Pennsylvania Department of Environmental Protection

Northeast Regional Office
CLEAN WATER PROGRAM

# NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

| | | | |
|---|---|---|---|
| Application Type | **Renewal** | Application No. | **PA0027081** |
| Facility Type | **Municipal** | APS ID | **827529** |
| Major / Minor | **Minor** | Authorization ID | **1353511** |

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **Lackawanna River Basin Sewer Authority** | Facility Name | **LRBSA Clinton Township WWTP** |
| Applicant Address | PO Box 280 | Facility Address | 1100 Main Street Browndale |
| | Olyphant, PA 18447-0280 | | Clinton Township, PA 18421 |
| Applicant Contact | Mike Matechak, Executive Director | Facility Contact | Glenn Butler, Plant Operator |
| Applicant Phone | (570) 489-7563 | Facility Phone | (570) 785-5671 |
| Client ID | 90054 | Site ID | 262689 |
| Ch 94 Load Status | Not Overloaded | Municipality | Clinton Township |
| Connection Status | - | County | Wayne |
| Date Application Received | May 7, 2021 | EPA Waived? | No |
| Date Application Accepted | May 20, 2021 | If No, Reason | 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 0.7 MGD of treated sewage into the Lackawanna River, 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, Dissolved Oxygen (DO), $CBOD_5$, Total Suspended Solids (TSS), and Fecal Coliform are technology-based and carried over from the previous permit.

Limitations for Ammonia-Nitrogen are water quality-based and carried over from the previous permit. WQM 7.0 modeling did not recommend stricter limits.

Wintertime monitoring and reporting was added for Ammonia-Nitrogen (Nov 1 – Feb 28). The previous permit already required the monitoring for Chesapeake Bay reporting.

Per current Standard Operating Procedures for Publicly Owned Treatment Plants, the raw sewage influent monitoring/reporting for TSS and $BOD_5$ has been maintained in the permit.

The Total Residual Chlorine (TRC) Calculation Spreadsheet recommends stricter limitations than the previous permit. The permittee will be required to meet the new technology quality-based limits for TRC starting three years after the effective date of the permit (see Part C.III.). TRC limitations from the previously issued permit are in effect for the first three years after the permit effective date.

| Approve | Deny | Signatures | Date |
|---|---|---|---|
| X | | /s/<br>Allison Seyfried Zukosky / Project Manager | June 3, 2025 |
| X | | /s/<br>Edward Dudick, P.E. / Environmental Engineer Manager | June 3, 2025 |

**Summary of Review**

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. The sewer system does not have any industrial or commercial users that discharge to the WWTP.

A final Total Maximum Daily Load (TMDL) exists for the Lackawanna River. The TMDL addresses metals (iron, manganese, and aluminum) and pH associated with acid mine drainage (AMD). There are no approved Waste Load Allocations (WLA) for this facility. Since this is a sewage discharge with no industrial contributors, no appreciable quantities of these metals are expected to be present in the effluent.

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).

24-hour composite sampling is now required in place of 8-hour composite sampling.

This is a Phase 3 Chesapeake Bay facility with annual net mass limits for Total Nitrogen and Total Phosphorus. The monitoring/reporting for Total Kjeldahl Nitrogen (TKN), Nitrate-Nitrite as N, and Ammonia-Nitrogen has also been maintained in this permit.

Data for the modeling of the discharge from this facility was obtained from different sources. The results were compared to determine what the most accurate representation of the stream could be.

First, data from the upstream stream gage 1534300 (Lackawanna River near Forest City, PA) was used to model the discharge, resulting in a low flow yield (LFY) of 0.044 cfs/mi$^2$ and $Q_{7\text{-}10}$ of 1.94 cfs.

Second, data from the downstream stream gage 15345000 (Lackawanna River at Archbald, PA) was used to model the discharge, resulting in a low flow yield (LFY) of 0.17 cfs/mi$^2$ and $Q_{7\text{-}10}$ of 7.48 cfs.

Third, USGS StreamStats was used to model the discharge, resulting in a low flow yield (LFY) of 0.099 cfs/mi$^2$ and $Q_{7\text{-}10}$ of 4.36 cfs.

All three methods used the same RMI values that were obtained using the "PA Historic Streams" feature of eMapPA, the drainage areas that were delineated using USGS's StreamStats Interactive Map, and elevations that were obtained using the elevation profile feature of StreamStats. The data/calculations for all three methods can be observed on pages 9-12 of this fact sheet.

Ultimately, the data from StreamStats was used to model the discharge because it appeared to be an average of the other two methods. The LFY of 0.099 cfs/mi$^2$ is also very close to the state-wide default LFY of 0.1 cfs/mi$^2$. The previous permit carried over modeling from the permit before which used a LFY of 0.19 cfs/mi$^2$ and $Q_{7\text{-}10}$ of 8.4 cfs. Therefore, the data used for this permit was more conservative than previous permits.

The permit application identifies 3 combined sewer overflow (CSO) Outfalls: 002, 009, and 010. The locations of the CSOs are listed in the table in Part A.I.E. in the draft NPDES Permit. The Annual CSO Report (dated February 2025) included with the Chapter 94 Annual Report states that Clinton WWTP system has reduced the number of permitted CSOs from 9 to 3. The Vandling Pump Station Gravity Bypass Interceptor construction project was completed in 2023. This project constructed a new gravity interceptor sewer that allowed flow previously conveyed by the Vandling Pump Station to be transported entirely by gravity flow to the Clinton WWTP. Construction of this line allowed for the elimination of the existing CSO that was associated with it. Therefore, CSO 009 was removed from this permit renewal. The feasibility of eliminating additional CSOs continues to be evaluated on a case-by-case basis and will be implemented whenever possible.

The Chapter 94 Annual Report for 2024 (dated March 21, 2025) was reviewed as part of this permit renewal. In 2024, LRBSA continued its sewer maintenance program by inspecting and cleaning problem areas of the system. The sewer mapping GIS conversion program is also being continued. 1,038 LF of pipe was repaired/replaced in 2024 in Vandling Borough. The Report indicates there are no extensions of the collection system proposed. No areas of the system are hydraulically overloaded. The construction of any new CSOs is prohibited and the municipalities must take "all practical steps to prevent stormwater from entering the Authority's facilities".

**Summary of Review**

A Post Construction Monitoring Plan (PCMP) was submitted with the permit renewal application for review by the Department. The Plan will provide DEP and EPA data to evaluate the performance of the implemented CSO controls and determine if LRBSA – Clinton Township is meeting their pollution reduction goals. The PCMP includes three tasks: data collection, data evaluation, and annual reporting.

Receiving water quality data (E. coli concentrations) will be gathered and compared to state water quality standards for bacteria. A minimum of three (3) years of data should be gathered before evaluating the effectiveness of the LTCP in meeting water quality goals. This time period is warranted to ensure the CSO program is evaluated against annual average conditions, and not biased by an abnormally dry or wet year.

The proposed PCMP schedule submitted by the permittee can be seen below:

| Task | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 |
| Data Collection | | | | | | | | | | | | | |
| Data Analysis | | | | | | | | | | | | | |
| Annual Report | | | | | | | | | | | | | |

This proposed schedule and the E. Coli data collection period discussed above was used to create the Implementation Schedule that can be seen in Part C.II.C. of the draft NPDES Permit.

The PCMP Plan is approved by the Department.

The existing permit expired on November 30, 2021 and the application for renewal was received on time.

A Water Management System Inspection query indicated that on August 28, 2024 a Compliance Evaluation was performed.

There are currently no open violations for this client that warrant withholding issuance of this permit.

Sludge use and disposal description and location(s): As per the permittee's NPDES Renewal Application, sludge is hauled to LRBSA Archbald WWTP located in Jermyn, PA by Russell Reid.

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) | 0.7 |
| Latitude | 41º 38' 45.07" | Longitude | -75º 27' 40.17" |
| Quad Name | Forest City | Quad Code | 0542 |
| Wastewater Description: | Sewage Effluent | | |
| Receiving Waters | Lackawanna River (HQ-CWF) | Stream Code | 28374 |
| NHD Com ID | 65629201 | RMI | 35.71 |
| Drainage Area | 44 $mi^2$ | Yield ($cfs/mi^2$) | 0.099 |
| $Q_{7-10}$ Flow (cfs) | 4.36 | $Q_{7-10}$ Basis | USGS StreamStats |
| Elevation (ft) | 1,412.40 | Slope (ft/ft) | - |
| Watershed No. | 5-A | Chapter 93 Class. | HQ-CWF |
| 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 | - |
| Nearest Downstream Public Water Supply Intake | Danville Water Authority | | |
| PWS Waters | Susquehanna River | Flow at Intake (cfs) | - |
| PWS RMI | 122.58 | Distance from Outfall (mi) | ~ 95 |

## Treatment Facility Summary

**Treatment Facility Name:** LRBSA Clinton Township WWTP

| WQM Permit No. | Issuance Date | Scope |
|---|---|---|
| 6423401 | 11/21/2023 | WWTP Upgrades |
| 350401 | 4/28/2021 | Vandling Gravity Main Project |

| Waste Type | Degree of Treatment | Process Type | Disinfection | Avg Annual Flow (MGD) |
|---|---|---|---|---|
| Sewage | Secondary | Extended Aeration Activated Sludge | Chlorination | 0.40 (2024) |

| Hydraulic Capacity (MGD) | Organic Capacity (lbs/day) | Load Status | Biosolids Treatment | Biosolids Use/Disposal |
|---|---|---|---|---|
| 0.7 | 2,000 | Not Overloaded | Holding Tanks | Hauled |

## 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 | 0.5 | 0.39 | 0.33 | 0.56 | 0.34 | 0.16 | 0.21 | 0.53 | 0.44 | 0.25 | 0.42 | 0.44 |
| Flow (MGD) Daily Maximum | 0.84 | 0.78 | 0.84 | 0.92 | 0.87 | 0.61 | 0.73 | 0.81 | 1.38 | 0.90 | 0.87 | 0.96 |
| pH (S.U.) Minimum | 6.48 | 6.30 | 6.32 | 6.37 | 6.49 | 6.54 | 6.40 | 6.47 | 6.29 | 6.11 | 6.42 | 6.42 |
| pH (S.U.) Instantaneous Maximum | 7.20 | 7.09 | 7.14 | 7.10 | 7.22 | 7.24 | 7.37 | 7.25 | 7.21 | 7.12 | 7.24 | 7.03 |
| DO (mg/L) Minimum | 6.83 | 9.39 | 8.34 | 8.84 | 6.69 | 6.87 | 6.45 | 6.57 | 6.61 | 6.46 | 7.62 | 7.66 |
| TRC (mg/L) Average Monthly | 0.52 | 0.46 | 0.42 | 0.68 | 0.38 | 0.42 | 0.42 | 0.39 | 0.4 | 0.52 | 0.47 | 0.42 |
| TRC (mg/L) Instantaneous Maximum | 0.86 | 1.02 | 1.07 | 1.2 | 1.15 | 1.1 | 0.89 | 1.44 | 0.9 | 0.95 | 0.90 | 0.86 |
| CBOD5 (lbs/day) Average Monthly | 20 | 19 | 12 | 17 | 10 | 6 | 7 | 32 | 18 | 11 | 22 | 13 |
| CBOD5 (lbs/day) Weekly Average | 31 | 28 | 28 | 27 | 26 | 8 | 11 | 21 | 42 | 17 | 47 | 17 |
| CBOD5 (mg/L) Average Monthly | 5 | 6 | 4.0 | 4 | 4.0 | 4.0 | 4 | 5 | 3 | 5.0 | 5 | 4.0 |
| CBOD5 (mg/L) Weekly Average | 6 | 8 | 5.0 | 6 | 5.0 | 5.0 | 5 | 6 | 5 | 6.0 | 7 | 4.0 |
| BOD5 (lbs/day) Influent <br/> Average Monthly | 405 | 406 | 410 | 506 | 290 | 227 | 229 | 436 | 345 | 350 | 347 | 498 |
| BOD5 (lbs/day) Influent <br/> Daily Maximum | 617 | 608 | 579 | 863 | 487 | 525 | 377 | 1096 | 1022 | 933 | 782 | 732 |
| BOD5 (mg/L) Influent <br/> Average Monthly | 107 | 154 | 172 | 123 | 182 | 164 | 140 | 95 | 101 | 174 | 101 | 119 |
| TSS (lbs/day) Average Monthly | 27 | 42 | 15 | 23 | 29 | 6 | 8 | 25 | 20 | 11 | 47 | 34 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TSS (lbs/day) Influent <br/> Average Monthly | 359 | 384 | 391 | 377 | 246 | 231 | 278 | 314 | 273 | 350 | 368 | 381 |
| TSS (lbs/day) Influent <br/> Daily Maximum | 418 | 846 | 726 | 718 | 315 | 451 | 597 | 813 | 462 | 636 | 855 | 433 |
| TSS (lbs/day) Weekly Average | 45 | 114 | 35 | 39 | 103 | 10 | 12 | 18 | 46 | 12 | 100 | 59 |
| TSS (mg/L) Average Monthly | 6 | 12 | 6.0 | 5 | 7 | 5.0 | 5 | 4 | 4 | 6.0 | 8 | 9.0 |
| TSS (mg/L) Influent <br/> Average Monthly | 96 | 135 | 171 | 98 | 160 | 171 | 168 | 73 | 95 | 177 | 106 | 97 |
| TSS (mg/L) Weekly Average | 8 | 23 | 8.0 | 6 | 14 | 6.0 | 7 | 5 | 5 | 10.0 | 14 | 10.0 |
| Fecal Coliform (CFU/100 ml) Geometric Mean | 19 | 33 | 15 | 7 | 44 | 20 | 14 | 17 | 18 | 21 | 18 | 16 |
| Fecal Coliform (CFU/100 ml) Instantaneous Maximum | 1986.3 | 7945.2 | 56.3 | 18.5 | 816.4 | 96 | 58.3 | 770.1 | 42 | 108.1 | 153.9 | 248.1 |
| Nitrate-Nitrite (mg/L) Average Monthly | < 13.1554 | < 17.7527 | < 18.38569 | < 12.69298 | < 30.41773 | < 29.8596 | < 23.0263 | < 12.959 | < 15.2174 | < 19.7152 | < 19.0492 | < 14.2546 |
| Nitrate-Nitrite (lbs) Total Monthly | < 1517.2 | < 1347.1 | < 1400.8 | < 1625.4 | < 1698.9 | < 1299.3 | < 1128.5 | < 1688.2 | < 1653.4 | < 2701.5 | < 2553.9 | < 1218.8 |
| Total Nitrogen (mg/L) Average Monthly | < 13.987844 | < 18.21845 | < 18.79769 | < 13.50542 | < 31.41173 | < 30.8536 | < 24.0203 | < 13.9536 | < 16.2114 | < 20.7092 | < 20.0432 | < 15.2486 |
| Total Nitrogen (lbs) Effluent Net <br/> Total Monthly | < 1633.8 | < 1383.2 | < 1437.8 | < 1727 | < 1778.2 | < 1342.7 | < 1179.9 | < 1825.5 | < 1785.9 | < 2837.7 | < 2694.1 | < 1323.5 |
| Total Nitrogen (lbs) Total Monthly | < 1633.8 | < 1383.2 | < 1437.8 | < 1727 | < 1778.2 | < 1342.9 | < 1179.9 | < 1825.5 | < 1785.9 | < 2837.7 | < 2694.1 | < 1323.5 |
| Total Nitrogen (lbs) Effluent Net <br/> Total Annual | | | | | | | < 12786 | | | | | |
| Total Nitrogen (lbs) Total Annual | | | | | | | < 20526 | | | | | |
| Ammonia (lbs/day) Average Monthly | < 1.377 | | | | | < 0.47 | < 1.71 | < 1.34 | < 1.29 | < 1.37 | < 1.23 | < 1.05 |
| Ammonia (mg/L) Average Monthly | < 0.37 | < 0.3 | < 0.03 | < 0.3 | < 0.3 | < 0.33 | < 0.32 | < 0.03 | < 0.3 | < 0.3 | < 0.3 | < 0.3 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ammonia (lbs)<br>Total Monthly | < 42.7 | < 23.5 | < 27.0 | < 40.2 | < 23.9 | < 14.6 | < 16 | < 41.5 | < 40 | < 41.1 | < 38.2 | < 31.6 |
| Ammonia (lbs)<br>Total Annual | | | | | | | < 394 | | | | | |
| TKN (mg/L)<br>Average Monthly | < 0.776 | < 0.466 | < 0.412 | < 0.812 | < 0.994 | < 0.994 | < 0.994 | < 0.994 | < 0.994 | < 0.994 | < 0.994 | < 0.994 |
| TKN (lbs)<br>Total Monthly | < 112.2 | < 36.1 | < 37 | < 101.7 | < 79.3 | < 43.4 | < 51.4 | < 137.3 | < 132.5 | < 136.2 | < 140.2 | < 104.7 |
| Total Phosphorus (mg/L)<br>Average Monthly | 1.046 | 1.734 | 1.58 | 1.142 | 2.97 | < 3.13 | 2.511 | 1.424 | 1.718 | 2.41 | 1.112 | 1.105 |
| Total Phosphorus (lbs) Effluent Net <br/><br>Total Monthly | < 125.2 | 132.1 | 123.7 | 149.8 | 158.3 | 134.1 | 121.6 | < 185.5 | 192 | 330.2 | 153.7 | 108.4 |
| Total Phosphorus (lbs)<br>Total Monthly | 125.2 | 132.1 | 123.7 | 149.8 | 158.3 | 134.1 | 121.6 | 185.5 | 192 | 330.2 | < 140.2 | 108.4 |
| Total Phosphorus (lbs) Effluent Net <br/><br>Total Annual | | | | | | | 1705 | | | | | |
| Total Phosphorus (lbs)<br>Total Annual | | | | | | | 1939 | | | | | |

**evelopment of Effluent Limitations**

**Outfall No.** 001 **Design Flow (MGD)** 0.7
**Latitude** 41º 38' 45.34" **Longitude** -75º 27' 40.59"
**Wastewater Description:** Sewage Effluent

## Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

| Pollutant | Limit (mg/l) | SBC | Federal Regulation | State Regulation |
|---|---|---|---|---|
| $CBOD_5$ | 25.0 | Average Monthly | 133.102(a)(4)(i) | 92a.47(a)(1) |
| | 40.0 | Average Weekly | 133.102(a)(4)(ii) | 92a.47(a)(2) |
| | 50.0 | IMAX | - | - |
| 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) |
| Total Residual Chlorine | 0.5 | Average Monthly | - | 92a.48(b)(2) |
| | 1.6 | IMAX | - | - |
| Dissolved Oxygen | 5.0 | Minimum | - | BPJ |
| E. Coli | Report | Average Quarterly | | 92a.61 |

## Water Quality-Based Limitations

The following limitations were determined through water quality modeling:

| Parameter | Limit (mg/l) | SBC | Model |
|---|---|---|---|
| Ammonia-Nitrogen Mar 1 - Oct 31 | 10.0 | Monthly Average | Previous Modeling |
| | 20.0 | IMAX | |
| Ammonia-Nitrogen Nov 1 - Feb 28 | Report | Average Monthly | |
| Biochemical Oxygen Demand (BOD5) Influent | Report | Average Monthly | POTW Requirement |
| Total Suspended Solids Influent | Report | Average Monthly | |
| Kjeldahl--N | Report | Average Monthly | Chesapeake Bay Requirements |
| Nitrate-Nitrite as N | Report | Average Monthly | |
| Total Phosphorus | Report | Average Monthly | |
| Net Total Phosphorus (lbs/day) | 12,786 | Annual | |
| Total Nitrogen | Report | Average Monthly | |
| Net Total Nitrogen (lbs/day) | 1,705 | Annual | |

## Anti-Backsliding

No limitations were made less stringent.

## Modeling Using USGS Stream Gages

**Stream Gage:** 01534300 – Lackawanna River near Forest City, PA

| Name | Value |
|---|---|
| USGS Station Number | 01534300 |
| Station Name | Lackawanna River near Forest City, PA |
| Station Type | Gaging Station, continuous record |
| Latitude | 41.67981 |
| Longitude | -75.47185 |
| NWIS Latitude | 41.67980547 |
| NWIS Longitude | -75.47184988 |
| Is regulated? | true |
| Agency | United States Geological Survey |
| NWIS Discharge Period of Record | 10/01/1958 - 05/29/2025 |

| Characteristic Name | Value | Units |
|---|---|---|
| Drainage Area | 38.8 | square miles |

| Statistic Name | Value | Units | Preferred? | Years of Record | Standard Error, percent | Citation | Comments |
|---|---|---|---|---|---|---|---|
| 1 Day 10 Year Low Flow | 1.1 | cubic feet per second | ✓ | 49 | | 49 | Statistic Date Range 4/1/1959 - 3/31/2008 |
| 7 Day 2 Year Low Flow | 5.1 | cubic feet per second | ✓ | 49 | | 49 | Statistic Date Range 4/1/1959 - 3/31/2008 |
| 7 Day 10 Year Low Flow | 1.7 | cubic feet per second | ✓ | 49 | | 49 | Statistic Date Range 4/1/1959 - 3/31/2008 |

$$Low\ Flow\ Yield\ using\ StreamStats\ Gage\ Data = \frac{1.7\ ft^3/sec}{38.8\ mi^2} = \mathbf{0.044}\ \frac{\boldsymbol{ft^3/sec}}{\boldsymbol{mi^2}}$$

$$Q_{7-10}\ at\ Outfall\ 001\ using\ StreamStats\ Gage\ Data = 0.04\ \frac{ft^3/sec}{mi^2} \times 44\ mi^2 = \mathbf{1.94}\ \boldsymbol{cfs}$$

**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 | |
| NWIS Longitude | |
| Is regulated? | true |
| Agency | United States Geological Survey |
| NWIS Discharge Period of Record | Undefined |

| 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 Low 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 |

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

$$Q_{7-10}\ at\ Outfall\ 001\ using\ StreamStats\ Gage\ Data = 0.17\ \frac{ft^3/sec}{mi^2} \times 44\ mi^2 = \mathbf{7.48}\ \boldsymbol{cfs}$$

## Modeling Using USGS StreamStats Data:

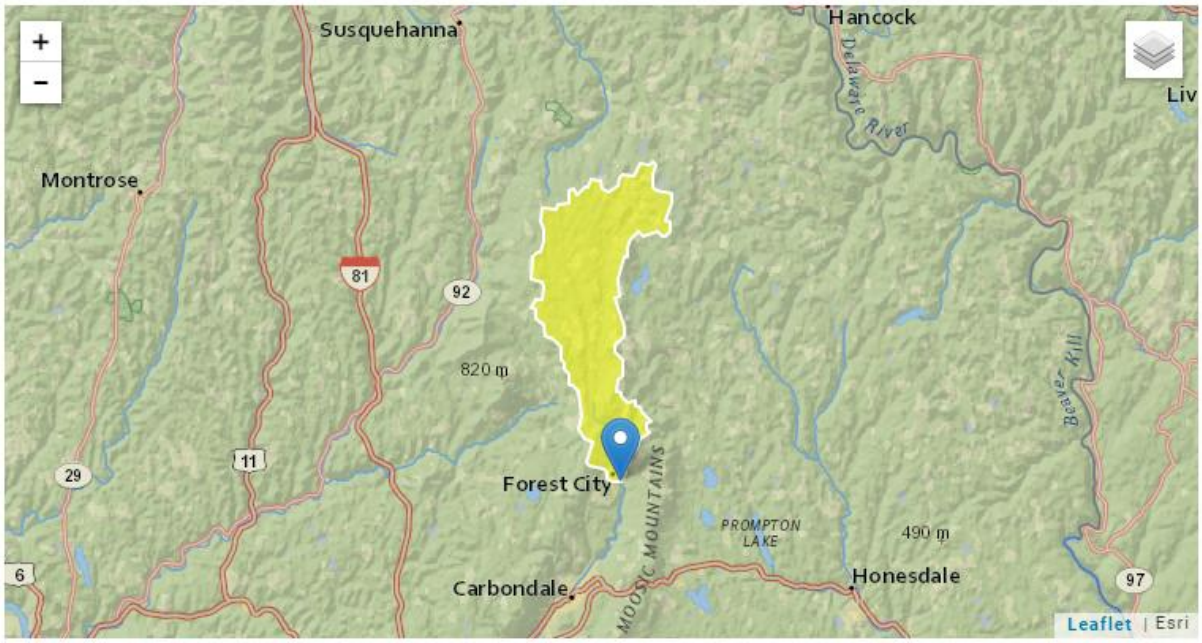
**At Outfall 001 on the Lackawanna River:**

| RMI | Elevation (ft) | Drainage Area (mi²) | $Q_{7-10}$ Flow (cfs) |
|---|---|---|---|
| 35.71 | 1,412.40 | 44 | 4.36 |

$$Low\ Flow\ Yield\ using\ StreamStats = \frac{4.36\ ft^3/sec}{44\ mi^2} = \mathbf{0.099}\ \frac{\boldsymbol{ft^3/sec}}{\boldsymbol{mi^2}}$$

# StreamStats Report

**Region ID:** PA
**Workspace ID:** PA20211202151640589000
**Clicked Point (Latitude, Longitude):** 41.64584, -75.46123
**Time:** 2021-12-02 10:17:00 -0500




| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| DRNAREA | Area that drains to a point on a stream | 44 | square miles |

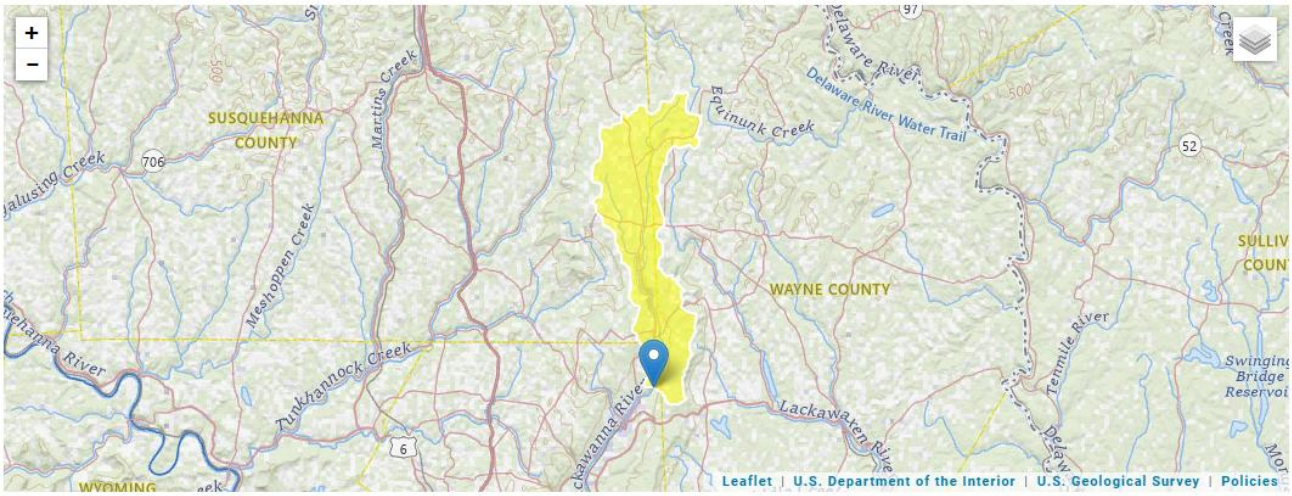
| Statistic | Value | Unit | SE | ASEp |
|---|---|---|---|---|
| 7 Day 2 Year Low Flow | 8.56 | ft^3/s | 38 | 38 |
| 30 Day 2 Year Low Flow | 11.1 | ft^3/s | 33 | 33 |
| 7 Day 10 Year Low Flow | 4.36 | ft^3/s | 51 | 51 |

**At confluence with Unnamed Tributary to Lackawanna River (28603):**

| RMI | Elevation (ft) | Drainage Area (mi²) |
|---|---|---|
| 32.044 | 1,205.46 | 56.2 |

StreamStats Report

| | |
|---|---|
| **Region ID:** | PA |
| **Workspace ID:** | PA20250603130643934000 |
| **Clicked Point (Latitude, Longitude):** | 41.60363, -75.46925 |
| **Time:** | 2025-06-03 09:07:09 -0400 |




## Low-Flow Statistics Parameters [Low Flow Region 2]

| Parameter Code | Parameter Name | Value | Units |
|---|---|---|---|
| CARBON | Percent Carbonate | 0 | percent |
| DRNAREA | Drainage Area | 56.2 | 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) |
|---|---|---|---|---|---|---|---|
| 35.710 | LRBSA Clinton | PA0027081 | 0.700 | CBOD5 | 25 | | |
| | | | | NH3-N | 11.73 | 23.46 | |
| | | | | Dissolved Oxygen | | | 3 |

## TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

| | | | |
|---|---|---|---|
| 4.36 | = Q stream (cfs) | 0.5 | = CV Daily |
| 0.7 | = 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 = 1.303 | 1.3.2.iii | WLA cfc = 1.263 |
| PENTOXSD TRG | 5.1a | LTAMULT afc = 0.373 | 5.1c | LTAMULT cfc = 0.581 |
| PENTOXSD TRG | 5.1b | LTA_afc= 0.486 | 5.1d | LTA_cfc = 0.734 |

| Source | | Effluent Limit Calculations | |
|---|---|---|---|
| PENTOXSD TRG | 5.1f | AML MULT = 1.231 | |
| PENTOXSD TRG | 5.1g | AVG MON LIMIT (mg/l) = 0.500 | BAT/BPJ |
| | | INST MAX LIMIT (mg/l) = 1.635 | |

| | |
|---|---|
| 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) |

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