Northeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0027065**
Facility Type	**Municipal**	APS ID	**788945**
Major / Minor	**Major**	Authorization ID	**1307300**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Lackawanna River Basin Sewer Authority**	Facility Name	**Archbald WWTP**
Applicant Address	PO Box 280	Facility Address	104 Delaware Street
	Olyphant, PA 18447-0280		Jermyn, PA 18433
Applicant Contact	Michael Matechak, Executive Director	Facility Contact	Robert Davis, Plant Superintendent
Applicant Phone	(570) 489-7563	Facility Phone	(570) 489-7563
Client ID	90054	Site ID	252662
Ch 94 Load Status	Not Overloaded	Municipality	Archbald Borough
Connection Status	-	County	Lackawanna
Date Application Received	March 3, 2020	EPA Waived?	No
Date Application Accepted	March 3, 2020	If No, Reason	Major Facility, Pretreatment, Significant CB Discharge

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

Summary of Review

The applicant is requesting the renewal of an NPDES permit to discharge up to 6 MGD of treated sewage into the Lackawanna River, a High Quality, Cold-Water Fishery, Migratory Fish (HQ, CWF, MF) receiving stream in State Water Plan Basin 5-A (Lackawanna River). As per the Department's current existing use list, the receiving stream does not have an existing use classification that is more protective than its designated use. This stream segment is designated as a naturally reproducing trout stream as per PA Fish & Boat Commission. This discharge is not expected to affect public water supplies.

Limitations for pH, Total Suspended Solids (TSS), Dissolved Oxygen (DO) and Fecal Coliform are technology-based and carried over from the previous permit.

Limitations for Ammonia-Nitrogen, $CBOD_5$, and Total Copper are water quality-based and carried over from the previous permit.

WQM 7.0 modeling did not recommend stricter limitations.

Sewage discharges now require monitoring and reporting for E. Coli. A monitoring frequency of 1/month for design flows >= 1 MGD, 1/quarter for design flows >= 0.05 and < 1 MGD, 1/year for design flows of 0.002 – 0.05 MGD will be utilized.

Influent monitoring requirements for TSS and BOD_5 has been carried over from the previous permit.

Ultraviolet (UV) Disinfection is used as the primary disinfection method. Monitoring for UV transmittance is not necessary for this facility as it has been operating well within the Fecal Coliform limits per DMR data. In the event the facility uses chlorine for cleaning purposes or as a back-up disinfection option, Total Residual Chlorine (TRC) should be sampled "daily when

Approve	Deny	Signatures	Date
X		Allison Seyfried Zukosky Allison Seyfried Zukosky / Project Manager	May 28, 2025
X		Edward Dudick Edward Dudick, P.E. / Engineer Manager	July 7, 2025

Summary of Review

discharging" (see requirements under Part C.VIII.D.). The previous permit had an IMAX limitation of 1.0 mg/L. The TRC Calculation Spreadsheet recommended a slightly stricter IMAX limitation of 0.98 mg/L. The new limitation has been applied to the permit will be effective at the permit effective date.

The permit renewal application was received on March 3, 2020. Pollutant sampling results submitted with the permit application were entered into the Toxics Screening Analysis (TSA) Spreadsheet and PENTOX. Preliminary effluent limitations for Total Copper, Total Silver, and Total Zinc were recommended. Monitoring/reporting was recommended for Total Lead. The preliminary limitations were sent to the permittee on April 27, 2020 and they were given the opportunity to conduct additional sampling. The permittee elected to conduct the additional sampling, and the results were provided to the Department.

In the time between when the additional sample results were provided and the technical review of the permit was conducted, the Department developed a new spreadsheet to calculate the limits for toxic pollutants, known as the Toxic Modeling Spreadsheet (TMS). The original sample results for all the parameters and the additional submitted sample results were modeled using the TMS. No limits (only monitoring and reporting) were recommended for the same parameters as the TSA (Total Copper, Total Silver, Total Zinc, and Total Lead). However, monitoring/reporting was now also recommended for Bis(2-Ethylhexyl) Phthalate and Free Cyanide.

The permittee was once again offered the opportunity to conduct additional sampling for Bis(2-Ethylhexyl) Phthalate and Free Cyanide. Only additional sampling was conducted for Bis-2 and the results were submitted to the Department. The modeling was re-run and monitoring/reporting was no longer suggested.

The permittee also included two additional comments regarding Total Silver and Total Lead via email. The permittee provided additional sample results for Total Silver and Total Lead and included "J" values with their submission. Modeling was once again re-run with all the compiled sample results. Monitoring/reporting was no longer recommended for either parameter.

Quarterly monitoring/reporting for Free Cyanide and Total Zinc have been added to the permit.

The monitoring/reporting for Total Kjeldahl Nitrogen (TKN), Nitrate-Nitrite as N, Total Nitrogen, and Total Phosphorus has been maintained in this permit. The maximum nutrient loads (cap loads) for TN and TP for this facility of 109,587 lbs/yr and 14,612 lbs/yr, respectively, have also been carried over in this permit.

A Total Maximum Daily Load (TMDL) for the Lackawanna River Watershed was approved by the EPA on April 7, 2005. The TMDL addresses metals (Iron, Manganese, and Aluminum) and depressed pH associated with acid mine drainage (AMD). The TMDL Load Allocations apply to nonpoint sources of pollution; there are no Waste Load Allocations (WLAs). The permit application indicates that approximately 8,000 gpd of process wastewater from a personal safety equipment manufacturer (military protective helmets, aluminized fabric, optical safety products) discharges into the LRBSA Archbald system. A company involved in the production and machining of metal perforated products also discharges into the system, but only non-contact cooling and sanitary wastewater. The quarterly monitoring requirements for total Iron, total Manganese, and total Aluminum have been maintained in the permit to monitor these pollutants of concern.

This type of facility has been identified by the EPA as being a potential source of PFAS. PFAS monitoring requirements have been added in Part A and described further in Part C.VI. The permittee shall monitor for PFOA, PFOS, HFPO-DA and PFBS quarterly at Outfall 001. The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in 4 consecutive monitoring periods indicate non-detect results at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittees must enter a No Discharge Indicator (NODI) Code of "GG" on DMRs.

In the 2009 WQM 7.0 modeling, the outfall and stream confluence elevations were interpolated from the contour line elevations found on the hard copy 7.5-minute series USGS topographical maps. The same method was used to obtain elevations in the previous permit from 2015. The 2015 permit obtained a Q_{7-10} stream flow value of 20.5 cfs for stream gage 01534500 (Lackawanna River @ Archbald) using BASINS 4.1 DFLOW, which resulted in a low flow yield (LFY) value of 0.19 cfs/mi^2.

Since the last permit was issued 10 years ago, the modeling was re-examined. USGS Stream Gage 01534500 (Lackawanna River at Archbald, PA) was still used to obtain data. The most recent gage information was obtained via USGS StreamStats. The Stream Gage data from USGS StreamStats can be observed on page 13 of this fact sheet. Two different Q_{7-10} values

Summary of Review

were provided in this data. One used data from 4/1/1940-3/31/1959 and the other used data from 4/1/1960-3/31/2008. These sets of data then yielded different LFYs. The more conservative LFY of 0.17 cfs/mi^2 was used to model the discharge.

The LFY and $Q_{7\text{-}10}$ from the previous permit was also used to model the discharge and yielded the same results.

The RMI values were obtained using the "PA Historic Streams" feature of eMapPA, drainage areas were delineated using USGS's StreamStats Interactive Map, and elevations were obtained using the elevation profile feature of StreamStats.

The monitoring and reporting for the two stormwater outfalls (Outfalls 019 and 020) in the previous permit will be carried over this permit. The facility is categorized by SIC code 4952 (Trans. & Utilities – Sewerage Systems) and falls under Appendix J monitoring requirements of the PAG-03 general permit. The Department renewed the NPDES General Permit for Stormwater Discharges Associated with Industrial Activity (PAG-03) and it became effective on March 24, 2023. Therefore, the new monitoring requirements for Appendix J will be utilized in this permit renewal. Semi-annual monitoring and reporting for Total Phosphorous, Total Suspended Solids (TSS), Oil & Grease, pH, and Chemical Oxygen Demand (BOD5) are required under this permit. Requirements applicable to stormwater outfalls are continued in the special conditions.

Review of the most recently submitted Chapter 94 report (dated March 21, 2025) for the treatment plant shows that there were no hydraulic or organic overloads in the past 5 years and there are no projected overloads in the next 5 years.

The permit application identifies 5 combined sewer overflow (CSO) outfalls: 002, 011, 012, 013, and 018. The locations of the CSOs are listed in the table in Part A.I.E. in the draft NPDES Permit. The 2024 annual CSO report (included with Chapter 94 reports) states that Archbald WWTP system has reduced the number of permitted CSOs from 16 to 5 and continues to examine the feasibility of eliminating additional CSOs whenever practicable. Permit special conditions regarding CSOs are in accordance with the Department's "Pennsylvania Combined Sewer Overflow Policy" (Document No. 385-2000-011, dated March 9, 2013). Per the guidance, the requirements for "Small CSO Systems" are applicable.

The original LTCP was approved on August 21, 2000 and uses the presumption approach. Under the presumption approach, the goal of the facility is the elimination or capture for treatment of no less than 85% by volume of the combined sewage collected in the CSS during precipitation events on a system-wide annual average basis.

LRBSA conducted a hydraulic model to verify and document the 85% target as part of their ongoing LTCP. An update (dated March 2022) to the CSO LTCP was provided to the Department via email. The update summarizes all the work that has been completed in the municipality. The Archbald WWTP Interceptor Hydraulic Model demonstrates that LRBSA has achieved the wet-weather capture in excess of the minimum 85% specified by EPA's CSO Control Policy. The submission of a CSO Post-Construction Monitoring Plan has been added as a requirement in this permit renewal and will be due with the next NPDES permit renewal application for this facility.

As per the 2024 Chapter 94 Report, LRBSA is continuing its sewer maintenance program. In 2024, six manhole frames/ covers were replaced, the grade was raised/adjusted for 24 manhole frames/covers, commercial root treatments were applied to 3,247 LF of sewer pipes, and a comprehensive video inspection was conducted in tributary municipalities. The video inspection program is expected to continue in 2025. LRBSA is also continuing is sewer mapping GIS conversion program. There were no sewer extensions constructed by LRBSA or its tributary municipalities in 2024. There are also no planned LRBSA extensions.

The previous permit included a special condition requiring Whole Effluent Toxicity (WET) testing. Based on the results of the WET testing, there is no reasonable potential for the effluent to cause toxicity. The permit includes the Part C condition for permits without WET limits. (See WET evaluation on pages 10-12 of this Fact Sheet)

For this permit renewal, all monitoring frequencies for parameters with limitations are consistent with the Department's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (document no. 362-0400-001).

The existing permit expired on September 30, 2020, and the application for renewal was received on time.

A Water Management System Inspection query indicated that on May 2, 2024 a Compliance Evaluation was performed. There are currently no open violations for this client that warrant withholding issuance of this permit.

Summary of Review

Sludge use and disposal description and location(s): As per the permittee's Sewage Sludge and Biosolids Supplemental Report forms, sludge is hauled to the Keystone Sanitary Landfill in Dunmore, PA by Environmental Services Corp.

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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	6.0
Latitude	41º 30' 47.17"	Longitude	-75º 32' 34.52"
Quad Name	Carbondale	Quad Code	0641
Wastewater Description:	Sewage Effluent		
Receiving Waters	Lackawanna River (HQ-CWF, MF)	Stream Code	28374
NHD Com ID	133507407	RMI	23.8
Drainage Area	108 mi^2	Yield (cfs/mi^2)	0.17
Q_{7-10} Flow (cfs)	18.53	Q_{7-10} Basis	USGS Stream Gage 01534500 (Lackawanna River at Archbald, PA)
Elevation (ft)	905.35	Slope (ft/ft)	-
Watershed No.	5-A	Chapter 93 Class.	HQ-CWF, MF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired		
Cause(s) of Impairment	METALS, METALS, PH, PH		
Source(s) of Impairment	ACID MINE DRAINAGE, ACID MINE DRAINAGE, ACID MINE DRAINAGE, ACID MINE DRAINAGE		
TMDL Status	Final	Name	Lackawanna River Watershed
Nearest Downstream Public Water Supply Intake	Danville Borough Water Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	1,123
PWS RMI	122.7	Distance from Outfall (mi)	> 50

Treatment Facility Summary

Treatment Facility Name: LRBSA - Archbald WWTP

WQM Permit No.	Issuance Date
3590405 (approves 6 MGD discharge)	7/11/1990
WQG02351401	3/9/2015
3516402	5/6/2016

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Sequencing Batch Reactor	Ultraviolet	3.24 (2024 Annual Average from Chapter 94 Report)

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
6.0	10,000	Not Overloaded	Combination	Landfill

Compliance History

DMR Data for Outfall 001 (from April 1, 2024 to March 31, 2025)

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Flow (MGD) Average Monthly	3.01	2.57	3.40	3.67	3.05	2.5	1.98	3.14	2.36	2.19	2.66	3.18
Flow (MGD) Daily Maximum	5.07	3.98	2.83	6.12	5.44	3.22	2.72	5.28	3.38	2.79	3.83	5.44
pH (S.U.) Minimum	6.68	6.57	6.59	6.55	6.44	6.52	6.61	6.65	6.59	6.64	6.47	6.36
pH (S.U.) Maximum	7.19	7.58	7.34	7.50	7.20	7.21	7.08	7.21	7.28	7.18	7.15	7.06
DO (mg/L) Minimum	8.8	9.3	9.5	7.8	7.3	6.6	7.09	7.2	7.2	7.4	7.62	7.8
TRC (mg/L) Instantaneous Maximum	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
CBOD5 (lbs/day) Average Monthly	162	157	214	201	154	131	100	99	93	86	94	126
CBOD5 (lbs/day) Weekly Average	247	217	259	235	227	159	122	112	100	95	131	194
CBOD5 (mg/L) Average Monthly	8.0	7.0	8.0	7.0	6.0	6.0	6.0	4.0	5.0	5.0	4.0	5.0
CBOD5 (mg/L) Weekly Average	6.0	9.0	10.0	7.0	7.0	7.0	6.0	5.0	6.0	5.0	6.0	7.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	2516	3118	3421	3612	3948	3492	2162	2374	2182	2926	2276	2325
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	4045	5999	5155	5822	9432	5227	3579	3978	3653	4764	4635	4326
BOD5 (mg/L) Raw Sewage Influent Average Monthly	104	149	128	126	165	147	130	99	113	163	105	100
TSS (lbs/day) Average Monthly	595	291	330	421	306	287	122	223	231	206	170	216
TSS (lbs/day) Raw Sewage Influent Average Monthly	3059	3970	3982	3859	4651	4513	3530	2828	3262	4551	2365	2520

TSS (lbs/day) Raw Sewage Influent Daily Maximum	5527	7917	8012	6622	7130	7322	5137	5616	6519	10416	5825	4891
TSS (lbs/day) Weekly Average	1673	499	489	611	518	319	236	280	327	257	242	254
TSS (mg/L) Average Monthly	19.0	13.0	12.0	13.0	12.0	14.0	13.0	9.0	12.0	11.0	8.0	8.0
TSS (mg/L) Raw Sewage Influent Average Monthly	125	193	146	135	195	170	220	119	173	251	108	103
TSS (mg/L) Weekly Average	45.0	21.0	13.0	17.0	14.0	16.0	14.0	11.0	17.0	14.0	11.0	13.0
Fecal Coliform (CFU/100 ml) Geometric Mean	8	14	16	13	21	30	70	32	27	28	9	11
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	148.3	76.3	161.6	243	275.5	113.7	122.2	68.2	63.5	192.4	80.1	209
Nitrate-Nitrite (mg/L) Average Monthly	< 5.3263	5.32	< 4.8895	< 3.0976	5.119	6.83	6.9463	< 6.3162	< 8.3862	9.0325	< 5.9482	6.605
Nitrate-Nitrite (lbs) Total Monthly	< 4207.4	3162.1	< 4233.4	< 2719.7	3746.2	4488.1	3443.6	< 4979	< 5562.1	4750.1	< 4108	3773.9
Total Nitrogen (mg/L) Average Monthly	< 10.4413	11.3375	< 13.4339	< 9.7287	8.985	10.29	10.9513	< 9.4773	< 11.7529	11.9163	< 8.7702	9.755
Total Nitrogen (lbs) Effluent Net Total Monthly	< 8150.4	6824.5	< 11595.8	< 8568	6563.4	6773	5448.5	< 7378.4	< 7782.6	6258.2	< 6034.1	5573.7
Total Nitrogen (lbs) Total Monthly	< 8150.4	6824.5	< 11595.8	< 8568.5	6563.4	6773	5448.5	< 7378.4	< 7782.6	6258.2	< 6034.1	5573.7
Total Nitrogen (lbs) Effluent Net Total Annual							109587					
Total Nitrogen (lbs) Total Annual							< 88434					
Ammonia (lbs/day) Average Monthly	75.53	243.73	158.4	117.3	40.05	29.85	30.5	< 33.82	33.4	39.62	17.18	25.9
Ammonia (mg/L) Average Monthly	3.13	3.57	5.79	4.02	1.61	1.43	1.869	< 1.463	1.721	1.99	0.678	1.36
TKN (mg/L) Average Monthly	5.12	6.02	8.54	6.63	3.87	3.46	4.01	3.16	3.37	2.88	2.82	3.15
TKN (lbs) Total Monthly	3943.1	3662.3	7362.4	5848.8	2817.2	2284.9	2004.9	2399.4	2220.5	1508.1	1926.1	1799.8

Total Phosphorus (mg/L) Average Monthly	2.144	2.601	2.496	1.82	2.12	2.67	2.446	2.306	3.1	3.678	2.275	1.69
Total Phosphorus (lbs) Effluent Net Total Monthly	1651.6	1548	2106.9	1585.3	1598.3	1755.8	1223.5	1764.9	2035.9	1954.9	1596.7	965.6
Total Phosphorus (lbs) Total Monthly	1651.6	1548	2106.9	1585.3	1598.3	1755.8	1223.5	1764.9	2035.9	1954.9	1596.7	965.6
Total Phosphorus (lbs) Effluent Net Total Annual							14612					
Total Phosphorus (lbs) Total Annual							18632					
Total Aluminum (mg/L) Average Quarterly	0.033			0.025			0.056			0.017		
Total Copper (ug/L) Average Monthly	5.69	8.41	7.34	8.9	7.5	7.4	8.91	4.01	10.3	8.04	8.46	7.22
Total Iron (mg/L) Average Quarterly	0.100			0.063			0.120			0.0700		
Total Lead (mg/L) Average Quarterly	0.00025			0.000272			0.00055			< 0.0000825		
Total Manganese (mg/L) Average Quarterly	0.0590			0.0500			0.0870			0.018		

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 6.0
Latitude 41º 30' 48.00" **Longitude** -75º 32' 34.00"
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
Total Suspended Solids	30.0	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45.0	Average Weekly	133.102(b)(2)	92a.47(a)(2)
	60.0	IMAX	-	-
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)
Dissolved Oxygen	5.0	Minimum	-	BPJ
E Coli	Report	Average Monthly	-	92a.61

Water Quality-Based Limitations

The following limitations were determined through water quality modeling:

Parameter	Limit (mg/l)	SBC	Model
$CBOD_5$	22.6	Average Monthly	Previous Modeling
	34.0	Average Weekly	
	45.2	IMAX	
Total Residual Chlorine	0.98	IMAX	TRC Calculation Spreadsheet
Ammonia-Nitrogen Nov 1 - Apr 30	12.0	Average Monthly	Previous Modeling
	24.0	IMAX	
Ammonia-Nitrogen May 1 - Oct 31	4.0	Average Monthly	
	8.0	IMAX	
Total Copper	14.0	Average Monthly	Previous Modeling
	35.0	IMAX	
Total Suspended Solids Raw Sewage Influent	Report	Average Monthly	POTW Requirement
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Average Monthly	
Kjeldahl--N	Report	Average Monthly	Chesapeake Bay Requirements
Nitrate-Nitrite as N	Report	Average Monthly	
Total Nitrogen	Report	Average Monthly	
Total Phosphorus	Report	Average Monthly	
Net Total Nitrogen (lbs/day)	109,587	Annual	
Net Total Phosphorus (lbs/day)	14,61	Annual	
Cyanide, Free	Report	Average Quarterly	Toxic Modeling Spreadsheet (TMS)
Zinc, Total	Report	Average Quarterly	

Iron, Total	Report	Average Quarterly	Lackawanna River Watershed TMDL
Manganese, Total	Report	Average Quarterly	
Aluminum, Total	Report	Average Quarterly	
PFOA (ng/L)	Report	Average Quarterly	PFAs Monitoring Requirement
PFOS (ng/L)	Report	Average Quarterly	
PFBS (ng/L)	Report	Average Quarterly	
HFPO-DA (ng/L)	Report	Average Quarterly	

Anti-Backsliding

No limitations were made less stringent.

Whole Effluent Toxicity (WET)

For Outfall 001, ☐ **Acute** ☒ **Chronic** WET Testing was completed:

☐ For the permit renewal application (4 tests).
☐ Quarterly throughout the permit term.
☐ Quarterly throughout the permit term and a TIE/TRE was conducted.
☒ Other: **Annually (2021-2024 Results)**

The dilution series used for the tests was: 100%, 66%, 31%, 16%, and 8%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 31%.

Summary of Four Most Recent Test Results

TST Data Analysis

(NOTE – In lieu of recording information below, the application manager may attach the DEP WET Analysis Spreadsheet).

	***Ceriodaphnia* Results (Pass/Fail)**		***Pimephales* Results (Pass/Fail)**	
Test Date	**Survival**	**Reproduction**	**Survival**	**Growth**
August 2024	Pass	Pass	Pass	Pass
July 2023	Pass	Pass	Pass	Pass
July 2022	Pass	Pass	Pass	Pass
October 2021	Pass	Pass	Pass	Pass

***** *A "passing" result is that in which the replicate data for the TIWC is not statistically significant from the control condition. This is exhibited when the calculated t value ("T-Test Result") is greater than the critical t value. A "failing" result is exhibited when the calculated t value ("T-Test Result") is less than the critical t value.*

Is there reasonable potential for an excursion above water quality standards based on the results of these tests? (*NOTE – In general, reasonable potential is determined anytime there is at least one test failure in the previous four tests).*

☐ **YES** ☒ **NO**

Evaluation of Test Type, IWC and Dilution Series for Renewed Permit

Acute Partial Mix Factor (PMFa): **0.518** Chronic Partial Mix Factor (PMFc): **1**

1. Determine IWC – Acute (IWCa):

$(Q_d \times 1.547) / ((Q_{7\text{-}10} \times PMFa) + (Q_d \times 1.547))$

[(6.0 MGD x 1.547) / ((18.53 cfs x 0.518) + (6.0 MGD x 1.547))] x 100 = **49.16%**

Is IWCa < 1%? ☐ **YES** ☒ **NO**

If the discharge is to the tidal portion of the Delaware River, indicate how the type of test was determined: **N/A**

Type of Test for Permit Renewal: **Chronic**

2. Determine Target IWCc (If Chronic Tests Required)

$(Q_d \times 1.547) / (Q_{7\text{-}10} \times PMFc) + (Q_d \times 1.547)$

[(6.0 MGD x 1.547) / ((18.53 cfs x 1) + (6.0 MGD x 1.547))] x 100 = **33.37%**

3. Determine Dilution Series

(NOTE – check Attachment C of WET SOP for dilution series based on TIWCa or TIWCc, whichever applies).

Dilution Series = 100%, 67%, 33%, 17%, and 8%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

Will WET limits be established in the permit? ☐ YES ☒ NO

If WET limits will be established, identify the species and the limit values for the permit (TU).

N/A

If WET limits will not be established, but reasonable potential was determined, indicate the rationale for not establishing WET limits:

N/A

WET Summary and Evaluation

Facility Name	Archbald WWTP
Permit No.	PA0027065
Design Flow (MGD)	6
Q_{7-10} Flow (cfs)	18.53
PMF_a	0.518
PMF_c	1

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Pimephales	Survival				

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**
TIWC	**33** % Effluent
Dilution Series	**8, 17, 33, 67, 100** % Effluent
Permit Limit	**None**
Permit Limit Species	

Modeling Using USGS Stream Gage

Stream Gage: 01534500 – Lackawanna River at Archbald, PA

Name	Value
USGS Station Number	01534500
Station Name	Lackawanna River at Archbald, PA
Station Type	Gaging Station, continuous record
Latitude	41.50452
Longitude	-75.54213
NWIS Latitude	41.5044422
NWIS Longitude	-75.5421143
Is regulated?	true
Agency	United States Geological Survey
NWIS Discharge Period of Record	02/01/1940 - 05/27/2025

Characteristic Name	Value	Units
Drainage Area	108	square miles

Controlled 1 Day 10 Year Low Flow	16.7	cubic feet per second	✓	48	49	Statistic Date Range 4/1/1960 - 3/31/2008
Controlled 7 Day 2 Year L ow Flow	29.2	cubic feet per second	✓	48	49	Statistic Date Range 4/1/1960 - 3/31/2008
Controlled 7 Day 10 Year Low Flow	18.8	cubic feet per second	✓	48	49	Statistic Date Range 4/1/1960 - 3/31/2008

$$Low\ Flow\ Yield\ using\ StreamStats\ Gage\ Data = \frac{18.8\ ft^3/sec}{108\ mi^2} = \mathbf{0.17}\ \boldsymbol{\frac{ft^3/sec}{mi^2}}$$

$$Q_{7-10}\ at\ Outfall\ 001\ using\ StreamStats\ Gage\ Data = 0.17\ \frac{ft^3/sec}{mi^2} \times 109\ mi^2 = \mathbf{18.53\ cfs}$$

USGS StreamStats Data:

At Outfall 001 on the Lackawanna River:

RMI	Elevation (ft)	Drainage Area (mi^2)	Q_{7-10} Flow (cfs)
23.8	905.35	109	10.3

* StreamStats Q_{7-10} was not used for modeling.

StreamStats Report

Region ID:	PA
Workspace ID:	PA20200310144917341000
Clicked Point (Latitude, Longitude):	41.51329, -75.54289
Time:	2020-03-10 10:49:37 -0400

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	0	percent
DRNAREA	Area that drains to a point on a stream	109	square miles

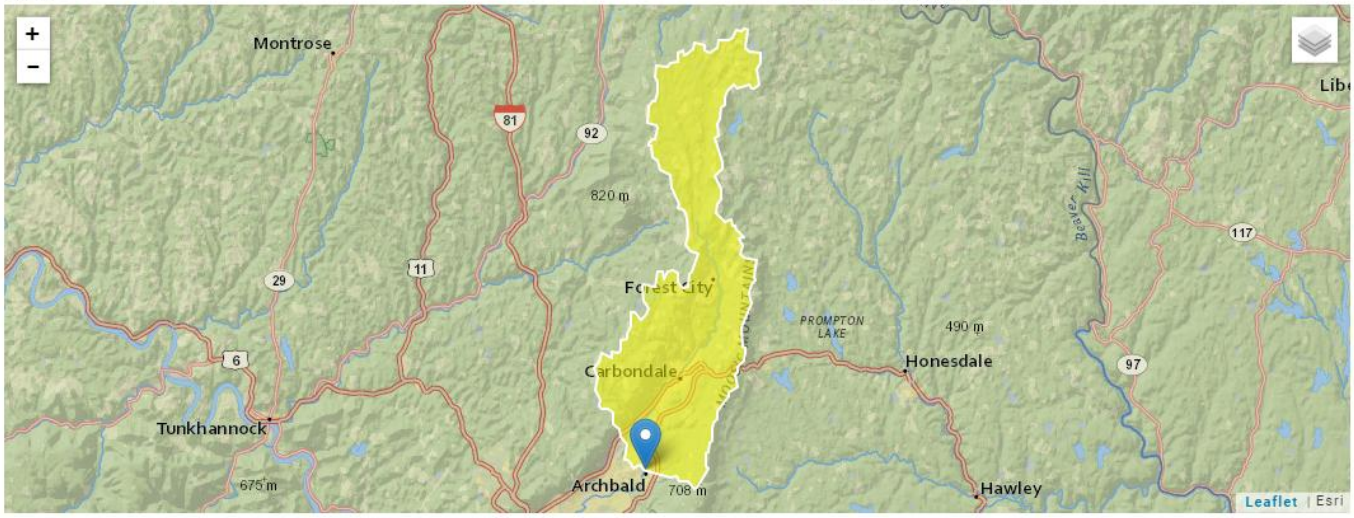
Statistic	Value	Unit
7 Day 2 Year Low Flow	20.8	ft^3/s
30 Day 2 Year Low Flow	27.3	ft^3/s
7 Day 10 Year Low Flow	10.3	ft^3/s

At confluence with White Oak Run (28560):

RMI	Elevation (ft)	Drainage Area (mi^2)
22.6	878.5	114

StreamStats Report

Region ID:	PA
Workspace ID:	PA20200310151331375000
Clicked Point (Latitude, Longitude):	41.49693, -75.54051
Time:	2020-03-10 11:13:48 -0400



Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	114	square miles

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
05A	28374	LACKAWANNA RIVER

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)
23.800	LRBSA Archbald	PA0027065	6.000	CBOD5	25		
				NH3-N	6.46	12.92	
				Dissolved Oxygen			3

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

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

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	0.656	1.3.2.iii	WLA cfc =	0.632
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.244	5.1d	LTA_cfc =	0.367

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.301	AFC
		INST MAX LIMIT (mg/l) =	0.984	

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

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: LRBSA - Archbald | NPDES Permit No.: PA0027065 | Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste | Wastewater Description: Treated 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
6	100	7						

					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		234									
	Chloride (PWS)	mg/L		73.2									
	Bromide	mg/L	<	0.066									
	Sulfate (PWS)	mg/L		24									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		64									
	Total Antimony	µg/L	<	1									
	Total Arsenic	µg/L		1.12									
	Total Barium	µg/L		17									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L		114									
	Total Cadmium	µg/L	<	0.191									
	Total Chromium (III)	µg/L		2.22									
	Hexavalent Chromium	µg/L	<	1									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L		6.82									
	Free Cyanide	µg/L		4									
	Total Cyanide	µg/L		16									
	Dissolved Iron	µg/L		64									
	Total Iron	µg/L		129									
	Total Lead	µg/L	<	0.584									
	Total Manganese	µg/L		143									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		5.79									
	Total Phenols (Phenolics) (PWS)	µg/L	<	25									
	Total Selenium	µg/L	<	5									
	Total Silver	µg/L	<	0.3559									
	Total Thallium	µg/L	<	1									
	Total Zinc	µg/L		56.5									
	Total Molybdenum	µg/L		1.53									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	4									
	Benzene	µg/L	<	0.41									
	Bromoform	µg/L	<	0.55									

Group 3	Carbon Tetrachloride	µg/L	<	0.34										
	Chlorobenzene	µg/L	<	0.19										
	Chlorodibromomethane	µg/L	<	0.42										
	Chloroethane	µg/L	<	0.75										
	2-Chloroethyl Vinyl Ether	µg/L	<	2										
	Chloroform	µg/L		0.89										
	Dichlorobromomethane	µg/L	<	0.39										
	1,1-Dichloroethane	µg/L	<	0.26										
	1,2-Dichloroethane	µg/L	<	0.35										
	1,1-Dichloroethylene	µg/L	<	0.31										
	1,2-Dichloropropane	µg/L	<	0.3										
	1,3-Dichloropropylene	µg/L	<	0.34										
	1,4-Dioxane	µg/L	<	5										
	Ethylbenzene	µg/L	<	0.31										
	Methyl Bromide	µg/L	<	0.83										
	Methyl Chloride	µg/L	<	0.68										
	Methylene Chloride	µg/L	<	0.77										
	1,1,2,2-Tetrachloroethane	µg/L	<	0.49										
	Tetrachloroethylene	µg/L	<	0.32										
	Toluene	µg/L		1.5										
	1,2-trans-Dichloroethylene	µg/L	<	0.33										
	1,1,1-Trichloroethane	µg/L	<	0.43										
	1,1,2-Trichloroethane	µg/L	<	0.21										
	Trichloroethylene	µg/L	<	0.39										
	Vinyl Chloride	µg/L	<	0.31										
Group 4	2-Chlorophenol	µg/L	<	0.98										
	2,4-Dichlorophenol	µg/L	<	0.98										
	2,4-Dimethylphenol	µg/L	<	0.98										
	4,6-Dinitro-o-Cresol	µg/L	<	2.5										
	2,4-Dinitrophenol	µg/L	<	2.5										
	2-Nitrophenol	µg/L	<	0.98										
	4-Nitrophenol	µg/L	<	0.98										
	p-Chloro-m-Cresol	µg/L	<	0.98										
	Pentachlorophenol	µg/L	<	2.5										
	Phenol	µg/L	<	0.98										
	2,4,6-Trichlorophenol	µg/L	<	0.98										
Group 5	Acenaphthene	µg/L	<	0.98										
	Acenaphthylene	µg/L	<	0.98										
	Anthracene	µg/L	<	0.98										
	Benzidine	µg/L	<	50										
	Benzo(a)Anthracene	µg/L	<	0.98										
	Benzo(a)Pyrene	µg/L	<	0.98										
	3,4-Benzofluoranthene	µg/L	<	0.98										
	Benzo(ghi)Perylene	µg/L	<	0.98										
	Benzo(k)Fluoranthene	µg/L	<	0.98										
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.98										
	Bis(2-Chloroethyl)Ether	µg/L	<	0.98										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.98										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5										
	4-Bromophenyl Phenyl Ether	µg/L	<	0.98										
	Butyl Benzyl Phthalate	µg/L	<	0.98										
	2-Chloronaphthalene	µg/L	<	0.98										
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.98										
	Chrysene	µg/L	<	0.98										
	Dibenzo(a,h)Anthrancene	µg/L	<	0.98										
	1,2-Dichlorobenzene	µg/L	<	0.32										
	1,3-Dichlorobenzene	µg/L	<	0.29										
	1,4-Dichlorobenzene	µg/L	<	0.27										
	3,3-Dichlorobenzidine	µg/L	<	0.98										
	Diethyl Phthalate	µg/L	<	0.98										
	Dimethyl Phthalate	µg/L	<	0.98										
	Di-n-Butyl Phthalate	µg/L	<	0.98										
	2,4-Dinitrotoluene	µg/L	<	0.98										

2,6-Dinitrotoluene	µg/L	<	0.98										
Di-n-Octyl Phthalate	µg/L		2.5										
1,2-Diphenylhydrazine	µg/L	<	0.98										
Fluoranthene	µg/L	<	0.98										
Fluorene	µg/L	<	0.98										
Hexachlorobenzene	µg/L	<	0.98										
Hexachlorobutadiene	µg/L	<	0.32										
Hexachlorocyclopentadiene	µg/L	<	0.98										
Hexachloroethane	µg/L	<	0.98										
Indeno(1,2,3-cd)Pyrene	µg/L	<	0.98										
Isophorone	µg/L	<	0.98										
Naphthalene	µg/L	<	0.34										
Nitrobenzene	µg/L	<	0.98										
n-Nitrosodimethylamine	µg/L	<	0.98										
n-Nitrosodi-n-Propylamine	µg/L	<	0.98										
n-Nitrosodiphenylamine	µg/L	<	0.98										
Phenanthrene	µg/L	<	0.98										
Pyrene	µg/L	<	0.98										
1,2,4-Trichlorobenzene	µg/L	<	0.31										

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

LRBSA - Archbald, NPDES Permit No. PA0027065, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: Lackawanna River

No. Reaches to Model: 1

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	028374	23.8	905.35	109			Yes
End of Reach 1	028374	22.6	878.5	114			Yes

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

Location	RMI	LFY (cfs/mi²)*	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	23.8	0.17										100	7		
End of Reach 1	22.6	0.17													

Q_h

Location	RMI	LFY (cfs/mi²)	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	23.8														
End of Reach 1	22.6														

☑ *AFC*	CCT (min):	15	PMF:	0.518	Analysis Hardness (mg/l):	100	Analysis pH:	7.00
☑ *CFC*	CCT (min):	55.835	PMF:	1	Analysis Hardness (mg/l):	100	Analysis pH:	7.00
☑ *THH*	CCT (min):	55.835	PMF:	1	Analysis Hardness (mg/l):	N/A	Analysis pH:	N/A
☑ *CRL*	CCT (min):	43.575	PMF:	1	Analysis Hardness (mg/l):	N/A	Analysis pH:	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	18.3	AFC	Discharge Conc > 10% WQBEL (no RP)
Free Cyanide	Report	Report	Report	Report	Report	µg/L	12.0	THH	Discharge Conc > 25% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	156	AFC	Discharge Conc > 10% WQBEL (no RP)

TMS PA0027065_5-28-25.pdf

2022_March Archbald LTCP Upda

2024 Chapter 94.pdf

WQM 7.0 - 2025.pdf