared on February 28, 2001 and approved by EPA on April 9, 2001. As mentioned earlier (page 3), there is no wasteload allocation (WLA) assigned to this facility as the TMDL states that no point sources were considered since there is no major sediment or phosphorus point source discharges located in the watershed. The discharge from this facility is significant and may cause or contribute to the impairment. While it has not been determined as to when the TMDL report will be modified to include WLAs for this facility, it is recommended to include a reopener clause in Part C of the draft permit, allowing DEP to modify or reissue the permit if the TMDL is revised to include the WLA for this discharge.

Chesapeake Bay Total Maximum Daily Load (TMDL)
DEP's current Supplement to Phase III Watershed Implementation Plan (WIP) lists this facility as a significant Phase 3 facility. Since the facility expanded its design flow greater than 0.4 MGD prior to this WIP, the facility is addressed in the WIP as follows:

"Leacock Township (PA0084212) will be upgrading to a design flow of 0.45 MGD. It has been issued a final permit with Cap Loads of 7,306 lbs/yr TN and 974 lbs/yr TP. This facility was previously considered non-significant, and so its load will be moved from the non-significant aggregate load to the Phase 3 aggregate load."

The WIP also provides the following table for Leacock Township WWTP:

NPDES Permit No.	Facility	Permit Issuance Date	Permit Expiration Date	Cap Load Compliance Start Date	TN Cap Load (lbs/yr)	TP Cap Load (lbs/yr)
PA0084212	Leacock Township	11/17/2015	1130/2020	10/1/2012	7,306	974

Cap loads are the maximum pollutant load of nutrients and sediments that can be allowed and still meet Chesapeake Bay water quality criteria. For Leacock Township, their TN and TP cap loads were previously established based on 6.0 mg/L and 0.8 mg/L respectively with the design flow of 0.4 MGD. The remaining expanded portion of 0.05 MGD received a 0 mg/L net loading. This resulted in equivalent concentration requirements of 5.3 mg/L of Total Nitrogen and 0.7 mg/L of Total Phosphorus.

The facility is currently meeting their cap loads; accordingly, no interim monitoring requirement is necessary and existing cap loads remain unchanged and will still be in effect at the issuance of the final permit.

Sampling Frequency & Sample Type
Unless specified otherwise in this fact sheet, all sample types and monitoring frequencies will remain unchanged.

Flow Monitoring
Flow monitoring remains unchanged and is recommended by the permit guidance and is also required by 25 PA Code §§ 92a.27 and 92a.61.

Influent Monitoring
As a result of negotiation with EPA, influent monitoring of TSS and BOD5 are required for any POTWs; therefore, existing influent monitoring requirements will remain in the draft permit. The sample type has changed from 24-hour composite to 8-hr composite to be consistent with the existing frequency for TSS and CBOD5 in the effluent.

Mass Loading Limitation
All mass loading effluent limitations recommended in the draft permit are concentration-based, calculated using a formula: design flow (MGD) x concentration limit (mg/L) x conversion factor of 8.34.

Anti-Backsliding
Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions addressed by DEP in this fact sheet.

Class A Wild Trout Streams
No Class A Wild Trout Fishery is impacted by this discharge.

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" (362-0400-001), 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	Daily Maximum	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
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	67	101 Wkly Avg	XXX	18	27	36	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	113	169 Wkly Avg	XXX	30	45	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Dissolved Solids	Report	Report	XXX	Report	Report Daily Max	XXX	2/month	8-Hr Composite
Total Dissolved Solids Raw Sewage Influent	Report	Report	XXX	Report	Report Daily Max	XXX	2/month	8-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 Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Ammonia Nov 1 - Apr 30	28	XXX	XXX	7.5	XXX	15	2/week	8-Hr Composite
Ammonia May 1 - Oct 31	9.4	XXX	XXX	2.5	XXX	5	2/week	8-Hr Composite

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	Daily Maximum	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	7.5	XXX	XXX	2.0	XXX	4	2/week	8-Hr Composite
Sulfate	Report	Report	XXX	Report	Report Daily Max	XXX	2/month	8-Hr Composite
Chloride	Report	Report	XXX	Report	Report Daily Max	XXX	2/month	8-Hr Composite
Bromide	Report	Report	XXX	Report	Report Daily Max	XXX	2/month	8-Hr Composite
Total Zinc	Report	Report	XXX	Report	Report Daily Max	XXX	2/month	8-Hr Composite
E. Coli	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab

Proposed Effluent Limitations and Monitoring Requirements

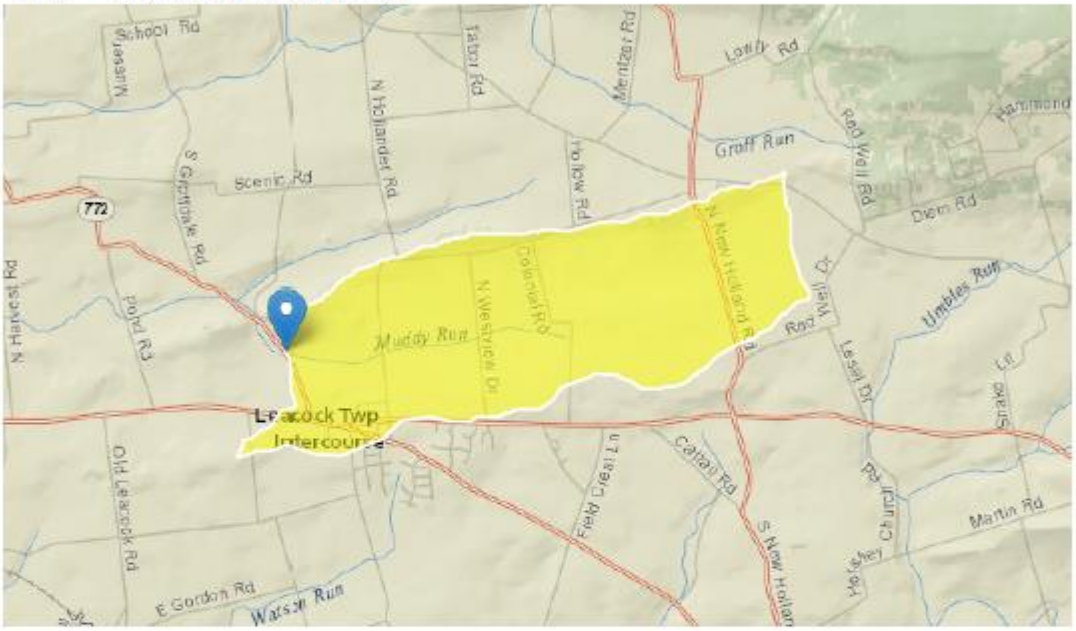
The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter [1]	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)			Minimum [2] Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	2/week	8-Hr Composite
Kjeldahl---N	Report	XXX	XXX	Report	XXX	2/week	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/week	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	8-Hr Composite
Net Total Nitrogen	XXX	7,306	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	XXX	974	XXX	XXX	XXX	1/month	Calculation

StreamStats Report

Region ID: PA
Workspace ID: PA20210910171859249000
Clicked Point (Latitude, Longitude): 40.04450, -76.11371
Time: 2021-09-10 13:19:19 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	2.92	square miles
BSLOPD	Mean basin slope measured in degrees	1.5755	degrees
ROCKDEP	Depth to rock	5	feet
URBAN	Percentage of basin with urban development	5.3504	percent

Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.92	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	1.5755	degrees	1.7	6.4
ROCKDEP	Depth to Rock	5	feet	4.13	5.21
URBAN	Percent Urban	5.3504	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.202	ft^3/s
30 Day 2 Year Low Flow	0.325	ft^3/s
7 Day 10 Year Low Flow	0.0646	ft^3/s
30 Day 10 Year Low Flow	0.109	ft^3/s
90 Day 10 Year Low Flow	0.28	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

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Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07J	7613	MUDDY RUN	3.950	380.00	2.92	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.119	0.00	0.00	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
leacock twp	PA0084212	0.4500	0.4500	0.4500	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	18.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	2.50	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07J	7613	MUDDY RUN	3.450	370.00	4.94	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.119	0.00	0.00	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	0.00	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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07J	7613	MUDDY RUN	2.180	345.00	6.48	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.119	0.00	0.00	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	0.00	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

SWP Basin	Stream Code	Stream Name
07J	7613	MUDDY RUN

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
3.950	0.35	0.00	0.35	.6962	0.00379	.509	12.35	24.29	0.17	0.184	20.00	7.00
3.450	0.59	0.00	0.59	.6962	0.00373	.526	14.7	27.95	0.17	0.468	20.00	7.00
Q1-10 Flow												
3.950	0.24	0.00	0.24	.6962	0.00379	NA	NA	NA	0.16	0.195	20.00	7.00
3.450	0.41	0.00	0.41	.6962	0.00373	NA	NA	NA	0.15	0.508	20.00	7.00
Q30-10 Flow												
3.950	0.44	0.00	0.44	.6962	0.00379	NA	NA	NA	0.17	0.175	20.00	7.00
3.450	0.75	0.00	0.75	.6962	0.00373	NA	NA	NA	0.18	0.438	20.00	7.00

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07J	7613	MUDDY RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.950	0.450	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
12.352	0.509	24.286	0.166
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
12.67	1.410	1.67	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.080	5.979	Tsivoglou	5
Reach Travel Time (days)			
0.184			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.018	12.35	1.65	5.85
0.037	12.03	1.63	5.65
0.055	11.72	1.60	5.49
0.074	11.42	1.58	5.36
0.092	11.13	1.56	5.25
0.110	10.85	1.54	5.17
0.129	10.57	1.52	5.10
0.147	10.30	1.50	5.06
0.166	10.03	1.49	5.03
0.184	9.78	1.47	5.01

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.450	0.450	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
14.704	0.526	27.946	0.166
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
8.32	1.273	1.19	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.614	5.879	Tsivoglou	5
Reach Travel Time (days)			
0.468			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.047	7.84	1.15	5.68
0.094	7.39	1.12	5.78
0.140	6.96	1.08	5.89
0.187	6.56	1.05	6.01
0.234	6.18	1.01	6.13
0.281	5.82	0.98	6.26
0.327	5.49	0.95	6.39
0.374	5.17	0.92	6.52
0.421	4.87	0.89	6.65
0.468	4.59	0.86	6.77

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.7	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.27	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07J	7613	MUDDY RUN

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
3.950	leacock twp	16.76	5	16.76	5	0	0
3.450		NA	NA	16.76	NA	NA	NA

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
3.950	leacock twp	1.89	2.5	1.89	2.5	0	0
3.450		NA	NA	1.89	NA	NA	NA

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
3.95	leacock twp	18	18	2.5	2.5	5	5	0	0
3.45		NA	NA	NA	NA	NA	NA	NA	NA

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07J	7613	MUDDY RUN

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Eff. Limit 30-day Ave. (mg/L)	Eff. Limit Maximum (mg/L)	Eff. Limit Minimum (mg/L)
3.950	leacock twp	PA0084212	0.450	CBOD5	18		
				NH3-N	2.5	5	
				Dissolved Oxygen			5

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Leacock Township WWTP** NPDES Permit No.: **PA00084212** Outfall No.: **001**

Evaluation Type: **Custom / Additives** Wastewater Description: **Minor Sewage**

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
0.45	100	7						

				0 if left blank		0.6 if left blank		0 if left blank			1 if left blank	
Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Total Copper	µg/L	<	2									
Total Lead	µg/L	<	1									
Total Zinc	µg/L		49									

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Leacock Township WWTP, NPDES Permit No. PA00084212, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: **Muddy Run**

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	007613	3.95	380	2.92			Yes
End of Reach 1	007613	3.45	370	4.94			Yes

Q_{7-10}

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	3.95	0.119										100	7		
End of Reach 1	3.45	0.119													

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	3.95														
End of Reach 1	3.45														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Leacock Township WWTP, NPDES Permit No. PA00084212, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***Hydrodynamics***

Q_{7-10}

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
3.95	0.35		0.35	0.696	0.004	0.509	12.352	24.286	0.166	0.184	1.039
3.45	0.59		0.588								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
3.95	2.95		2.95	0.696	0.004	0.882	12.352	14.007	0.335	0.091	2.686
3.45	4.67		4.67								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 1.039 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

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	13.439	14.0	21.0	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	122	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	180	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 1.039 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

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	8.956	9.33	14.0	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	4.77	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	180	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 1.039 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Leacock Township WWTP, NPDES Permit No. PA00084212, Outfall 001

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☑ ***Hydrodynamics***

$Q_{7\text{-}10}$

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
3.95	0.35		0.35	0.696	0.004	0.509	12.352	24.286	0.166	0.184	1.039
3.45	0.59		0.588								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
3.95	2.95		2.95	0.696	0.004	0.882	12.352	14.007	0.335	0.091	2.688
3.45	4.67		4.67								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 1.039 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
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Total Zinc	0	0		0	118.139	120	180	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 1.039 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

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	

☑ ***CRL*** CCT (min): 2.686 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

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: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Zinc	Report	Report	Report	Report	Report	µg/L	120	AFC	Discharge Conc > 10% WQBEL (no 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 Copper	N/A	N/A	Discharge Conc < TQL
Total Lead	N/A	N/A	Discharge Conc < TQL

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other: