pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0080748**
Facility Type	**Municipal**	APS ID	**14511**
Major / Minor	**Minor**	Authorization ID	**1354573**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Northern Lebanon County Authority**	Facility Name	**Jonestown STP**
Applicant Address	PO Box 434	Facility Address	400 Jonestown Road
	Jonestown, PA 17038-0434		Jonestown, PA 17038
Applicant Contact	James Darkes	Facility Contact	James Darkes
Applicant Phone	(717) 865-7202	Facility Phone	(717) 865-7202
Client ID	65331	Site ID	252109
Ch 94 Load Status	Not Overloaded	Municipality	Union Township
Connection Status	No Limitations	County	Lebanon
Date Application Received	May 14, 2021	EPA Waived?	No
Date Application Accepted	May 28, 2021	If No, Reason	Significant CB Discharge

Purpose of Application: NPDES permit renewal for discharge of treated sewage

Summary of Review

1.0 General Discussion

This factsheet is developed for the renewal of an existing NPDES permit for discharge of treated sewage from the Jonestown wastewater treatment plant. Northern Lebanon County Authority owns, maintains and operates the Jonestown wastewater treatment plant located in Union Township, Lebanon County. The sequential batch reactor (SBR) treatment process discharges treated wastewater to Swatara Creek which is classified for warm water fishes and migratory fishes. The collection system has no combined sewers. The facility has a design average annual flow of 0.75 MGD and the hydraulic design capacity is 0.9 MGD and the organic design capacity is 2,502lbs/day. The facility receives 18% of the flow flows from Union Township, 48% of the flow from Swatara Township and 34% of the flow from Jonestown Borough. The existing NPDES permit was issued on January 27, 2017 with an effective date of February 1, 2017 and expiration date of January 31, 2022. The applicant submitted a timely NPDES renewal application to the Department. A topographic map showing the discharge location is presented in attachment A. A draft permit was issued on January 25, 2022, but the facility has retired on-lots and has recently connected flows from Swatara Mobile Home Park(PA0084255) and requested adjustment in Total Nitrogen Cap load to account for credits from the retired mobile home park and offsets from the retired on-lots. The permit is being re-drafted to address permittee's request. See section 4.4.9 of the factsheet for details.

1.1 Sludge use and disposal description and location(s):

Sludge is wasted from the SBRs to the two aerobic digesters for digestion. Digested sludge is sent to either the retrofitted sludge holding tank or the retrofitted primary clarifier for thickening prior to hauling out to Annville Township Authority STP.

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	April 11, 2022
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	April 27, 2022
X		*Maria D. Bebenek* Maria D. Bebenek. P.E. / Program Manager	April 27, 2022

Summary of Review

1.2 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.

1.3 Changes to the existing Permit

- Quarterly monitoring of E. Coli has been added
- Monthly monitoring of Total Copper and Total Zinc has been added.
- 75lbs of Total Nitrogen offsets has been added for connection of retired on-lots
- 91lbs of Total Nitrogen and 15lbs of Total Phosphorus has been to the Chesapeake Bay Cap loads for connection of a decommissioned package plant that served a mobile home park.

1.4 Existing Limit and Monitoring Requirements

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Instantaneous Maximum		
Flow (mgd)	Report	Report Daily Max	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
TSS	188	281	XXX	30	45	60	2/week	24-hr comp
$CBOD_5$	156	250	XXX	25	40	50	2/week	24-hr comp
Fecal Coliform (5/1 to 9/30)[(5)]	XXX	XXX	XXX	200	XXX	XXX	2/week	Grab
Fecal Coliform (10/1 to 4/30)	XXX	XXX	XXX	2,000	XXX	XXX	2/week	Grab
Total Phosphorus	12.5	XXX	XXX	2.0	XXX	4.0	2/week	24-hr comp
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	Report	2/week	24-hr comp
Ammonia May 1 - Oct 31	84	XXX	XXX	13.5	XXX	27	2/week	24-hr comp

Summary of Review

1.4.1 Chesapeake Bay Permit Requirements

Discharge Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Load(lbs)		Concentrations (mg/l)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	1/week	24-hr Comp
Kjeldahl---N	Report	XXX	XXX	Report	XXX	2/Week	24-hr Comp
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	1/Week	24-hr Comp
Total Nitrogen	Report	Report	XXX	Report	XXX	1/Month	Calculate
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	24-hr Comp
Net Total Nitrogen	Report	7,306	XXX	XXX	XXX	1/Month	Calculate
Net Total Phos.	Report	974	XXX	XXX	XXX	1/Month	Calculate

1.5 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.75
Latitude	40º 24' 11"	Longitude	-76º 29' 11"
Quad Name	Fredericksburg	Quad Code	1634
Wastewater Description:	Sewage Effluent		
Receiving Waters	Swatara Creek	Stream Code	09361
NHD Com ID	56396579	RMI	39.22
Drainage Area	291.0	Yield (cfs/mi^2)	0.0656
Q_{7-10} Flow (cfs)	12.5	Q_{7-10} Basis	USGS Gage station
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	Pennsylvania American Water		
PWS Waters	Swatara Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	<30

Changes Since Last Permit Issuance: None

1.5.1 Water Supply Intake

The closest water supply intake located downstream from the discharge is Pennsylvania American Water Co. in South Hanover Township, Dauphin County. The distance downstream from the discharge to the intake is approximately 30 miles. No impact is expected from this discharge

2.0 Treatment Facility Summary				
Treatment Facility Name: Northern Lebanon County Jonestown STP				
WQM Permit No.	**Issuance Date**			
3874404 12-1	June 24, 2013			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Ammonia And Phosphorus	Sequencing Batch Reactor	Ultraviolet	0.75
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.9	2,502	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: None

2.1 Treatment Facility Description

The treatment plant consists of influent pump station, screening unit, 2 SBRs, post SBR equalization, 2 aerobic digesters, 2 sludge holding tanks, 2 sidestream equalization tanks and UV for disinfection and standby effluent pumps.

2.2 Treatment Chemicals

- Sodium Hydroxide for alkalinity or pH adjustment as needed
- Delpac 1525 for phosphorus removal
- Micro C 2000 for carbon Source

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from December 1, 2020 to November 30, 2021)

Parameter	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20
Flow (MGD) Average Monthly	0.267	0.258	0.499	0.2449	0.240	0.2351	0.253	0.282	0.3994	0.319	0.3156	0.420
Flow (MGD) Daily Maximum	0.357	0.453	1.97	0.389	0.291	0.265	0.325	0.432	1.21	0.669	0.5096	2.082
pH (S.U.) Minimum	7.29	7.17	7.08	7.23	7.29	7.26	6.90	6.94	6.71	6.89	6.87	6.74
pH (S.U.) Maximum	7.53	7.39	7.43	7.44	7.50	7.48	7.35	7.14	7.10	7.12	7.13	7.25
DO (mg/L) Minimum	8.52	7.95	7.94	7.29	7.31	7.46	8.04	8.95	9.20	9.49	9.35	8.68
CBOD5 (lbs/day) Average Monthly	< 5	< 4	< 10	< 4	< 4	< 5	< 5	< 7	< 7	< 7	6	6
CBOD5 (lbs/day) Weekly Average	5	< 4	29	4	5	7	8	10	< 13	8	7	10
CBOD5 (mg/L) Average Monthly	< 2.3	< 2.0	< 2.2	< 2.0	< 2.2	< 2.5	< 2.6	< 2.9	< 2.1	< 2.8	< 2.4	2.5
CBOD5 (mg/L) Weekly Average	2.6	2.0	3.0	2.0	2.4	3.7	4.4	4.3	2.3	3.6	2.7	3.1
BOD5 (lbs/day) Raw Sewage Influent Ave. Monthly	612	508	686	503	530	562	559	591	633	537	545	578
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	721	587	1132	567	574	689	666	660	760	565	616	711
BOD5 (mg/L) Raw Sewage Influent Ave. Monthly	272	248	197	254	265	276	253	258	224	211	215	229
TSS (lbs/day) Average Monthly	4	< 4	16	< 5	4	< 2	< 3	6	< 13	< 10	< 10	< 10
TSS (lbs/day) Raw Sewage Influent Ave. Monthly	470	418	662	404	351	342	460	449	524	581	480	580
TSS (lbs/day) Raw Sewage Influent Daily Maximum	556	479	1516	475	372	370	716	523	616	941	607	717
TSS (lbs/day) Weekly Average	7	6	67	9	6	4	5	9	< 26	< 15	< 13	< 13

TSS (mg/L) Average Monthly	2.0	< 2.0	3.0	< 3.0	2.0	< 1.0	< 1.0	3.0	< 4.0	< 4.0	< 4.0	< 4.0
TSS (mg/L) Raw Sewage Influent Ave. Monthly	208	202	167	205	175	168	203	194	177	213	187	234
TSS (mg/L) Weekly Average	3.0	3.0	7.0	5.0	3.0	2.0	2.0	3.0	< 4.0	< 4.0	< 4.0	4.4
Fecal Coliform (CFU/100 ml) Geometric Mean	12	< 11	44	26	12	19	19	13	2	7	12	14
Fecal Coliform (CFU/100 ml) Instant. Maximum	23	84	300	44	18	33	26	25	5	17	22	44
Nitrate-Nitrite (mg/L) Average Monthly	3.54	3.19	4.27	3.47	2.89	2.87	3.18	3.53	3.85	4.1	3.78	4.25
Nitrate-Nitrite (lbs) Total Monthly	235	202	465	225	176	167	208	260	494	282	320	382
Total Nitrogen (mg/L) Average Monthly	< 4.17	< 3.9	< 4.97	< 4.33	3.94	4.02	4.1	4.45	5.3	5.61	< 4.67	< 5.3
Total Nitrogen (lbs) Effluent Net Total Monthly	< 277	< 246	< 557	< 279	241	235	266	327	664	379	393	464
Total Nitrogen (lbs) Total Monthly	< 277	< 246	< 557	< 279	241	235	266	327	664	379	< 393	< 464
Total Nitrogen (lbs) Effluent Net Total Annual			< 4502									
Total Nitrogen (lbs) Total Annual			< 4502									
Ammonia (lbs/day) Average Monthly	< 0.1	< 0.1	< 0.3	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.6	< 0.5	< 0.3	< 0.4
Ammonia (mg/L) Average Monthly	< 0.05	< 0.06	< 0.1	< 0.10	< 0.1	< 0.10	< 0.1	< 0.1	< 0.22	< 0.24	< 0.13	< 0.15
Ammonia (lbs) Total Monthly	< 3	< 4	< 10	< 6	< 6	< 6	< 6	< 7	< 20	< 15	< 11	< 12
Ammonia (lbs) Total Annual			< 115									
TKN (mg/L) Average Monthly	< 0.63	< 0.71	< 0.7	< 0.86	1.05	1.16	0.92	0.93	1.45	1.51	< 0.9	< 1.05
TKN (lbs) Total Monthly	< 42	< 44	< 91	< 54	65	68	58	67	170	97	< 73	< 82
Total Phosphorus (lbs/day) Ave. Monthly	1.62	1.3	2.51	1.47	1.04	0.7	0.9	1.99	2.60	1.35	1.47	0.90

Total Phosphorus (mg/L) Average Monthly	0.72	0.6	0.72	0.70	0.54	0.38	0.44	0.81	0.75	0.57	0.55	0.31
Total Phosphorus (lbs) Effluent Net Total Monthly	48.5	39	< 75.23	45.63	32.17	22.21	28.65	59.77	80.48	37.89	45.60	26.61
Total Phosphorus (lbs) Total Monthly	48.5	39	75.23	45.63	32.17	22.21	28.65	59.77	80.48	37.89	45.60	26.61
Total Phosphorus (lbs) Effluent Net Total Annual			545									
Total Phosphorus (lbs) Total Annual			545									
UV Dosage (mjoules/cm²) Minimum	41	51	32	73	75	80	85	75	33	89	64	37

3.3 Summary of Discharge Monitoring Reports (DMRs)**:**

DMRs review for the facility for the last 12 months of operation, presented on the table above in section 3.1 indicate permit limits have been met consistently. No effluent violation was recorded during the period reviewed.

3.4 Summary of Inspections:

The facility has been inspected a couple times during last permit cycle. No effluent violations were found during plant inspections. The facility is operated and well maintained.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .75
Latitude 40º 24' 11.00" **Longitude** -76º 29' 11.00"
Wastewater Description: Sewage Effluent

4.1 Basis for Effluent Limitations

In general, the Clean Water Act(AWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

4.2 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: TRC limitation not applicable, the facility utilizes UV for disinfection.

4.3 Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34

4.4 Water Quality-Based Limitations

4.4.1 Receiving Stream

The receiving stream is the Swatara Creek. According to 25 PA § 93.9o, Swatara Creek is protected for Warm Water Fishes (WWF) and Migratory Fishes (MF). It is located in Drainage List O and State Watershed 7-D. It has been assigned stream code 09361. According to the Department's Pennsylvania Integrated Water Quality Monitoring and Assessment Report, the stream segment receiving the discharge is attaining it uses.

4.4.2 Streamflow:

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No 01573000 on Swatara Creek at Harper Tavern. The Q_{7-10} and drainage area at the gage is 22.1ft3/s and 337 mi^2 respectively. The resulting yields are as follows:

- Q_{7-10} = (22.1ft^3/s)/337 mi^2 = 0.0656ft^3/s/ mi^2
- Q_{30-10} / Q_{7-10} = 1.40
- Q_{1-10} / Q_{7-10} = 0.80

The drainage area at discharge calculated from streamstats = 291.0 mi^2 (this is different from the drainage area of 191.0 mi^2 used in the previous protection report and has changed the Q_{7-10} significantly)

The Q_{7-10} at discharge = 291mi^2 x 0.0.0656ft^3/s/mi^2 = 19.1ft^3/s.

4.4.3 NH_3N Calculations

NH_3N calculations will be based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the instream NH_3N criteria used in the attached computer model of the stream:

STP pH	=7.2 (DMR median)
STP Temp	=25^{0}C (Default)
Stream pH	=7.0 (Default)
Stream Temp	=20^0 C (Default)
Background NH_3N	=0.00 (Default)

4.4.4 $CBOD_5$

Due to the proximity of Fort Indiantown Gap discharge (PA0028142) and Monroe Valley discharge (PA0247570) to Northern Lebanon County Authority Discharge, they were modeled together. The results of WQM 7.0 stream model presented in attachment B indicates that for the Northern Lebanon County Authority Discharge of 0.75MGD, an average monthly limit (AML) of 25mg/l is required to protect the water quality of the stream. This limit is consistent with the existing permit and the STP has been consistently achieving below 10 mg/l $CBOD_5$. Therefore, a limit of 25mg/l AML, 40mg/l average weekly limit (AWL) and 50 mg/l IMAX is recommended for this permit cycle. Mass limits are calculated as follows:

Mass based AML (lb/day) = 25 (mg/L) × 0.75(mgd) × 8.34 = 156

Mass based AWL (lb/day) = 40(mg/L) × 0.75(mgd) × 8.34 = 250

4.4.5 **NH_3-N**

The results of WQM 7.0 stream model presented in attachment B also indicates that a summer limit of 20 mg/l NH_3 as a monthly average is necessary to protect the aquatic life from toxicity effects. This is less stringent than the existing limit of 13.5 mg/l and will not be written in the permit due to anti-backsliding restrictions. The existing summer average limit of 13.5 mg/l with monitoring during winter months is recommended for the current permit renewal. Mass limits are calculated as follows:

Mass based AML (lb/day) for the summer months = 13.5 (mg/L) × 0.75(mgd) × 8.34 = 84

4.4.6 Dissolved Oxygen

The existing permit contains a limit of 5 mg/l for Dissolved Oxygen (DO). DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001, 10/97) suggests that either the adopted minimum stream D.O. criteria for the receiving stream or the effluent level determined through water quality modeling be used for the limit. Since the WQM 7.0 model was run using a minimum D.O. of 5.0 mg/l, this limit will be continued in the renewed permit with a daily monitoring requirement per DEP guidance.

4.4.7 Total Suspended Solids (TSS):

There is no water quality criterion for TSS. A limit of 30 mg/l AML will be required based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 PA § 92a.47(a)(1) and an AWL of 45mg/l per 40CFR 133.102(b)(2) and 25 PA § 92a.47(a)(2)

Mass based AML (lb/day) = 30 (mg/L) × 0.75(mgd) × 8.34 = 188

Mass based AWL (lb/day) = 45(mg/L) × 0.75(mgd) × 8.34 = 281

4.4.8 Total Phosphorus:

The existing phosphorus limitation of 2mg/l to control phosphorus discharges to the Lower Susquehanna River Basin is superseded by the Chesapeake Bay Strategy but would be continued due to anti-backsliding.

4.4.9 Chesapeake Bay Strategy:

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay Foundation requirements to reduce point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP) to the Bay. In the Strategy, sewage dischargers have been prioritized by Central Office based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers received annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mdg) are required to monitor and report TN and TP during permit renewal and any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. EPA published Chesapeake Bay TMDL in December of 2010. In order to address the TMDL, Pennsylvania developed Chesapeake Watershed Implementation Plan (WIP) Phase 1, Phase 2 and currently Phase 3 WIP and a supplement to the WIPs to be implemented with the original Chesapeake Bay Strategy.

As outlined in the current Phase 3 WIP and the current supplement to the WIP, re-issuing permits for significant dischargers would follow the same phased approach formulated in the original Bay strategy whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewals.

This facility falls in phase 2 of the strategy and is currently required to meet a total maximum annual Total Nitrogen Cap load of 7,306 lbs/year based on a design annual wasteflow of 0.4 MGD and 6 mg/l total nitrogen and a TP cap load of 974 lbs/year based on annual wasteflow of 0.4 MGD and 0.8 mg/l total phosphorus.

Swatara Mobile Home Park is a 0.0088MGD package plant with Permit Number PA0084255 was decommissioned and the flow is connected to the Northern Lebanon County Authority (NLCA) Jonestown STP for treatment. The Cap load will be transferred from the Mobile Home Park to NLCA Jonestown STP in accordance with the Phase III WIP Wastewater Supplement, revised September 13, 2021. The loadings are calculated based on actual average flow of 0.0012MGD (presented in attachment D) with a default TN of 25 mg/l and TP of 4mg/l. A cap load of 91lbs/year (0.0012 x 25x 8.34 x365) TN and 15lbs/year (0.0012 x4x8.34 x365) TP will be added to the original cap load of NLCA Jonestown STP. The total TN and TP cap loads for NLCA Jonestown STP are respectively 7397lbs/year and 989lbs/year. Swatara Mobile Home Park was considered non-significant, and its load will be moved from the non-significant aggregate load to the Phase 1 aggregate in the next WIP wastewater supplement update.

The Department approved a total nitrogen offset of 1,575lbs of nitrogen based on 63EDUs at 25lbs/EDU for the Northern Lebanon County Authority Treatment Plant. The offset is for 63EDUs on-lot disposal systems that have been connected to the sewer conveyance system. These on-lot systems were put into use prior to January 1, 2003 and retired after January 1, 2003. The approved offsets are only for compliance purposes and are not available for trading or selling and will not be added to the base TN cap load. The permit will show the base cap load on the effluent page and show the offsets as a foot note with a language indicating the offsets may be applied throughout the compliance year or during the truing period. The Department's approval letters and the complete list of addresses of the dwellings that were served by the retired on-lot systems that are now connected to the sewage conveyance system are attached to the 2016 factsheet. The Department has approved an additional 75lbs of Nitrogen based on 3EDUs at 25lbs/EDU for the facility for a total nitrogen offset of 1,650lbs. The complete list of addresses of the dwellings that were served by the retired on-lot systems that are now connected to the sewage conveyance system are presented in attachment E.

4.4.10 Total Residual Chlorine

The discharge does not have the reasonable potential to cause or contribute to a water quality standards violation for total residual chlorine since the permittee no longer add chlorine to the wastewater for disinfection. Therefore, the proposed permit does not contain effluent limits for total residual chlorine. The permittee may use chlorine-based chemicals for cleaning and is required to optimize chlorine usage to prevent negative impacts on receiving stream. Daily UV dosage monitoring is required in the permit to ensure efficiency of the UV unit.

4.4.11 Toxics

A reasonable potential (RP) analysis was done for pollutants sampled in support of the permit renewal application. All pollutants that were presented in the application sampling data were entered into DEP's Toxics Management Spreadsheet (TMS) to calculate WQBELs. The results of the TMS are presented in attachment C. Monitoring of Total Copper and Total Zinc is recommended. Monthly monitoring of Total Copper and Total Zinc is required in the permit to collect additional data for analysis at the next permit renewal.

The recommended limitations follow the logic presented in DEPs SOP, to establish limits in the permit where the maximum reported concentration exceeds 50% of the WQBEL, or for non-conservative pollutants to establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL, or to establish monitoring requirements for conservative pollutants where the maximum reported concentration is between 10% - 50% of the WQBEL.

4.4.12 TDS, Chloride, Sulfate, Bromide, and 1,4-dioxane

The maximum daily TDS discharge submitted with the application is 350 mg/l which is equivalent to 2190lbs/day based on the permitted flow of 0.75 MGD. The discharge level for TDS is well below 1000 mg/l and the 20,000lbs/day cut-off to require monitoring in the permit. There is no data on 1,4-dioxane.

4.4.13 Influent BOD and TSS Monitoring

The permit will include influent BOD5 and TSS monitoring at the same frequency as is done for effluent in order to implement Chapter 94.12 and assess percent removal requirements.

4.4.14 Stormwater

There is no stormwater outfall associated with this facility.

4.4.15 Industrial Users

The Jonestown Wastewater Treatment Plant receives wastewater from three non-significant industrial users. The industrial users listed are Jonestown Auto Suds Carwash (0.0035mgd), Wabash National Truck body Fabricating (0.002mgd) and Raylin Properties Concrete Fabricating (0.0004mgd).

4.4.16 Pretreatment Requirements

The design annual average flow of the treatment plant is 0.75 MGD and the facility receives no flow from significant Industrial users. EPA does not require development of pretreatment program for facilities with design flow less than 5MGD. However, the permit contains standard conditions requiring the permittee to monitor and control industrial users if applicable.

4.4.17 Fecal Coliform and E. Coli

The existing Fecal Coliform limit is consistent with the technology limits recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. Quarterly monitoring of E. Coli is required in the permit following DEP recommendation of 1/quarter monitoring of E. Coli at a minimum for this type of facility.

5.0 Other Requirements

5.1 Anti-backsliding

Not applicable to this permit

5.2 Anti-Degradation (93.4)

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. The facility discharge to a stream segment designated as High-Quality Waters. The discharge is not expected to impact the stream negatively. No Exceptional Value Waters are impacted by this discharge.

5.3 Class A Wild Trout Fisheries

The discharge is into a stream segment which is identified as Class A Wild Trout Stream by PA Fish and Boat Commission. The discharge is not expected to the stream negatively.

5.4 303d Listed Streams

The discharge is not located on a 303d listed stream segment.

5.5 Special Permit Conditions

The permit contains the following special conditions:

- Stormwater Prohibition, Approval Contingencies, Solids Management, Restriction on receipt of hauled in waste under certain conditions, and chlorine minimization.

5.6 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

5.7 Effluent Monitoring Frequency

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

6.0 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	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
CBOD5	156	250	XXX	25.0	40.0	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	188	281	XXX	30.0	45.0	60	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	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	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	84	XXX	XXX	13.5	XXX	27	2/week	24-Hr Composite
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	12.5	XXX	XXX	2.0	XXX	4	2/week	24-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
UV Dosage (mjoules/cm^2)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Copper, Total	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Zinc, Total	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

Compliance Sampling Location: Outfall 001

6.1 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.

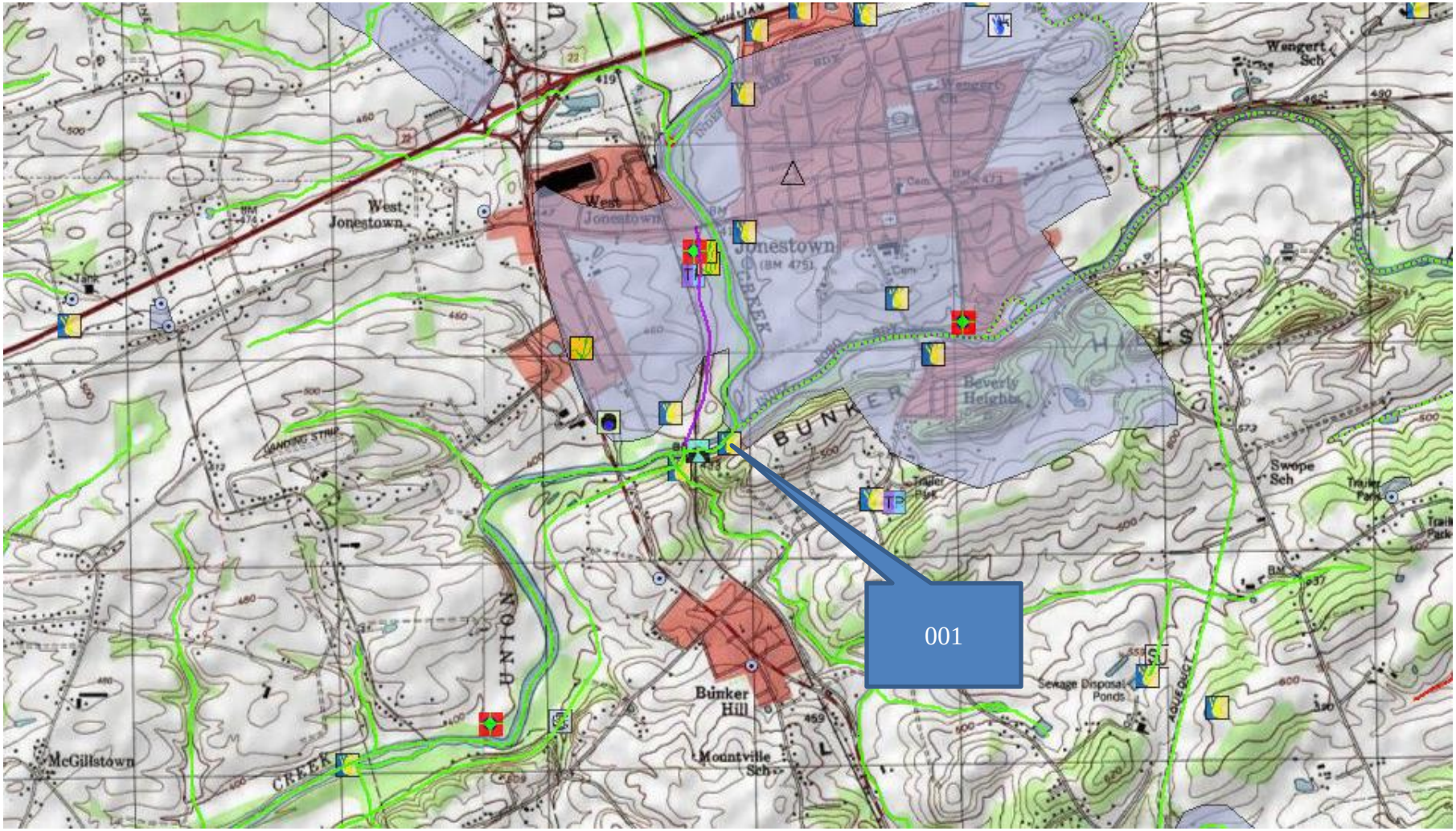
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Total Nitrogen (lbs) Effluent Net	XXX	7397 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Ammonia (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs) Effluent Net	XXX	989 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: Outfall 001

7.0 Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (see Attachment **C**)
☐	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: Establishing effluent limitations for individual sewage permit
☒	Other: WIP 3 and Supplement

8. Attachment

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07D	9361	SWATARA 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)
44.390	Monroe Valley	PA0247570	0.100	CBOD5	25		
				NH3-N	20.26	40.52	
				Dissolved Oxygen			5

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)
39.220	Nor Leb Co Auth	PA0080748	0.750	CBOD5	25		
				NH3-N	20.26	40.52	
				Dissolved Oxygen			5

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)
29.700	Fort IndianTG	PA0028142	1.000	CBOD5	25		
				NH3-N	20.26	40.52	
				Dissolved Oxygen			5

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
07D	9361	SWATARA CREEK	**44.390**	417.00	170.00	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	0.065	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
Monroe Valley	PA0247570	0.1000	0.1000	0.1000	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	5.00	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
07D	9361	SWATARA CREEK	**39.220**	392.00	291.00	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	0.065	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
Nor Leb Co Auth	PA0080748	0.7500	0.7500	0.7500	0.000	25.00	7.20

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	5.00	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
07D	9361	SWATARA CREEK	**29.700**	363.00	323.00	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	0.065	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
Fort IndianTG	PA0028142	1.0000	1.0000	1.0000	0.000	25.00	6.90

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	5.00	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
07D	9361	SWATARA CREEK	**22.200**	343.19	371.00	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	0.065	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	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	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07D	9361	SWATARA 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
44.390	Monroe Valley	16.64	50	16.64	50	0	0
39.220	Nor Leb Co Auth	16.11	50	16.05	50	0	0
29.700	Fort IndianTG	16.32	50	15.77	50	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
44.390	Monroe Valley	1.88	25	1.88	25	0	0
39.220	Nor Leb Co Auth	1.86	25	1.85	25	0	0
29.700	Fort IndianTG	1.86	25	1.83	25	0	0

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)		
44.39	Monroe Valley	25	25	25	20.26	5	5	3	14
39.22	Nor Leb Co Auth	25	25	25	20.26	5	5	3	14
29.70	Fort IndianTG	25	25	25	20.26	5	5	3	14

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07D	9361	SWATARA CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
44.390	0.100	20.069	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
58.995	0.833	70.864	0.228
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.32	0.101	0.28	0.704
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.198	1.428	Tsivoglou	5
Reach Travel Time (days)			
1.385			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.138	2.29	0.25	8.22
0.277	2.25	0.23	8.23
0.415	2.22	0.21	8.23
0.554	2.19	0.19	8.23
0.692	2.16	0.17	8.23
0.831	2.13	0.16	8.23
0.969	2.10	0.14	8.23
1.108	2.07	0.13	8.23
1.246	2.04	0.12	8.23
1.385	2.02	0.11	8.23

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
39.220	0.850	20.325	7.009
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
80.421	0.926	86.820	0.272
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.33	0.234	1.22	0.718
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.051	1.077	Tsivoglou	5
Reach Travel Time (days)			
2.142			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.214	3.16	1.05	7.34
0.428	3.01	0.90	6.89
0.643	2.86	0.77	6.62
0.857	2.71	0.66	6.50
1.071	2.58	0.57	6.47
1.285	2.45	0.49	6.52
1.500	2.33	0.42	6.60
1.714	2.21	0.36	6.72
1.928	2.10	0.31	6.86
2.142	2.00	0.26	7.01

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07D	9361	SWATARA CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
29.700	1.850	20.600	7.001
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
87.244	0.951	91.777	0.288
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.49	0.337	1.54	0.733
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.983	0.996	Tsivoglou	5
Reach Travel Time (days)			
1.593			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.159	3.30	1.37	6.31
0.319	3.13	1.22	5.83
0.478	2.96	1.08	5.51
0.637	2.80	0.96	5.31
0.797	2.65	0.86	5.20
0.956	2.51	0.76	5.17
1.115	2.37	0.68	5.20
1.275	2.24	0.60	5.27
1.434	2.12	0.54	5.38
1.593	2.01	0.48	5.51

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	0.8	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.4	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07D	9361	SWATARA CREEK

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												
44.390	11.05	0.00	11.05	.1547	0.00092	.833	58.99	70.86	0.23	1.385	20.07	7.00
39.220	18.91	0.00	18.91	1.3149	0.00058	.926	80.42	86.82	0.27	2.142	20.33	7.01
29.700	20.99	0.00	20.99	2.8619	0.00050	.951	87.24	91.78	0.29	1.593	20.60	7.00
Q1-10 Flow												
44.390	8.84	0.00	8.84	.1547	0.00092	NA	NA	NA	0.20	1.566	20.09	7.00
39.220	15.13	0.00	15.13	1.3149	0.00058	NA	NA	NA	0.24	2.406	20.40	7.01
29.700	16.80	0.00	16.80	2.8619	0.00050	NA	NA	NA	0.26	1.776	20.73	7.00
Q30-10 Flow												
44.390	15.47	0.00	15.47	.1547	0.00092	NA	NA	NA	0.27	1.150	20.05	7.00
39.220	26.48	0.00	26.48	1.3149	0.00058	NA	NA	NA	0.32	1.793	20.24	7.01
29.700	29.39	0.00	29.39	2.8619	0.00050	NA	NA	NA	0.34	1.346	20.44	7.00

C. Toxics Management Spreadsheet (TMS) Results

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Northern Lebanon County Jonestown STP** NPDES Permit No.: **PA0089748** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **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
0.75	100	7.2						

					0 if left blank		0.5 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
Group 1	Total Dissolved Solids (PWS)	mg/L		350									
	Chloride (PWS)	mg/L		91.4									
	Bromide	mg/L	<	0.2									
	Sulfate (PWS)	mg/L		44.1									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L											
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L		5									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L		0.3									
	Total Manganese	µg/L											
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L											
	Total Silver	µg/L											
	Total Thallium	µg/L											
	Total Zinc	µg/L		95									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Northern Lebanon County Jonestown STP, NPDES Permit No. PA0089748, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: **Swatara Creek**

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	009361	39.22	392	291			Yes
End of Reach 1	009631	29.7	363	323			Yes

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

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	39.22	0.065										100	7		
End of Reach 1	29.7	0.065													

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	39.22														
End of Reach 1	29.7														

Model Results

Northern Lebanon County Jonestown STP, NPDES Permit No. PA0089748, Outfall 001

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

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ ***AFC*** CCT (min): 15 PMF: 0.202 Analysis Hardness (mg/l): 100 Analysis pH: 7.04

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 Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	13.439	14.0	60.2	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	351	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	515	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.01

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 Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	8.956	9.33	161	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	55.0	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	2,073	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): ###### 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 Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	

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): ####### 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 Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
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 Copper	Report	Report	Report	Report	Report	µg/L	38.6	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	330	AFC	Discharge Conc > 10% WQBEL (no RP)

☐ ***Other Pollutants without Limits or Monitoring***

D. Flow Data

PERMIT	AUTH_CLIENT	MONITORING	MONITORING_	PARAMET	LOAD_UN	LOAD_1_V	LOAD_1_LIMIT	LOAD_1_SBC	LOAD_2_V	LOAD_2_L	LOAD_2_S	CONC_UN
PA0084255	SWATARA MOBILE HOMES	1/1/2019	1/31/2019	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.002	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	2/1/2019	2/28/2019	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.002	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	3/1/2019	3/31/2019	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.002	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	4/1/2019	4/30/2019	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.002	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	5/1/2019	5/31/2019	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.002	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	6/1/2019	6/30/2019	Flow	MGD	0.002	Monitor and Report	Average Monthly	0.003	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	7/1/2019	7/31/2019	Flow	MGD	0.002	Monitor and Report	Average Monthly	0.003	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	8/1/2019	8/31/2019	Flow	MGD	0.002	Monitor and Report	Average Monthly	0.005	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	9/1/2019	9/30/2019	Flow	MGD	0.002	Monitor and Report	Average Monthly	0.003	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	10/1/2019	10/31/2019	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.003	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	11/1/2019	11/30/2019	Flow	MGD	0.002	Monitor and Report	Average Monthly	0.01	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	12/1/2019	12/31/2019	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.002	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	1/1/2020	1/31/2020	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.002	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	2/1/2020	2/29/2020	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.002	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	3/1/2020	3/31/2020	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.002	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	4/1/2020	4/30/2020	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.001	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	5/1/2020	5/31/2020	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.002	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	6/1/2020	6/30/2020	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.001	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	7/1/2020	7/31/2020	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.001	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	7/1/2020	7/31/2020	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.001	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	8/1/2020	8/31/2020	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.001	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	9/1/2020	9/30/2020	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.001	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	10/1/2020	10/31/2020	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.002	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	11/1/2020	11/30/2020	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.004	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	12/1/2020	12/31/2020	Flow	MGD	0.001	Monitor and Report	Average Monthly	0.002	Monitor a	Daily Maximum	
PA0084255	SWATARA MOBILE HOMES	1/1/2021	1/31/2021	Flow	MGD	0.0013	Monitor and Report	Average Monthly	0.002	Monitor a	Daily Maximum	
Average Flow						**0.001204**						

E. Details of On-lots Retired

Nutrient Credit New Connections List - NLCA

* = estimated per Assessment Office

Property Address	Date Connected	Date Built
2435 State Route 72, Jonestown, PA 17038	6/24/2016	*1960
209 Mountville Drive, Lebanon, PA 17046	9/2/2016	*1950
5 Elderberry Lane, Lebanon, PA 17046	6/20/2019	*1925