Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

# NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

| | | | |
|---|---|---|---|
| Application Type | **Renewal** | Application No. | **PA0263711** |
| Facility Type | **Municipal** | APS ID | **1074871** |
| Major / Minor | **Minor** | Authorization ID | **1416157** |

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **Benezette Township Elk County** | Facility Name | **Benezette WWTP** |
| Applicant Address | PO Box 45 16 Trout Run Road | Facility Address | 105 Schoolhouse Road |
| | Benezette, PA 15821-0045 | | Benezette, PA 15821 |
| Applicant Contact | Pamela Mong | Facility Contact | Pamela Mong |
| Applicant Phone | (814) 787-8811 | Facility Phone | (814) 787-8811 |
| Client ID | 140919 | Site ID | 715653 |
| Ch 94 Load Status | Not Overloaded | Municipality | Benezette Township |
| Connection Status | No Limitations | County | Elk |
| Date Application Received | October 31, 2022 | EPA Waived? | Yes |
| Date Application Accepted | March 21, 2025 | If No, Reason | |

Purpose of Application: This is an application for NPDES renewal

## Summary of Review

The application submitted by the applicant requests a NPDES renewal permit for the Benezette WWTP located at 105 Schoolhouse Road, Benezette, PA 15821 in Elk County, municipality of Benezette Township. The existing permit became effective on May 1, 2018 and expired on April 30, 2023. The application for renewal was received by DEP Southcentral Regional Office (SCRO) on October 31, 2022.

The purpose of this Fact Sheet is to present the basis of information used for establishing the proposed NPDES permit effluent limitations. The Fact Sheet includes a description of the facility, a description of the facility's receiving waters, a description of the facility's receiving waters attainment/non-attainment assessment status, and a description of any changes to the proposed monitoring/sampling frequency. Section 6 provides the justification for the proposed NPDES effluent limits derived from technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), total maximum daily loading (TMDL), antidegradation, anti-backsliding, and/or whole effluent toxicity (WET). A brief summary of the outlined descriptions has been included in the Summary of Review section.

The subject facility is a 0.04 MGD treatment facility. The applicant anticipates proposed upgrades to the treatment facility in the next five years. The facility proposes an effluent pump station to address outfall backwater effects on the treatment process. The NPDES application has been processed as a Minor Sewage Facility (Level 1) due to the type of sewage and the design flow rate for the facility. The applicant disclosed the Act 14 requirement to Elk County Commissioners and Benezette Township Supervisors. A planning approval letter was not necessary as the facility is neither new or expanding.

Utilizing the DEP's web-based Emap-PA information system, the receiving waters has been determined to be Trout Run. The sequence of receiving streams that the Trout Run discharges into are Bennett Branch Sinnemahoning Creek, West Branch

| Approve | Deny | Signatures | Date |
|---|---|---|---|
| X | | Nicholas Hong, P.E. / Environmental Engineer<br><br>Nick Hong (via electronic signature) | April 2, 2025 |
| | | Adam Olesnanik, P.E. / Environmental Engineer Manager | Okay to Draft<br>JCD 4/4/2025 |

**Summary of Review**

Susquehanna River, Susquehanna River which eventually drains into the Chesapeake Bay. The subject site is subject to the Chesapeake Bay implementation requirements. The receiving water has protected water usage for cold water fishes (CWF) and migratory fishes (MF). No Class A Wild Trout fisheries are impacted by this discharge. The absence of high quality and/or exceptional value surface waters removes the need for an additional evaluation of anti-degradation requirements.

The Trout Run is a Category 2 stream listed in the 2024 Integrated List of All Waters (formerly 303d Listed Streams). This stream is an attaining stream that supports aquatic life and recreational uses. The secondary receiving waters has total maximum daily load (TMDL) effluent limits to improve water quality in the subject facility's watershed.

The existing permit and proposed permit differ as follows:

- **Dissolved oxygen limit increased to 5 mg/l.**
- **Due to the EPA triennial review, monitoring shall be required for E. Coli.**

Sludge use and disposal description and location(s): Sewage sludge disposed at Benezette WWTP on reed beds

The proposed permit will expire five (5) years from the effective date.

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

Any additional information or public review of documents associated with the discharge or facility may be available at PA DEP Southcentral Regional Office (SCRO), 909 Elmerton Avenue, Harrisburg, PA 17110. To make an appointment for file review, contact the SCRO File Review Coordinator at 717.705.4700.

## 1.0 Applicant

### 1.1 General Information

This fact sheet summarizes PA Department of Environmental Protection's review for the NPDES renewal for the following subject facility.

| | |
|---|---|
| Facility Name: | Benezette WWTP |
| NPDES Permit # | PA0263711 |
| Physical Address: | 105 Schoolhouse Road<br>Benezette, PA 15821 |
| Mailing Address: | 16 Trout Run Road<br>Benezette, PA 15821 |
| Contact: | Pamela Mong<br>Secretary/Treasurer<br>bentwp@yahoo.com |
| Consultant: | Brock Bowers<br>Water/Wastewater Designer<br>420 Allegheny Street<br>Hollidaysburg, PA 16648<br>(814) 696-7460<br>bbowers@keller-engineers.com |

### 1.2 Permit History

Description of Facility

Due to frequent effluent violations, the Township entered into a Consent Order and Agreement on December 18, 2017.

Permit submittal included the following information.

- NPDES Application
- Flow Diagrams
- Influent Sample Data
- Effluent Sample Data

## 2.0 Treatment Facility Summary

### 2.1.1 Site location

The physical address for the facility is 105 Schoolhouse Road, Benezette, PA 15821. A topographical and an aerial photograph of the facility are depicted as Figure 1 and Figure 2.

Figure 1: Topographical map of the subject facility

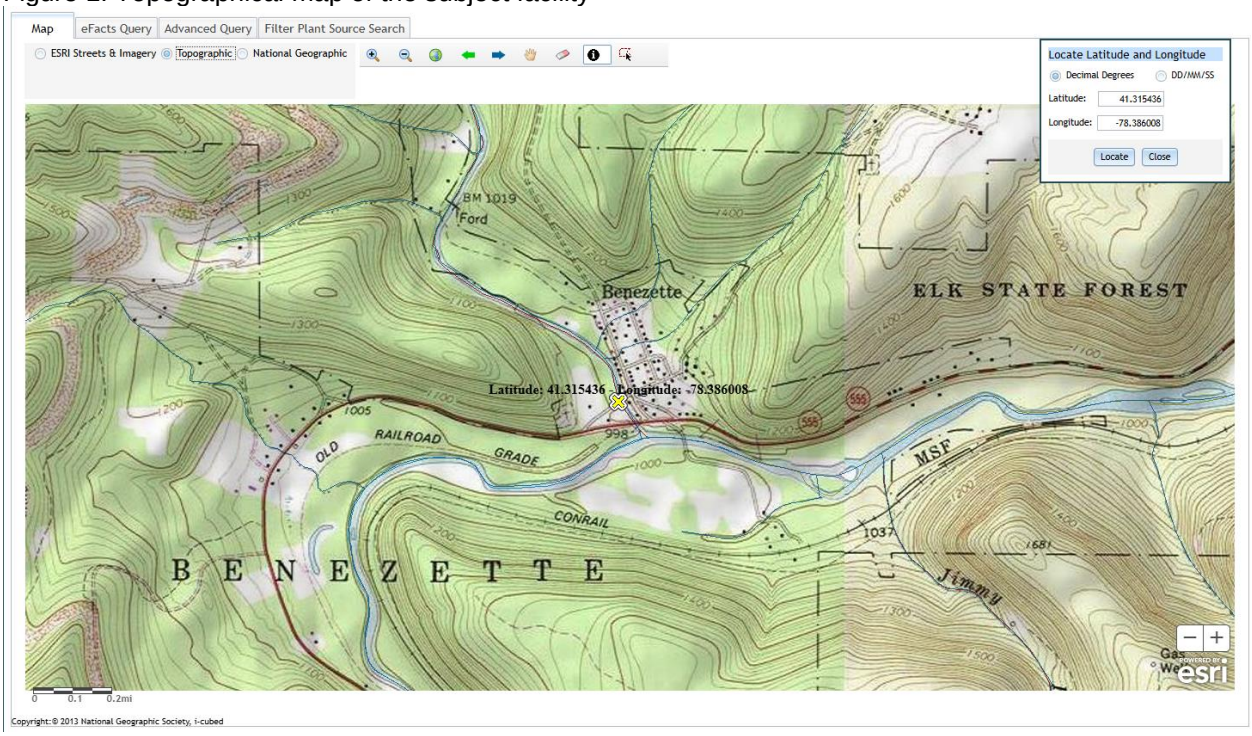
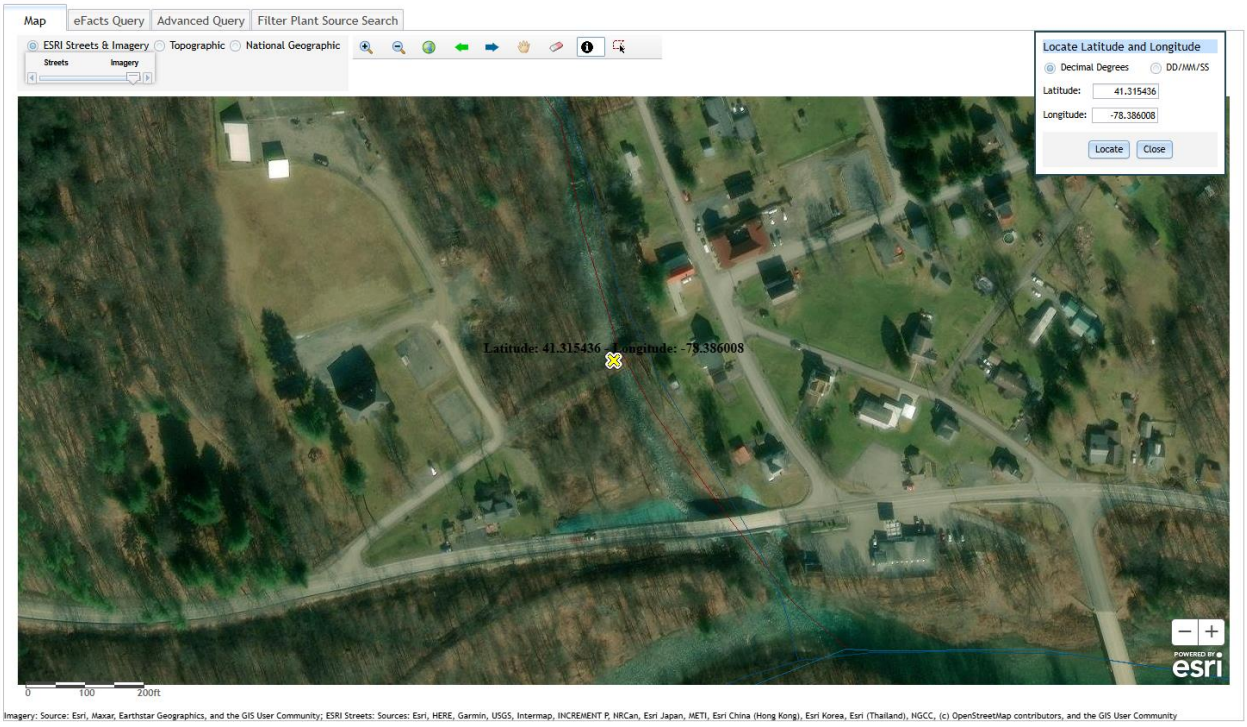



Figure 2: Aerial Photograph of the subject facility



### 2.1.2 Sources of Wastewater/Stormwater

The wastewater treatment plant receives 100% of the wastewater from Benezette Township.

### 2.2 Description of Wastewater Treatment Process

The subject facility is a 0.04 MGD design flow facility. The subject facility treats wastewater using a Purestream / ES Biologically Engineered Single Sludge Technology (BESST) system. The treatment consists of anoxic tanks, aeration tanks, clarifiers, and chlorine disinfection prior to discharge through the outfall. Solids are treated using an aerated sludge holding tank and reed beds. The facility is being evaluated for flow, pH, dissolved oxygen, TRC, CBOD5, TSS, fecal coliform, nitrogen species, and phosphorus. The existing permits limits for the facility is summarized in Section 2.4.

The treatment process is summarized in the table.

**Treatment Facility Summary**

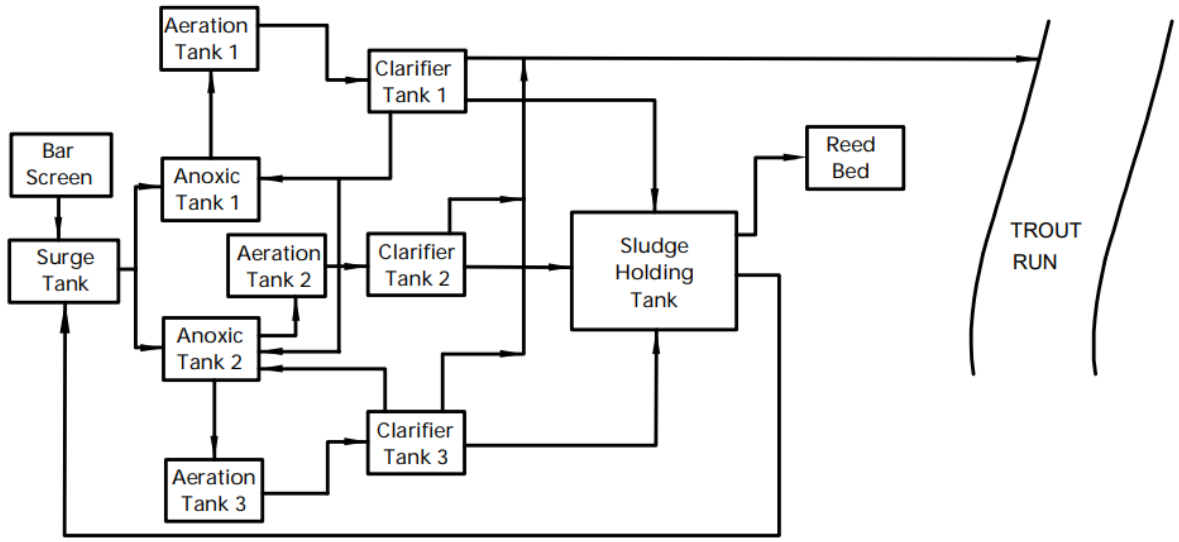
**Treatment Facility Name:** Benezette WWTP

| WQM Permit No. | Issuance Date |
|---|---|
| 2410402 | 01/12/2012 |
| 2410402 A-1 | 03/28/2013 |
| 2410402 A-2 | 08/28/2018 |
| 2410402 A-3 | 08/14/2023 |

| Waste Type | Degree of Treatment | Process Type | Disinfection | Avg Annual Flow (MGD) |
|---|---|---|---|---|
| Sewage | Secondary With Total Nitrogen Reduction | Activated Sludge | Hypochlorite | 0.04 |

| Hydraulic Capacity (MGD) | Organic Capacity (lbs/day) | Load Status | Biosolids Treatment | Biosolids Use/Disposal |
|---|---|---|---|---|
| 0.04 | 63 | Not Overloaded | Drying | Landfill |

The treatment process is depicted as shown. The schematic did not include a disinfection unit. The project narrative submitted with the NPDES application detailed the disinfection as chlorine. Subsequent renewal applications should include an updated flow diagram.




## 2.3 Facility Outfall Information

The facility has the following outfall information for wastewater.

| | | | |
|---|---|---|---|
| **Outfall No.** | 001 | **Design Flow (MGD)** | .04 |
| **Latitude** | 41º 18' 56.48" | **Longitude** | -78º 23' 10.00" |
| **Wastewater Description:** | Sewage Effluent | | |

### 2.3.1 Operational Considerations- Chemical Additives

Chemical additives are chemical products introduced into a waste stream that is used for cleaning, disinfecting, or maintenance and which may be detected in effluent discharged to waters of the Commonwealth. Chemicals excluded are those used for neutralization of waste streams, the production of goods, and treatment of wastewater.

The subject facility utilizes the following chemicals as part of their treatment process.

- Chlorine for disinfection

## 2.4 Existing NPDES Permits Limits

The existing NPDES permit limits are summarized in the table.

**PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS**

**I. A. For Outfall** 001 , **Latitude** 41° 18' 56.5" , **Longitude** 78° 23' 11" , **River Mile Index** 0.13 , **Stream Code** 24674

**Type of Effluent:** Treated domestic sewage

1. The permittee is authorized to discharge during the period from **Permit Effective Date** through **Permit Expiration Date**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) | Required |
| | Average Monthly | Weekly Average | Minimum | Average Monthly | Weekly Average | Instant. Maximum | Measurement Frequency | Sample Type |
| Flow (MGD) | Report | Report | XXX | XXX | XXX | XXX | Continuous | Measured |
| pH (S.U.) | XXX | XXX | 6.0 Inst Min | XXX | XXX | 9.0 | 1/day | Grab |
| Dissolved Oxygen (Interim)* | XXX | XXX | Report Inst Min | XXX | XXX | XXX | 1/day | Grab |
| Dissolved Oxygen (Final)** | XXX | XXX | 4.0 Inst Min | XXX | XXX | XXX | 1/day | Grab |
| Total Residual Chlorine (TRC) | XXX | XXX | XXX | 0.5 | XXX | 1.6 | 1/day | Grab |
| Carbonaceous Biochemical Oxygen Demand (CBOD5) | 8.0 | 13 | XXX | 25.0 | 40.0 | 50 | 1/week | 8-Hr Composite |
| Biochemical Oxygen Demand (BOD5) Influent | Report | XXX | XXX | Report | XXX | XXX | 1/week | 8-Hr Composite |
| Total Suspended Solids Influent | Report | XXX | XXX | Report | XXX | XXX | 1/week | 8-Hr Composite |
| Total Suspended Solids | 10 | 15 | XXX | 30.0 | 45.0 | 60 | 1/week | 8-Hr Composite |
| Fecal Coliform (No./100 ml) Oct 1 - Apr 30 | XXX | XXX | XXX | 2000 Geo Mean | XXX | 10000 | 1/week | Grab |
| Fecal Coliform (No./100 ml) May 1 - Sep 30 | XXX | XXX | XXX | 200 Geo Mean | XXX | 1000 | 1week | Grab |
| Ammonia-Nitrogen May 1 - Oct 31 | XXX | XXX | XXX | Report | XXX | XXX | 2/month | 8-Hr Composite |
| Total Phosphorus | XXX | XXX | XXX | Report | XXX | XXX | 2/month | 8-Hr Composite |

* - Interim limits apply from the permit effective date (PED) to PED + 2 years
** - Final limits apply from the PED + 2 years to the permit expiration date.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. B. For Outfall 001 (cont'd), Latitude 41° 18' 56.5", Longitude 78° 23' 11", River Mile Index 0.13, Stream Code 24674

Type of Effluent: Treated domestic sewage

1. The permittee is authorized to discharge during the period from Permit Effective Date through Permit Expiration Date.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

| 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 | | |
| Ammonia--N | Report | Report | XXX | Report | XXX | XXX | 2/month | 8-Hr Composite |
| Kjeldahl--N | Report | XXX | XXX | Report | XXX | XXX | 2/month | 8-Hr Composite |
| Nitrate-Nitrite as N | Report | XXX | XXX | Report | XXX | XXX | 2/month | 8-Hr Composite |
| Total Nitrogen | Report | Report | XXX | Report | XXX | XXX | 2/month | 8-Hr Composite |
| Total Phosphorus | Report | Report | XXX | Report | XXX | XXX | 2/month | 8-Hr Composite |
| Net Total Nitrogen | XXX | 0 | XXX | XXX | XXX | XXX | 1/year | Calculation |
| Net Total Phosphorus | XXX | 0 | XXX | XXX | XXX | XXX | 1/year | Calculation |

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Outfall 001 – after disinfection, except for the influent sampling.

Footnotes:
(1) See Part C for Chesapeake Bay Requirements.
(2) This is the minimum number of sampling events required. Permittees are encouraged, and it may be advantageous in demonstrating compliance, to perform more than the minimum number of sampling events required.
(3) The permittee is authorized to use Total Nitrogen offsets in the amount of 3,500 lbs/year for compliance purposes, due to the retirement of 140 on-lot systems. These offsets may be reported on monthly and/or annual Chesapeake Bay supplemental reporting forms.

## 3.0 Facility NPDES Compliance History

### 3.1 Summary of Inspections

A summary of the most recent inspections during the existing permit review cycle is as follows.

The DEP inspector noted the following during the inspection.

09/23/2022:

- The new flow-proportioned chlorine system was not operable due to a sag in the effluent discharge line affecting its operation.
- The reed beds have been replanted and small reeds were visible.

12/01/2022:

- The low-pressure collection system owned by the Township is comprised of approximately 170 camps/residences with grinder pumps and a single pump station located at the Benezette store campground.
- Sewage Treatment Plant (STP) has two trains with only Plant B in operation due to low flows
- DEP observed a layer of solids/scum on top of the clarifier to the left of the anoxic tank which was inhibiting any flow into the trough. Ms. Martinchek explained the floating solids were due to balking sludge and a scum skimmer that was set to low to be effective. The scum/solids appeared to be carrying over to the contact tank where the floating solids and cloudy effluent entered the dechlorination tank. The solids were also observed in the manhole at the effluent composite sampling location which eventually discharges to Trout Run. The solids leaving the STP was

attributed to the scum skimmer not being operable and inadequate sludge wasting. This is a violation of 92A.41(A)5: 25 Pa. Code 92a.41(a)(5) for failure to keep permitted treatment units in operable condition and failure to operate and maintain all facilities which are installed or used by the Permittee to achieve compliance. DEP requested the Township provide a detailed written corrective action plan in the next 14 days to address the violation.

- DEP observed the outfall at the stream which was partially submerged. No solids were present most likely due to increased stream flow/levels due to heavy rainfall in the area the previous day.
- There were 6 effluent violations for Fecal Coliform and two permit exceedances for Total Suspended Solids(TSS) during the period reviewed. Noncompliance forms submitted for the Fecal Coliform violations attribute them to insufficient Chlorine feed or equipment malfunction and TSS violations for need of increased wasting of sludge due to higher than normal organic loads.
- Mr. Ruffo stated the Township's engineer (Keller engineers of Hollidaysburg) is contracted to design a pump station to push flow proportioned chlorinated effluent to the Trout Run outfall to deal with Hypochlorite feed issues and better meet Fecal Coliform limits set forth on NPDES permit. He advised he is seeking funding sources for the project and hopes to have work completed by spring of 2023.
- DEP recommended Standard Operating Procedures (SOPs are outdated from 2018) be updated and establish a written checklist to be completed by the daily operations staff which details plant process controls, daily cleaning/maintenance of plant/equipment, observations, and sludge wasting.

01/05/2023:

- The Township continues to experiment with manually adding the polymer, Pollu-Treat CL 835 to the aeration basins for coagulation.
- DEP recommended the Township develop a high flow management plan and conduct some type of inflow/infiltration investigation to deal with excessive flows which appear to be upsetting STP performance.
- DEP observed a layer of solids/sludge in the baffle area next to the effluent trough by the clarifier to the left of the anoxic tank. Solids/sludge was observed on the top lip of the trough entering the flow which discharges to the chlorine contact tank . The solids were also observed in the manhole at the effluent composite sampling location which eventually discharges to Outfall # 001 at Trout Run which was submerged and not visible today. These solids leaving the STP may be attributed to inadequate sludge cleaning /wasting and plant maintenance. This is a violation of 92A.41(A)5 NPDES-failure to operate and maintain all facilities which are installed or used by the Permittee to achieve compliance.
- Operator should complete a circuit rider general work plan.

02/03/2023:

- The Township continues to experiment with manually adding the polymer, Pollu-Treat CL 835 to the aeration basins for coagulation.
- A high flow management plan was added to the SOP.
- Due to low temperatures/freezing conditions, the de-chlorination tank appeared foamy.
- TRC samples appear to vary greatly when the plant is discharging as compared to idle mode

09/04/2024:

- The manhole with parshall flume was the prior location of an ultrasonic flow meter. The meter has been relocated to the chlorine contact tank and a 4" weir installed. A composite sampling line is located in the flume and pulls samples on a flow basis when the plant is discharging.
- A different manhole on the discharge line appeared to have solids accumulation.
- A different manhole had no issues observed. The slope of the line from this manhole to the outfall was increased to eliminate backflow and an elbow added at the discharge. After observation of the chlorine tank, manholes, and outfall, a general overview plant tour was conducted.
- Sludge is wasted as needed to three reed beds. Two of the three beds were replanted this year and do not yet have full coverage.
- A non-compliance report was submitted on 8/12/24 for overflow from the EQ tank during a high rainfall event on 8/9/24. The affected area was limed.

## 3.2 Summary of DMR Data

A review of approximately 1-year of DMR data shows that the monthly average flow data for the facility below the design capacity of the treatment system. The maximum average flow data for the DMR reviewed was 0.015053 MGD in September 2024. The design capacity of the treatment system is 0.04 MGD.

The off-site laboratory used for the analysis of the parameters was Fairway Laboratories located at 2019 Ninth Avenue, Altoona, PA 16603.

**DMR Data for Outfall 001 (from February 1, 2024 to January 31, 2025)**

| Parameter | JAN-25 | DEC-24 | NOV-24 | OCT-24 | SEP-24 | AUG-24 | JUL-24 | JUN-24 | MAY-24 | APR-24 | MAR-24 | FEB-24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow (MGD) Average Monthly | 0.006406 | 0.008633 | 0.009998 | 0.013101 | 0.015053 | 0.0124 | 0.011449 | 0.008427 | 0.008994 | 0.014508 | 0.008721 | 0.009235 |
| Flow (MGD) Weekly Average | 0.007751 | 0.010748 | 0.010985 | 0.015265 | 0.01859 | 0.0196 | 0.013894 | 0.008524 | 0.010496 | 0.022728 | 0.012396 | 0.01241 |
| pH (S.U.) Instantaneous Minimum | 6.5 | 6.58 | 6.12 | 7.02 | 7.14 | 7.19 | 7.06 | 7.02 | 6.84 | 6.84 | 6.6 | 6.64 |
| pH (S.U.) Instantaneous Maximum | 7.91 | 8.04 | 7.68 | 8.16 | 8.29 | 8.32 | 8.34 | 8.3 | 8.3 | 7.57 | 8.0 | 8.11 |
| DO (mg/L) Instantaneous Minimum | 8.56 | 7.75 | 7.59 | 6.57 | 5.85 | 4.88 | 5.39 | 5.74 | 4.21 | 10.09 | 5.04 | 4.39 |
| TRC (mg/L) Average Monthly | < 0.02 | < 0.15 | < 0.1 | 0.02 | 0.20 | 0.17 | < 0.06 | < 0.17 | < 0.25 | < 0.18 | < 0.09 | < 0.18 |
| TRC (mg/L) Instantaneous Maximum | 0.13 | 1.27 | 0.98 | 0.2 | 0.72 | 1.37 | 0.4 | 1.46 | 1.53 | 1.57 | 0.84 | 0.96 |
| CBOD5 (lbs/day) Average Monthly | 0.8 | 1.1 | 0.7 | < 1.2 | 1.2 | 1.8 | 2.0 | 1.4 | 1.2 | 2.7 | 0.6 | 0.5 |
| CBOD5 (lbs/day) Weekly Average | 2.0 | 2.0 | 0.8 | 2 | 2.0 | 3.0 | 3.0 | 2.0 | 2.0 | 8 | 0.6 | 0.8 |
| CBOD5 (mg/L) Average Monthly | 14.8 | 13.3 | 12.0 | < 11.4 | 16.6 | 24.6 | 22.9 | 21.1 | 22.3 | 16.9 | 13.2 | 8.8 |
| CBOD5 (mg/L) Weekly Average | 24.0 | 20.0 | 13.0 | 16.0 | 42.0 | 33.0 | 29.0 | 27.0 | 34.0 | 30.0 | 16.0 | 15.0 |
| BOD5 (lbs/day) Influent <br/> Average Monthly | 19.0 | 19.0 | 16.0 | 40 | 33 | 17.0 | 33.0 | 21 | 19.0 | 15 | 11 | 301 |
| BOD5 (mg/L) Influent <br/> Average Monthly | 391.0 | 251.0 | 266.0 | 399 | 339 | 229.5 | 385.0 | 332 | 331.0 | 160.9 | 232 | 14 |
| TSS (lbs/day) Average Monthly | 1.0 | 1.0 | 1.0 | 1.0 | 0.6 | 0.8 | 0.7 | 0.6 | 1.0 | 4 | 0.8 | < 0.6 |
| TSS (lbs/day) Influent <br/> Average Monthly | 21.0 | 23.0 | 18.0 | 37.0 | 39.0 | 27.0 | 38.0 | 25 | 22.0 | 20 | 15 | 284 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TSS (lbs/day) Weekly Average | 2.0 | 2.0 | 1.0 | 2.0 | 0.9 | 1.0 | 1.0 | 0.8 | 1.0 | 13 | 1.0 | 1 |
| TSS (mg/L) Average Monthly | 22.6 | 15.5 | 15.9 | 12.0 | 6.8 | 9.6 | 7.4 | 8.6 | 18.1 | 23.0 | 16.3 | < 11.4 |
| TSS (mg/L) Influent <br/> Average Monthly | 421.0 | 298.0 | 291.0 | 366 | 400 | 356.0 | 438.0 | 386 | 387 | 206 | 303 | 13 |
| TSS (mg/L) Weekly Average | 37.0 | 23.0 | 23.0 | 17.0 | 8.0 | 12.0 | 11.0 | 11.0 | 27.0 | 47.0 | 23.0 | 30.0 |
| Fecal Coliform (No./100 ml) Geometric Mean | 10.0 | < 2.0 | 2.0 | 63 | 11 | 13.0 | 12.0 | 19 | 20.0 | 18 | < 134 | < 2 |
| Fecal Coliform (No./100 ml) Instantaneous Maximum | 31.5 | 4.1 | 4.0 | 1986.3 | 65 | 32.3 | 63.7 | 44.3 | 50.8 | 579.4 | 2420 | 4.1 |
| Nitrate-Nitrite (mg/L) Average Monthly | 30.05 | < 18.19 | < 35.56 | < 23.44 | < 10.953 | < 12.052 | < 2.4 | < 9.54 | < 7.37 | < 2.952 | < 10.226 | < 6.009 |
| Nitrate-Nitrite (lbs) Total Monthly | 40.0 | < 44.0 | < 71 | < 68 | < 28 | < 34.0 | < 5 | < 17 | < 13 | < 7 | < 15 | < 11 |
| Total Nitrogen (mg/L) Average Monthly | 33.003 | < 39.07 | < 40.04 | < 25.582 | < 20.876 | < 12.931 | < 4.878 | < 11.68 | < 10.746 | < 31.422 | < 24.81 | < 19.744 |
| Total Nitrogen (lbs) Total Monthly | 44.0 | < 95 | < 80 | < 74 | < 63 | < 37.0 | < 11 | < 21 | < 19.0 | < 70 | < 37 | < 31 |
| Total Nitrogen (lbs) Effluent Net <br/> Total Annual | | | | | -2989 | | | | | | | |
| Total Nitrogen (lbs) Total Annual | | | | | < 511 | | | | | | | |
| Ammonia (mg/L) Average Monthly | < 1.058 | 22.97 | 4.334 | 0.3988 | 8.9984 | < 0.1 | < 0.4254 | < 0.1 | < 0.714 | 6.418 | 12.0 | 13.152 |
| Ammonia (lbs) Total Monthly | < 2.0 | 56 | 9.0 | 1.0 | 34 | < 0.3 | < 0.9 | < 0.2 | < 1.0 | 14 | 18 | 18 |
| Ammonia (lbs) Total Annual | | | | | < 142 | | | | | | | |
| TKN (mg/L) Average Monthly | 2.958 | 20.88 | 4.48 | 2.142 | 9.923 | 0.879 | 2.478 | 2.15 | 3.381 | 28.47 | 14.59 | 13.74 |
| TKN (lbs) Total Monthly | 4.0 | 51 | 9.0 | 6.0 | 35 | 3.0 | 6.0 | 4 | 7.0 | 63 | 21 | 20 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Phosphorus (mg/L) Average Monthly | 4.85 | 5.77 | 9.8 | 9.92 | 9.71 | 6.88 | 8.35 | 9.48 | 7.53 | 2.35 | 2.63 | 5.01 |
| Total Phosphorus (lbs) Total Monthly | 6.0 | 14 | 20 | 28 | 29 | 21.0 | 19.0 | 17 | 14 | 5 | 4 | 10 |
| Total Phosphorus (lbs) Effluent Net <br/> Total Annual | | | | | 0.0 | | | | | | | |
| Total Phosphorus (lbs) Total Annual | | | | | 212 | | | | | | | |

### 3.2.1 Chesapeake Bay Truing

The table summarizes the facility's compliance/noncompliance with Chesapeake Bay cap loads.

For the truing period ending in 2023, the supplemental report indicates that the facility was in violation with phosphorus cap loads. DEP suspects that there could be a data entry error on the supplemental report. This violation should be reviewed by the township and DEP operations staff.

**Chesapeake Bay Annual Nutrient Summary**
**Benezette WWTP**
**PA0263711**

| Year for Truing Period (Oct 1 - Sept 30) | Nitrogen (lbs) | | | | Phosphorus (lbs) | | | | Compliant with Permit Limits (Yes/No) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Annual Total Mass Load | Lbs Credit Purchased | Lbs Offsets Generated | Annual Net Mass Load | Annual Total Mass Load | Lbs Credit Purchased | Lbs Offsets Generated | Annual Net Mass Load | Nitrogen | Phosphorus |
| 2017 | 1070 | 0 | 3500 | -2430 | 158 | 158 | | 0 | Yes | Yes |
| 2018 | 988 | | 3500 | -2512 | 187 | 188 | | -1 | Yes | Yes |
| 2019 | 927 | 0 | 3500 | -2573 | 138 | 138 | | 0 | Yes | Yes |
| 2020 | 298 | 0 | 3500 | -3202 | 117 | 119 | | -2 | Yes | Yes |
| 2021 | 627 | 0 | 3500 | -2873 | 181 | 183 | | -2 | Yes | Yes |
| 2022 | 381 | 0 | 3500 | -3119 | 183 | 183 | | 0 | Yes | Yes |
| 2023 | 511 | 0 | 3500 | -2989 | 212 | 0 | | 212 | Yes | No |

Notes:

| | | |
|---|---|---|
| Nitrogen Annual Net Mass CAP Load = | 0 | lbs |
| Phosphorus Annual Net Mass CAP Load = | 0 | lbs |

### 3.3 Non-Compliance

### 3.3.1 Non-Compliance- NPDES Effluent

A summary of the non-compliance to the permit limits for the existing permit cycle is as follows.

From the DMR data beginning on May 1, 2018 to March 25, 2025, the following table summarizes effluent non-compliances.

**Summary of Non-Compliance with NPDES Effluent Limits**
**Beginning May 1, 2018 and Ending March 23, 2025**

| NON_COMPLIANCE_DATE | NON_COMPL_TYPE_DESC | NON_COMPL_CATEGORY_DESC | PARAMETER | SAMPLE_VALUE | VIOLATION_CONDITION | PERMIT_VALUE | UNIT_OF_MEASURE | STAT_BASE_CODE | DISCHARGE_COMMENTS | FACILITY_COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| 6/19/2018 | Violation of permit condition | Effluent | Fecal Coliform | > 2420 | > | 1000 | No./100 ml | Instantaneous Maximum | | Cause: foam in MLSS basin spilled over causing excessive solids in chlorine contact basin. Action: transfer solids from chlorine contact basin to digerster, increase chlorine dose |
| 6/19/2018 | Violation of permit condition | Effluent | Total Residual Chlorine (TRC) | 1.8 | > | 1.6 | mg/L | Instantaneous Maximum | | |
| 7/15/2018 | Violation of permit condition | Effluent | Fecal Coliform | > 2420 | > | 1000 | No./100 ml | Instantaneous Maximum | | employee training |
| 7/15/2018 | Violation of permit condition | Effluent | Total Residual Chlorine (TRC) | 2.2 | > | 1.6 | mg/L | Instantaneous Maximum | | employee training |
| 8/23/2018 | Violation of permit condition | Effluent | Carbonaceous Biochemical Oxygen | 42.0 | > | 40.0 | mg/L | Weekly Average | | Cause: Equipment malfunction caused plant septicity Correction: equipment repaired, waste, increase air, add lime, reseed |
| 8/23/2018 | Violation of permit condition | Effluent | Fecal Coliform | > 2420 | > | 1000 | No./100 ml | Instantaneous Maximum | | Cause: Equipment malfunction caused plant septicity Correction: Equ |
| 8/23/2018 | Violation of permit condition | Effluent | Total Suspended Solids | 51.0 | > | 45.0 | mg/L | Weekly Average | | Cause: equipment malfunction caused plant septicity Correction: equipment repaired, waste, increase air, add lime, reseed |
| 9/27/2018 | Violation of permit condition | Effluent | Fecal Coliform | > 2420 | > | 1000 | No./100 ml | Instantaneous Maximum | | clean chlorine contact tank, monitor free chlorine |
| 10/18/2018 | Violation of permit condition | Effluent | Total Residual Chlorine (TRC) | < 0.6 | > | .5 | mg/L | Average Monthly | | increased dechlorination tablets |
| 11/26/2018 | Violation of permit condition | Effluent | Total Residual Chlorine (TRC) | 0.7 | > | .5 | mg/L | Average Monthly | | increase dechlorination tablets |
| 11/26/2018 | Violation of permit condition | Effluent | Total Residual Chlorine (TRC) | 2.2 | > | 1.6 | mg/L | Instantaneous Maximum | | increase dechlorination tablets |
| 12/16/2018 | Violation of permit condition | Effluent | Total Residual Chlorine (TRC) | 1.9 | > | 1.6 | mg/L | Instantaneous Maximum | | tablet feeder broke and pieces of chlorine tablets entered contact basin |
| 1/19/2019 | Violation of permit condition | Effluent | Total Residual Chlorine (TRC) | 2.0 | > | 1.6 | mg/L | Instantaneous Maximum | | Insufficient dechlorination tablets. Employee training on how to determine quantity of dechlorination tablet feeders needed. |
| 4/21/2019 | Violation of permit condition | Effluent | Total Residual Chlorine (TRC) | 1.7 | > | 1.6 | mg/L | Instantaneous Maximum | | |
| 3/16/2019 | Other | Other | | | | | | | | |
| 6/20/2019 | Violation of permit condition | Effluent | Fecal Coliform | > 2420 | > | 1000 | No./100 ml | Instantaneous Maximum | | Cause: High TSS prevented sufficient disinfection. Action: Addressed TSS non-compliance and cleaned out chlorine contact tank |
| 6/20/2019 | Violation of permit condition | Effluent | Total Suspended Solids | 38.0 | > | 30.0 | mg/L | Average Monthly | | Cause: Septic waste from local campground and high flows Action: Increased air, added lime, increased plant hydraulic capacity |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 6/20/2019 | Violation of permit condition | Effluent | Total Suspended | 80.0 | > | 45.0 | mg/L | Weekly Average | | Cause: Septic waste from local campground and high flows Action: Increased air, added lime, increased plant hydraulic capacity |
| 9/15/2019 | Violation of permit condition | Effluent | Fecal Coliform | 2420 | > | 1000 | No./100 ml | Instantaneous Maximum | | A flow based chlorine injector is to be installed with current improvement project to address low chlorine levels during high flow events |
| 9/2/2019 | Violation of permit condition | Other Violations | | | | | | | | |
| 10/15/2019 | Violation of permit condition | Effluent | Fecal Coliform | > 2420 | > | 1000 | No./100 ml | Instantaneous Maximum | | New chlorine equipment installed and started up October 14th |
| 10/15/2019 | Violation of permit condition | Effluent | Fecal Coliform | > 504 | > | 200 | No./100 ml | Geometric Mean | | New chlorine equipment installed and started up October 14th |
| 10/15/2019 | Violation of permit condition | Effluent | Total Suspended | 53.0 | > | 45.0 | mg/L | Weekly Average | | Influent surge pushed solids up in clarifier. Reset influent floats to step feed high flows. |
| 9/15/2019 | Violation of permit condition | Other Violations | | | | | | | | |
| 10/15/2019 | Violation of permit condition | Other Violations | | | | | | | | |
| 11/25/2019 | Violation of permit condition | Effluent | Carbonaceous Biochemical Oxygen | 105.0 | > | 40.0 | mg/L | Weekly Average | | High instantaneous waste load on plant due to tourist season. Low DO decreased bug population to efficiently process waste |
| 11/25/2019 | Violation of permit condition | Effluent | Carbonaceous Biochemical Oxygen | 45.0 | > | 25.0 | mg/L | Average Monthly | | High instantaneous waste load on plant due to tourist season. Low DO decreased bug population to efficiently process waste |
| 11/25/2019 | Violation of permit condition | Effluent | Total Suspended | 34.0 | > | 30.0 | mg/L | Average Monthly | | High instantaneous waste load on plant due to tourist season. Low DO decreased bug population to efficiently process waste |
| 11/25/2019 | Violation of permit condition | Effluent | Total Suspended Solids | 80.0 | > | 45.0 | mg/L | Weekly Average | | High instantaneous waste load on plant due to tourist season. Low DO decreased bug population to efficiently process waste |
| 12/21/2019 | Violation of permit condition | Effluent | Carbonaceous Biochemical Oxygen | 42.0 | > | 25.0 | mg/L | Average Monthly | | |
| 12/21/2019 | Violation of permit condition | Effluent | Carbonaceous Biochemical Oxygen | 79.0 | > | 40.0 | mg/L | Weekly Average | | |
| 12/21/2019 | Violation of permit condition | Effluent | Total Suspended | 39.0 | > | 30.0 | mg/L | Average Monthly | | |
| 12/21/2019 | Violation of permit condition | Effluent | Total Suspended | 62.0 | > | 45.0 | mg/L | Weekly Average | | |
| 1/25/2020 | Violation of permit condition | Effluent | Carbonaceous Biochemical Oxygen | 27.0 | > | 25.0 | mg/L | Average Monthly | | Digester supernatant pumped to headworks during low flows causing temporary plant upset. |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/25/2020 | Violation of permit condition | Effluent | Carbonaceous Biochemical Oxygen | 57.0 | > | 40.0 | mg/L | Weekly Average | | Digester supernatant pumped to headworks during low flows causing temporary plant upset. |
| 1/25/2020 | Violation of permit condition | Effluent | Total Suspended | 65.0 | > | 45.0 | mg/L | Weekly Average | | Digester supernatant pumped to headworks during low flows causing temporary plant upset. |
| 4/27/2021 | Violation of permit condition | Effluent | Total Suspended | < 40.0 | > | 30.0 | mg/L | Average Monthly | | Caused by a frozen wasting line that was quickly cleared and wasting increased. |
| 4/27/2021 | Violation of permit condition | Effluent | Total Suspended | 170.0 | > | 45.0 | mg/L | Weekly Average | | Caused by a frozen wasting line that was quickly cleared and wasting increased. |
| 3/12/2021 | Violation of permit condition | Other Violations | | | | | | | | |
| 5/24/2021 | Sample collection less frequent than required | Other Violations | Total Kjeldahl Nitrogen | | | | | | | |
| 5/24/2021 | Sample collection less frequent than required | Other Violations | Total Nitrogen | | | | | | | |
| 5/24/2021 | Violation of permit schedule | Other Violations | | | | | | | | |
| 6/23/2021 | Sample collection less frequent than required | Other Violations | Ammonia-Nitrogen | | | | | | | |
| 6/23/2021 | Sample collection less frequent than required | Other Violations | Nitrate-Nitrite as N | | | | | | | |
| 6/23/2021 | Sample collection less frequent than required | Other Violations | Total Kjeldahl Nitrogen | | | | | | | |
| 6/23/2021 | Sample collection less frequent than required | Other Violations | Total Nitrogen | | | | | | | |
| 6/23/2021 | Sample collection less frequent than required | Other Violations | Total Phosphorus | | | | | | | |
| 5/10/2021 | Violation of permit condition | Other Violations | | | | | | | | |
| 7/19/2021 | Violation of permit condition | Effluent | Fecal Coliform | > 2420 | > | 1000 | No./100 ml | Instantaneous Maximum | | On 6/10/21 lid to sample bottle was dropped in sink causing sample contamination. |
| 7/19/2021 | Violation of permit condition | Effluent | Fecal Coliform | > 65 | > | 200 | No./100 ml | Geometric Mean | | On 6/10/21 lid to sample bottle was dropped in sink causing sample contamination. |
| 6/30/2021 | Violation of permit condition | Other Violations | | | | | | | | |
| 9/18/2021 | Violation of permit condition | Effluent | Fecal Coliform | > 2420 | > | 1000 | No./100 ml | Instantaneous Maximum | | Effluent flow meter not communicating with chlorine feed pumps and is in manual operation. High flows resulted in low chlorine residual. Manufacturer is evaluating problem. |
| 9/18/2021 | Violation of permit condition | Effluent | Fecal Coliform | > 246 | > | 200 | No./100 ml | Geometric Mean | | Effluent flow meter not communicating with chlorine feed pumps and is in manual operation. Variable flows resulted in low chlorine residual and higher than normal fecal results. Manufacturer is evaluating problem. |
| 9/6/2021 | Violation of permit condition | Other Violations | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 10/23/2021 | Violation of permit condition | Effluent | Fecal Coliform | > 101 | > | 200 | No./100 ml | Geometric Mean | | Chlorine application rate is being manually controlled. Unanticipated high flows exceeded manual settings and resulted in a high fecal reading on 9/16/21. Flow meter that controls chlorine dosing is still out for service. |
| 10/23/2021 | Violation of permit condition | Effluent | Fecal Coliform | > 2420 | > | 1000 | No./100 ml | Instantaneous Maximum | | Chlorine application rate is being manually controlled. Unanticipated high flows exceeded manual settings and resulted in a high fecal reading on 9/16/21. Flow meter that controls chlorine dosing is still out for service. |
| 10/23/2021 | Violation of permit condition | Other Violations | | | | | | | | |
| 11/29/2022 | Late DMR Submission | Other | | | | | | | | |
| 6/27/2022 | Violation of permit condition | Effluent | Total Suspended | 33.3 | > | 30.0 | mg/L | Average Monthly | | Increase in organic load caused a slight upset to plant. Solids wasting increased and put additional section of plant into service. |
| 7/21/2022 | Violation of permit condition | Effluent | Total Suspended Solids | 46.7 | > | 45.0 | mg/L | Weekly Average | | Plant A got upset when put into service to accommodate higher organic flows. Plant needed time to adjust. Recommended increased wasting and to slowly introduce influent when putting a new portion of plant in service. |
| 10/25/2022 | Sample collection less frequent than required | Other Violations | Ammonia-Nitrogen | | | | | | | |
| 10/25/2022 | Sample collection less frequent than required | Other Violations | Nitrate-Nitrite as N | | | | | | | |
| 10/25/2022 | Sample collection less frequent than required | Other Violations | Total Kjeldahl Nitrogen | | | | | | | |
| 10/25/2022 | Sample collection less frequent than required | Other Violations | Total Nitrogen | | | | | | | |
| 10/25/2022 | Sample collection less frequent than required | Other Violations | Total Phosphorus | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 2/24/2023 | Violation of permit condition | Effluent | Carbonaceous Biochemical Oxygen | 47.6 | > | 40.0 | mg/L | Weekly Average | | High flows caused an increased CBOD concentration in effluent. Wasting was increased and SOP was updated to include a plan for high flow events |
| 1/27/2023 | Violation of permit condition | Other Violations | | | | | | | | |
| 9/26/2023 | Violation of permit condition | Effluent | Fecal Coliform | > 2420 | > | 1000 | No./100 ml | Instantaneous Maximum | | |
| 8/30/2023 | Violation of permit condition | Other Violations | | | | | | | | |
| 1/29/2024 | | Unauthorized Discharges | | | | | | | due to snowmelt and rain we had a hydraulic overload at the plant resulting in a solids washout into the receiving waters: Trout Run Immediate action took place to resolve the issue and prevent further washout.<br>Immediate actions taken:<br>1 waste the plant<br>2 turn air off to let sludge settle | |
| 5/22/2024 | Violation of permit condition | Effluent | Total Suspended | 47.0 | > | 45.0 | mg/L | Weekly Average | | |
| 8/12/2024 | | Unauthorized Discharges | | | | | | | As noted, the area experienced 3 inches of rain in the matter of 2 hours, which caused the plant to handle higher than normal peak flows. This caused the 2 pumps in the EQ tank to not keep up with incoming flow for a short period of time causing a small overflow outside of the tank on the ground surface. | |
| 10/23/2024 | Violation of permit condition | Effluent | Carbonaceous Biochemical Oxygen Demand | 42.0 | > | 40.0 | mg/L | Weekly Average | | For the first two weeks of September, Tourist activity was very high and more solids needed wasted from the Clarifier. After this was completed and flow reduced, CBODs came back down to underneath 7 mg/l on the following 3 weeks lab samples. |

### 3.3.2 Non-Compliance- Enforcement Actions

A summary of the non-compliance enforcement actions for the current permit cycle is as follows:

Beginning in May 1, 2018 to March 25, 2025, there were no observed enforcement actions.

### 3.4 Summary of Biosolids Disposal

A summary of the biosolids disposed of from the facility is as follows.

**2024**

**Sewage Sludge / Biosolids Production Information**

| Hauled Off-Site | | | |
|---|---|---|---|
| 2024 | Gallons | % Solids | Dry Tons |
| January | 11,600 | 0.037 | 0.18 |
| February | 1,200 | 0.520 | 0.026 |
| March | 0 | 0.000 | 0 |
| April | 2,300 | 0.760 | 0.073 |
| May | 5,800 | 0.610 | 0.091 |
| June | 20,529 | 0.370 | 0.315 |
| July | 25,640 | 0.370 | 0.392 |
| August | 25,640 | 0.370 | 0.392 |
| September | 15,450 | 0.388 | 0.243 |
| October | 14,775 | 0.452 | 0.274 |
| November | 0 | 0.000 | 0 |
| December | 3,700 | 1.100 | 0.17 |

Notes:

Sewage sludge disposed at Benezette WWTP on reed beds

### 3.5 Open Violations

No open violations existed as of March 2025.

## 4.0 Receiving Waters and Water Supply Information Detail Summary

### 4.1 Receiving Waters

The receiving waters has been determined to be Trout Run. The sequence of receiving streams that the Trout Run discharges into are Bennett Branch Sinnemahoning Creek, West Branch Susquehanna River, Susquehanna River which eventually drains into the Chesapeake Bay.

### 4.2 Public Water Supply (PWS) Intake

The closest PWS to the subject facility is Shawville Power Plant (PWS ID #6170333) located approximately 88 miles downstream of the subject facility on the West Branch Susquehanna. Based upon the distance and the flow rate of the facility, the PWS should not be impacted.

## 4.3 Class A Wild Trout Streams

Class A Wild Trout Streams are waters that support a population of naturally produced trout of sufficient size and abundance to support long-term and rewarding sport fishery. DEP classifies these waters as high-quality coldwater fisheries.

The information obtained from EMAP suggests that no Class A Wild Trout Fishery will be impacted by this discharge.

## 4.4 2024 Integrated List of All Waters (303d Listed Streams)

Section 303(d) of the Clean Water Act requires States to list all impaired surface waters not supporting uses even after appropriate and required water pollution control technologies have been applied. The 303(d) list includes the reason for impairment which may be one or more point sources (i.e. industrial or sewage discharges) or non-point sources (i.e. abandoned mine lands or agricultural runoff and the pollutant causing the impairment such as metals, pH, mercury or siltation).

States or the U.S. Environmental Protection Agency (EPA) must determine the conditions that would return the water to a condition that meets water quality standards. As a follow-up to listing, the state or EPA must develop a Total Maximum Daily Load (TMDL) for each waterbody on the list. A TMDL identifies allowable pollutant loads to a waterbody from both point and non-point sources that will prevent a violation of water quality standards. A TMDL also includes a margin of safety to ensure protection of the water.

The water quality status of Pennsylvania's waters uses a five-part categorization (lists) of waters per their attainment use status. The categories represent varying levels of attainment, ranging from Category 1, where all designated water uses are met to Category 5 where impairment by pollutants requires a TMDL for water quality protection.

**The receiving waters is listed in the 2024 Pennsylvania Integrated Water Quality Monitoring and Assessment Report as a Category 2 waterbody. The surface waters is an attaining stream that supports aquatic life and recreational uses. The designated use has been classified as protected waters for cold water fishes (CWF) and migratory fishes (MF). The receiving waters contains trout natural reproduction. However, eMAP does not indicate the stream as Class A stream.**

## 4.5 Low Flow Stream Conditions

Water quality modeling estimates are based upon conservative data inputs. The data are typically estimated using either a stream gauge or through USGS web based StreamStats program. The NPDES effluent limits are based upon the combined flows from both the stream and the facility discharge.

A conservative approach to estimate the impact of the facility discharge using values which minimize the total combined volume of the stream and the facility discharge. The volumetric flow rate for the stream is based upon the seven-day, 10-year low flow (Q710) which is the lowest estimated flow rate of the stream during a 7 consecutive day period that occurs once in 10 -year time period. The facility discharge is based upon a known design capacity of the subject facility.

The closest WQN station to the subject facility is the West Branch Susquehanna River Karthaus (WQN404). This WQN station is located approximately 56 miles downstream of the subject facility.

The closest gauge station to the subject facility is the Sinnemahoning Creek at Sinnemahoning, PA (USGS station number 1543500). This gauge station is located approximately 21 miles downstream of the subject facility.

For WQM modeling, default values for pH and stream water temperature data from the water quality network station were used. pH was estimated to be 7.0 and the stream water temperature was estimated to be 20 C.

The hardness of the stream was estimated from the water quality network to be 100 mg/l $CaCO_3$.

The low flow yield and the Q710 for the subject facility was estimated as shown below.

| Gauge Station Data | | | |
|---|---|---|---|
| USGS Station Number | 1543500 | | |
| Station Name | Sinnemahoning Creek at Sinnemahoning, PA | | |
| Q710 | 14.5 | $ft^3/sec$ | |
| Drainage Area (DA) | 685 | $mi^2$ | |
| | | | |
| ***Calculations*** | | | |
| The low flow yield of the gauge station is: | | | |
| Low Flow Yield (LFY) = Q710 / DA | | | |
| LFY = | ( 14.5 $ft^3/sec$ / 685 $mi^2$) | | |
| LFY = | 0.0212 | $ft^3/sec/mi^2$ | |
| | | | |
| The low flow at the subject site is based upon the DA of | | 55.7 | $mi^2$ |
| | | | |
| Q710 = (LFY@gauge station)(DA@Subject Site) | | | |
| Q710 = (0.0212 $ft^3/sec/mi^2$)(55.7 $mi^2$) | | | |
| Q710 = | 1.179 | $ft^3/sec$ | |

## 4.6 Summary of Discharge, Receiving Waters and Water Supply Information

| | | | |
|---|---|---|---|
| Outfall No. | 001 | Design Flow (MGD) | 0.12 |
| Latitude | 41º 18' 56.91" | Longitude | -78º 23' 9.97" |
| Quad Name | | Quad Code | |
| Wastewater Description: | Sewage Effluent | | |

| | | | |
|---|---|---|---|
| Receiving Waters | Trout Run (CWF, MF) | Stream Code | 24674 |
| NHD Com ID | 61431142 | RMI | 0.12 |
| Drainage Area | 55.7 | Yield (cfs/mi$^2$) | 0.0212 |
| $Q_{7-10}$ Flow (cfs) | 1.179 | $Q_{7-10}$ Basis | Streamstats/Streamgauge |
| Elevation (ft) | 300 | Slope (ft/ft) | |
| Watershed No. | 8-A | Chapter 93 Class. | CWF, MF |
| Existing Use | | Existing Use Qualifier | |
| Exceptions to Use | | Exceptions to Criteria | |
| Assessment Status | Attaining Use(s) supports aquatic life and recreational uses. | | |
| Cause(s) of Impairment | Not appl. | | |
| Source(s) of Impairment | Not appl. | | |
| TMDL Status | February 27, 2009 | Name | Bennett Branch Sinnemahoning Creek Watershed TMDL. Target is drainage from abandoned coal mines |

| Background/Ambient Data | | Data Source |
|---|---|---|
| pH (SU) | 7.0 | Default |
| Temperature (°C) | 20 | Default |
| Hardness (mg/L) | 100 | Default |
| Other: | | |

| | | | |
|---|---|---|---|
| Nearest Downstream Public Water Supply Intake | Shawville Power Plant | | |
| PWS Waters | West Branch Susquehanna | Flow at Intake (cfs) | |
| PWS RMI | | Distance from Outfall (mi) | 88 |

## 5.0: Overview of Presiding Water Quality Standards

### 5.1 General

There are at least six (6) different policies which determines the effluent performance limits for the NPDES permit. The policies are technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), antidegradation, total maximum daily loading (TMDL), anti-backsliding, and whole effluent toxicity (WET) The effluent performance limitations enforced are the selected permit limits that is most protective to the designated use of the receiving waters. An overview of each of the policies that are applicable to the subject facility has been presented in Section 6.

### 5.2.1 Technology-Based Limitations

TBEL treatment requirements under section 301(b) of the Act represent the minimum level of control that must be imposed in a permit issued under section 402 of the Act (40 CFR 125.3). Available TBEL requirements for the state of Pennsylvania are itemized in PA Code 25, Chapter 92a.47.

The presiding sources for the basis for the effluent limitations are governed by either federal or state regulation. The reference sources for each of the parameters is itemized in the tables. The following technology-based limitations apply, subject to water quality analysis and best professional judgement (BPJ) where applicable:

| Parameter | 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) |

### 5.2.2 Mass Based Limits

For publicly owned treatment works (POTW), mass loadings are calculated based upon design flow rate of the facility and the permit limit concentration. The generalized calculation for mass loadings is shown below:

$$Quantity\left(\frac{lb}{day}\right) = (MGD)(Concentration)(8.34)$$

### 5.3 Water Quality-Based Limitations

WQBEL are based on the need to attain or maintain the water quality criteria and to assure protection of designated and existing uses (PA Code 25, Chapter 92a.2). The subject facility that is typically enforced is the more stringent limit of either the TBEL or the WQBEL.

Determination of WQBEL is calculated by spreadsheet analysis or by a computer modeling program developed by DEP. DEP permit engineers utilize the following computing programs for WQBEL permit limitations: (1) MS Excel worksheet for Total Residual Chorine (TRC); (2) WQM 7.0 for Windows Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen Version 1.1 (WQM Model) and (3) Toxics using DEP Toxics Management Spreadsheet for Toxics pollutants.

The modeling point nodes utilized for this facility are summarized below.

| ***General Data 1*** | ***(Modeling Point #1)*** | ***(Modeling Point #2)*** | ***Units*** |
|---|---|---|---|
| Stream Code | 24674 | 24508 | |
| River Mile Index | 2.69 | 0 | miles |
| Elevation | 300 | 288 | feet |
| Latitude | 41.315436 | 41.32432 | |
| Longitude | -78.386008 | -78.343972 | |
| Drainage Area | 55.7 | 236 | sq miles |
| Low Flow Yield | 0.021167883 | 0.0212 | cfs/sq mile |
| | | | |
| Note: RMI in table are RMI used for modeling. Actual RMI are different | | | |

**5.3.1 Water Quality Modeling 7.0**

The WQM Model is a computer model that is used to determine NPDES discharge effluent limitations for Carbonaceous BOD (CBOD5), Ammonia Nitrogen (NH3-N), and Dissolved Oxygen (DO) for single and multiple point source discharges scenarios. WQM Model is a complete-mix model which means that the discharge flow and the stream flow are assumed to instantly and completely mixed at the discharge node.

WQM recommends effluent limits for DO, CBOD5, and $NH_3$-N in mg/l for the discharge(s) in the simulation.

Four types of limits may be recommended. The limits are

*(a)* a *minimum concentration for DO in the discharge as 30-day average;*
*(b) a 30-day average concentration for CBOD5 in the discharge;*
*(c) a 30-day average concentration for the $NH_3$-N in the discharge;*
(d) *24-hour average concentration for $NH_3$-N in the discharge*.

The WQM Model requires several input values for calculating output values. The source of data originates from either EMAP, the National Map, or Stream Stats. Data for stream gauge information, if any, was abstracted from USGS Low-Flow, Base-Flow, and Mean-Flow Regression Equations for Pennsylvania Streams authored by Marla H. Stuckey (Scientific Investigations Report 2006-5130).

**The applicable WQM Effluent Limit Type are discussed in Section 6 under the corresponding parameter which is either DO, CBOD, or ammonia-nitrogen.**

**5.3.2 Toxics Modeling**

Toxics modeling is required if the facility receives industrial/commercial contributions. The facility reported the facility does not receive industrial/commercial wastewater.

The facility flow rate does not exceed 0.1 MGD and the facility does not receive industrial/commercial contributions. Thus, the facility is not subject to toxics modeling.

**5.3.3 Whole Effluent Toxicity (WET)**

The facility is not subject to WET.

## 5.4 Total Maximum Daily Loading (TMDL)

### 5.4.1 TMDL

The goal of the Clean Water Act (CWA), which governs water pollution, is to ensure that all of the Nation's waters are clean and healthy enough to support aquatic life and recreation. To achieve this goal, the CWA created programs designed to regulate and reduce the amount of pollution entering United States waters. Section 303(d) of the CWA requires states to assess their waterbodies to identify those not meeting water quality standards. If a waterbody is not meeting standards, it is listed as impaired and reported to the U.S. Environmental Protection Agency. The state then develops a plan to clean up the impaired waterbody. This plan includes the development of a Total Maximum Daily Load (TMDL) for the pollutant(s) that were found to be the cause of the water quality violations. A Total Maximum Daily Load (TMDL) calculates the maximum amount of a specific pollutant that a waterbody can receive and still meet water quality standards.

A TMDL for a given pollutant and waterbody is composed of the sum of individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include an implicit or explicit margin of safety (MOS) to account for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody. The TMDL components are illustrated using the following equation:

$$TMDL = \Sigma WLAs + \Sigma LAs + MOS$$

Pennsylvania has committed to restoring all impaired waters by developing TMDLs and TMDL alternatives for all impaired waterbodies. The TMDL serves as the starting point or planning tool for restoring water quality.

#### 5.4.1.1 Local TMDL

The subject facility discharge into Trout Run. Trout Run then discharges into Bennett Branch Sinnemahoning Creek which has a local TMDL. Bennett Branch Sinnemahoning Creek Watershed TMDL was developed for impaired segments in the Bennett Branch Sinnemahoning Creek Watershed. These were done to address the impairments noted on the 1996 Pennsylvania (PA) Section 303(d) list of impaired waters, required under the Clean Water Act.

Bennett Branch is listed as impaired for metals and pH. All impairments resulted from drainage from abandoned coal mines. The TMDL addresses the three primary metals associated with abandoned mine drainage (AMD) (iron, aluminum, and manganese) and pH.

The subject facility is a sewage discharger. This the facility will not be subject to the TMDL.

#### 5.4.1.2 Chesapeake Bay TMDL Requirement

The Chesapeake Bay Watershed is a large ecosystem that encompasses approximately 64,000 square miles in Maryland, Delaware, Virginia, West Virginia, Pennsylvania, New York and the District of Columbia. An ecosystem is composed of interrelated parts that interact with each other to form a whole. All of the plants and animals in an ecosystem depend on each other in some way. Every living thing needs a healthy ecosystem to survive. Human activities affect the Chesapeake Bay ecosystem by adding pollution, using resources and changing the character of the land.

Most of the Chesapeake Bay and many of its tidal tributaries have been listed as impaired under Section 303(d) of the federal Water Pollution Control Act ("Clean Water Act"), 33 U.S.C. § 1313(d). While the Chesapeake Bay is outside the boundaries of Pennsylvania, more than half of the State lies within the watershed. Two major rivers in Pennsylvania are part of the Chesapeake Bay Watershed. They are (a) the Susquehanna River and (b) the Potomac River. These two rivers total 40 percent of the entire Chesapeake Bay watershed.

The overall management approach needed for reducing nitrogen, phosphorus and sediment are provided in the Bay TMDL document and the Phase I, II, and III WIPs which is described in the Bay TMDL document and Executive Order 13508.

The Bay TMDL is a comprehensive pollution reduction effort in the Chesapeake Bay watershed identifying the necessary pollution reductions of nitrogen, phosphorus and sediment across the seven Bay watershed jurisdictions of Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia to meet applicable water quality standards in the Bay and its tidal waters.

The Watershed Implementation Plans (WIPs) provides objectives for how the jurisdictions in partnership with federal and local governments will achieve the Bay TMDL's nutrient and sediment allocations.

Phase 3 WIP provides an update on Chesapeake Bay TMDL implementation activities for point sources and DEP's current implementation strategy for wastewater. The latest revision of the supplement was September 13, 2021.

The Chesapeake Bay TMDL (Appendix Q) categorizes point sources into four sectors:

- Sector A- significant sewage dischargers;
- Sector B- significant industrial waste (IW) dischargers;
- Sector C- non-significant dischargers (both sewage and IW facilities); and
- Sector D- combined sewer overflows (CSOs).

All sectors contain a listing of individual facilities with NPDES permits that were believed to be discharging at the time the TMDL was published (2010). All sectors with the exception of the non-significant dischargers have individual wasteload allocations (WLAs) for TN and TP assigned to specific facilities. Non-significant dischargers have a bulk or aggregate allocation for TN and TP based on the facilities in that sector that were believed to be discharging at that time and their estimated nutrient loads.

Cap Loads will be established in permits as Net Annual TN and TP loads (lbs/yr) that apply during the period of October 1 – September 30. For facilities that have received Cap Loads in any other form, the Cap Loads will be modified accordingly when the permits are renewed.

Offsets have been incorporated into Cap Loads in several permits issued to date. From this point forward, permits will be issued with the WLAs as Cap Loads and will identify Offsets separately to facilitate nutrient trading activities and compliance with the TMDL.

Based upon the supplement the subject facility has been categorized as a Sector C discharger. The supplement defines Sector C as a non-significant dischargers include sewage facilities (Phase 4 facilities: ≥ 0.2 MGD and < 0.4 MGD and Phase 5 facilities: > 0.002 MGD and < 0.2 MGD), small flow/single residence sewage treatment facilities (≤ 0.002 MGD), and non-significant IW facilities, all of which may be covered by statewide General Permits or may have individual NPDES permits.

At this time, there are approximately 850 Phase 4 and 5 sewage facilities, approximately 715 small flow sewage treatment facilities covered by a statewide General Permit, and approximately 300 non-significant IW facilities.

For Phase 5 sewage facilities with individual permits (average annual design flow on August 29, 2005 > 0.002 MGD and < 0.2 MGD), DEP will issue individual permits with monitoring and reporting for TN and TP throughout the permit term at a frequency no less than annually, unless 1) the facility has already conducted at least two years of nutrient monitoring and 2) a summary of the monitoring results are included in the next permit's fact sheet. If, however, Phase 5 facilities choose to expand, the renewed or amended permits will contain Cap Loads based on the lesser of a) existing TN/TP concentrations at current design average annual flow or b) 7,306 lbs/yr TN and 974 lbs/yr TP.

If no data are available to determine existing concentrations for expanding Phase 4 or 5 facilities, default concentrations of 25 mg/l TN and 4 mg/l TP may be used (these are the average estimated concentrations of all non-significant sewage facilities).

DEP will not issue permits to existing Phase 4 and 5 facilities containing Cap Loads unless it is done on a broad scale or unless the facilities are expanding.

For new Phase 4 and 5 sewage discharges, in general DEP will issue new permits containing Cap Loads of "0" and new facilities will be expected to purchase credits and/or apply offsets to achieve compliance, with the exception of small flow and single residence facilities.

The total nitrogen (TN) and total phosphorus (TP) cap loads itemized by for the subject facility are as follows:

| | |
|---|---|
| TN Cap Load (lbs/yr) | 0 |
| TN Delivery Ratio | 0.644 |
| TP Cap Load (lbs/yr) | 0 |
| TP Delivery Ratio | 0.241 |

**This facility subject to Sector C monitoring requirements. Monitoring for nitrogen and phosphorus shall continue at least 2x/month.**

*Reporting*

Cap Loads will be established in permits as Net Annual TN and TP loads (lbs/yr) that apply during the period of October 1 – September 30.

Facilities with NPDES permits must use DEP's eDMR system for reporting, except small flow treatment facilities. An Annual DMR must be submitted by the end of the Truing Period, November 28. As attachments to the Annual DMR a facility must submit a completed Annual Chesapeake Bay Spreadsheet, available through DEP's Supplemental Reports website, which contains an Annual Nutrient Monitoring worksheet and an Annual Nutrient Budget worksheet. This Spreadsheet will be submitted once per Compliance Year only, and reflect all nutrient sample results (for the period October 1 – September 30), Credit transactions (including the Truing Period) and Offsets applied during the Compliance Year.

## 5.5 Anti-Degradation Requirement

Chapter 93.4a of the PA regulations requires that surface water of the Commonwealth of Pennsylvania may not be degraded below levels that protect the existing uses. The regulations specifically state that *Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected*. Antidegradation requirements are implemented through DEP's guidance manual entitled Water Quality Antidegradation Implementation Guidance (Document #391-0300-02).

The policy requires DEP to protect the existing uses of all surface waters and the existing quality of High Quality (HQ) and Exceptional Value (EV) Waters. Existing uses are protected when DEP makes a final decision on any permit or approval for an activity that may affect a protected use. Existing uses are protected based upon DEP's evaluation of the best available information (which satisfies DEP protocols and Quality Assurance/Quality Control (QA/QC) procedures) that indicates the protected use of the waterbody.

For a new, additional, or increased point source discharge to an HQ or EV water, the person proposing the discharge is required to utilize a nondischarge alternative that is cost-effective and environmentally sound when compared with the cost of the proposed discharge. If a nondischarge alternative is not cost-effective and environmentally sound, the person must use the best available combination of treatment, pollution prevention, and wastewater reuse technologies and assure that any discharge is nondegrading. In the case of HQ waters, DEP may find that after satisfaction of intergovernmental coordination and public participation requirements lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In addition, DEP will assure that cost-effective and reasonable best management practices for nonpoint source control in HQ and EV waters are achieved.

**The subject facility's discharge will be to a non-special protection waters and the permit conditions are imposed to protect existing instream water quality and uses. Neither HQ waters or EV waters is impacted by this discharge.**

## 5.6 Anti-Backsliding

Anti-backsliding is a federal regulation which prohibits a permit from being renewed, reissued, or modified containing effluent limitations which are less stringent than the comparable effluent limitations in the previous permit (40 CFR 122.l.1 and 40 CFR 122.l.2). A review of the existing permit limitations with the proposed permit limitations confirm that the facility is consistent with anti-backsliding requirements. The facility has proposed effluent limitations that are as stringent as the existing permit.

## 6.0 NPDES Parameter Details

The basis for the proposed sampling and their monitoring frequency that will appear in the permit for each individual parameter are itemized in this Section. The final limits are the more stringent of technology based effluent treatment (TBEL) requirements, water quality based (WQBEL) limits, TMDL, antidegradation, anti-degradation, or WET.

The reader will find in this section:

a) a justification of recommended permit monitoring requirements and limitations for each parameter in the proposed NPDES permit;
b) a summary of changes from the existing NPDES permit to the proposed permit; and
c) a summary of the proposed NPDES effluent limits.

## 6.1 Recommended Monitoring Requirements and Effluent Limitations

A summary of the recommended monitoring requirements and effluent limitations are itemized in the tables. The tables are categorized by (a) Conventional Pollutants and Disinfection, (b) Nitrogen Species and Phosphorus, and (c) Chapter 92a.61 targeted parameters

### 6.1.1 Conventional Pollutants and Disinfection

**Summary of Proposed NPDES Parameter Details for Conventional Pollutants and Disinfection**
**Benezette WWTP; PA0263711**

| Parameter | Permit Limitation Required by[1]: | Recommendation | |
|---|---|---|---|
| **pH (S.U.)** | TBEL | Monitoring: | The monitoring frequency shall be daily as a grab sample (Table 6-3). |
| | | Effluent Limit: | Effluent limits may range from pH = 6.0 to 9.0 |
| | | Rationale: | The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 95.2(1). |
| **Dissolved Oxygen** | BPJ | Monitoring: | The monitoring frequency shall be daily as a grab sample (Table 6-3). |
| | | Effluent Limit: | Effluent limits shall be greater than 5.0 mg/l. |
| | | Rationale: | The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by best professional judgement. |
| **CBOD** | TBEL | Monitoring: | The monitoring frequency shall be 1x/wk as an 8-hr composite sample (Table 6-3). |
| | | Effluent Limit: | Effluent limits shall not exceed 8 lbs/day and 25 mg/l as an average monthly. |
| | | Rationale: | The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(1). WQM modeling indicates that the TBEL is more stringent than the WQBEL. Thus, the permit limit is confined to TBEL. |
| **TSS** | TBEL | Monitoring: | The monitoring frequency shall be 1x/wk as an 8-hr composite sample (Table 6-3). |
| | | Effluent Limit: | Effluent limits shall not exceed 10 lbs/day and 30 mg/l as an average monthly. |
| | | Rationale: | The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(1). While there is no WQM modeling for this parameter, the permit limit for TSS is generally assigned similar effluent limits as CBOD or BOD. |
| **TRC** | TBEL | Monitoring: | The monitoring frequency shall be on a daily basis as a grab sample (Table 6-3). |
| | | Effluent Limit: | The average monthly limit should not exceed 0.5 mg/l and/or 1.6 mg/l as an instantaneous maximum. |
| | | Rationale: Chlorine in both combined (chloramine) and free form is extremely toxic to freshwater fish and other forms of aquatic life (Implementation Guidance Total Residual Chlorine 1). The TRC effluent limitations to be imposed on a discharger shall be the more stringent of either the WQBEL or TBEL requirements and shall be expressed in the NPDES permit as an average monthly and instantaneous maximum effluent concentration (Implementation Guidance Total Residual Chlorine 4).<br>Based on the stream flow rate (lowest 7-day flow rate in 10 years) and the design flow rate of the subject facility calculated by the TRC Evaluation worksheet, the TBEL is more stringent than the WQBEL.<br>The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.48(b)(2) | |
| **Fecal Coliform** | TBEL | Monitoring: | The monitoring frequency shall be 1x/wk as a grab sample (Table 6-3). |
| | | Effluent Limit: | Summer effluent limits shall not exceed 200 No./100 mL as a geometric mean. Winter effluent limits shall not exceed 2000 No./100 mL as a geometric mean. |
| | | Rationale: | The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(4) and 92a.47(a)(5). |
| **E. Coli** | SOP; Chapter 92a.61 | Monitoring: | The monitoring frequency shall be 1x/yr as a grab sample (SOP). |
| | | Effluent Limit: | No effluent requirements. |
| | | Rationale: | Consistent with the SOP- Establishing Effluent Limitations for Individual Sewage Permits (Revised March 22, 2019) and under the authority of Chapter 92a.61, the facility will be required to monitor for E.Coli. |

**Notes:**

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other

2 Monitoring frequency based on flow rate of 0.04 MGD.

3 Table 6-3 (Self Monitoring Requirements for Sewage Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Chesapeake Bay Phase 3 Watershed Implementation Plan Wastewater Supplement, Revised September 13, 2021

## 6.1.2 Nitrogen Species and Phosphorus

**Summary of Proposed NPDES Parameter Details for Nitrogen Species and Phosphorus**

**Benezette WWTP; PA0263711**

| Parameter | Permit Limitation Required by[1]: | Recommendation | |
|---|---|---|---|
| **Ammonia-Nitrogen** | Impl. Guidance of Section 93.7 Ammonia Criteria | Monitoring: | The monitoring frequency shall be 2x/month as an 8-hr composite sample (Table 6-3). |
| | | Effluent Limit: | No effluent requirements. |
| | | Rationale: | The monitoring frequency has been assigned in accordance with Table 6-3 |
| **Nitrate-Nitrite as N** | Chesapeake Bay TMDL | Monitoring: | The monitoring frequency shall be 2x/mo as an 8-hr composite sample |
| | | Effluent Limit: | No effluent requirements. |
| | | Rationale: | Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 2x/mo. |
| **Total Nitrogen** | Chesapeake Bay TMDL | Monitoring: | The monitoring frequency shall be 1x/mo as a calculation |
| | | Effluent Limit: | No effluent requirements. |
| | | Rationale: | Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/mo. |
| **TKN** | Chesapeake Bay TMDL | Monitoring: | The monitoring frequency shall be 2x/mo as an 8-hr composite sample |
| | | Effluent Limit: | No effluent requirements. |
| | | Rationale: | Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 2x/mo. |
| **Total Phosphorus** | Chesapeake Bay TMDL | Monitoring: | The monitoring frequency shall be 2x/mo as an 8-hr composite sample |
| | | Effluent Limit: | No effluent requirements. |
| | | Rationale: | Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 2x/mo. |
| **Net Total Nitrogen** | Chesapeake Bay TMDL | Monitoring: | The monitoring frequency shall be 1x/yr as a calculation |
| | | Effluent Limit: | Effluent limits shall not exceed 0 lbs/yr. |
| | | Rationale: | Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/yr. |
| **Net Total Phosphorus** | Chesapeake Bay TMDL | Monitoring: | The monitoring frequency shall be 1x/yr as a calculation |
| | | Effluent Limit: | Effluent limits shall not exceed 0 lbs/yr. |
| | | Rationale: | Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/yr. |

**Notes:**

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other

2 Monitoring frequency based on flow rate of 0.04 MGD.

3 Table 6-3 (Self Monitoring Requirements for Sewage Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Chesapeake Bay Phase 3 Watershed Implementation Plan Wastewater Supplement, Revised September 13, 2021

### 6.1.3 Toxics

| Summary of Proposed NPDES Parameter Details for polluants monitored under Chapter 92a.61 | | | |
|---|---|---|---|
| Benezette WWTP; PA0263711 | | | |
| **Parameter** | **Permit Limitation Required by[1]:** | **Recommendation** | |
| **E. Coli** | SOP; Chapter 92a.61 | Monitoring: | The monitoring frequency shall be 1x/yr as a grab sample (SOP). |
| | | Effluent Limit: | No effluent requirements. |
| | | Rationale: | Consistent with the SOP- Establishing Effluent Limitations for Individual Sewage Permits (Revised March 22, 2019) and under the authority of Chapter 92a.61, the facility will be required to monitor for E.Coli. |
| | | | |
| **Notes:** | | | |

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other
2 Monitoring frequency based on flow rate of 0.04 MGD.
3 Table 6-3 (Self Monitoring Requirements for Sewage Discharges) in Technical Guidance for the Development and Specification of Effluent
4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)
5 Chesapeake Bay Phase 3 Watershed Implementation Plan Wastewater Supplement, Revised September 13, 2021

#### 6.1.3.1 Implementation of Regulation- Chapter 92a.61

Chapter 92a.61 provides provisions to DEP to monitor for pollutants that may have an impact on the quality of waters of the Commonwealth.

Based upon DEP policy directives the following pollutants shall be monitored:

- Consistent with DEP Management directives issued on March 22, 2021 and in conjunction with EPA's 2017 Triennial Review, monitoring for E. Coli shall be required. The monitoring frequency is based upon flow rate.

### 6.2 Summary of Changes From Existing Permit to Proposed Permit

A summary of how the proposed NPDES permit differs from the existing NPDES permit is summarized as follows.

- **Dissolved oxygen limit increased to 5 mg/l.**
- **Due to the EPA triennial review, monitoring shall be required for E. Coli.**

### 6.3.1 Summary of Proposed NPDES Effluent Limits

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.

The proposed NPDES effluent limitations are summarized in the table below.

**PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS**

**I. A. For Outfall** 001 , **Latitude** 41° 18' 56.48" , **Longitude** 78° 23' 10.00" , **River Mile Index** 0.12 , **Stream Code** 24674

**Receiving Waters:** Trout Run (CWF, MF)

**Type of Effluent:** Sewage Effluent

1. The permittee is authorized to discharge during the period from **Permit Effective Date** through **Permit Expiration Date**.

2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) Measurement Frequency | Required Sample Type |
| | Average Monthly | Weekly Average | 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 |
| Dissolved Oxygen | XXX | XXX | 5.0 Inst Min | XXX | XXX | XXX | 1/day | Grab |
| Carbonaceous Biochemical Oxygen Demand (CBOD5) | 8 | 13 | XXX | 25.0 | 40.0 | XXX | 1/week | 8-Hr Composite |
| Biochemical Oxygen Demand (BOD5) Raw Sewage Influent | Report | Report Daily Max | XXX | Report | XXX | XXX | 1/week | 24-Hr Composite |
| Total Suspended Solids Raw Sewage Influent | Report | Report Daily Max | XXX | Report | XXX | XXX | 1/week | 24-Hr Composite |
| Total Suspended Solids | 10 | 15 | XXX | 30.0 | 45.0 | XXX | 1/week | 8-Hr Composite |
| Fecal Coliform (No./100 ml) Oct 1 - Apr 30 | XXX | XXX | XXX | 2000 Geo Mean | XXX | 10000 | 1/week | Grab |
| Fecal Coliform (No./100 ml) May 1 - Sep 30 | XXX | XXX | XXX | 200 Geo Mean | XXX | 1000 | 1/week | Grab |
| E. Coli (No./100 ml) | XXX | XXX | XXX | XXX | Report Daily Max | XXX | 1/year | Grab |

**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 | Minimum | Average Monthly | Weekly Average | Instant. Maximum | | |
| Ammonia-Nitrogen Nov 1 - Apr 30 | Report | XXX | XXX | Report | XXX | XXX | 2/week | 8-Hr Composite |
| Ammonia-Nitrogen May 1 - Oct 31 | Report | XXX | XXX | Report | XXX | XXX | 2/week | 8-Hr Composite |
| Total Phosphorus | Report | XXX | XXX | Report | XXX | XXX | 2/week | 8-Hr Composite |

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Outfall 001

**PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS**

**I. B. For Outfall** 001 , **Latitude** 41° 18' 56.48" , **Longitude** 78° 23' 10.00" , **River Mile Index** 0.12 , **Stream Code** 24674

**Receiving Waters:** Trout Run (CWF, MF)

**Type of Effluent:** Sewage Effluent

1. The permittee is authorized to discharge during the period from **Permit Effective Date** through **Permit Expiration Date**.

2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

| 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 | | |
| Ammonia--N | Report | Report | XXX | Report | XXX | XXX | 2/week | 8-Hr Composite |
| Kjeldahl--N | Report | XXX | XXX | Report | XXX | XXX | 2/week | 8-Hr Composite |
| Nitrate-Nitrite as N | Report | XXX | XXX | Report | XXX | XXX | 2/week | 8-Hr Composite |
| Total Nitrogen | Report | Report | XXX | Report | XXX | XXX | 1/month | Calculation |
| Total Phosphorus | Report | Report | XXX | Report | XXX | XXX | 2/week | 8-Hr Composite |
| Net Total Nitrogen | Report | 0 | XXX | XXX | XXX | XXX | 1/month | Calculation |
| Net Total Phosphorus | Report | 0 | XXX | XXX | XXX | XXX | 1/month | Calculation |

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Outfall 001

Footnotes:
(1) See Part C for Chesapeake Bay Requirements.
(2) This is the minimum number of sampling events required. Permittees are encouraged, and it may be advantageous in demonstrating compliance, to perform more than the minimum number of sampling events required.

## 6.3.2 Summary of Proposed Permit Part C Conditions

The subject facility has the following Part C conditions.

- Chlorine Minimization
- Hauled-in Waste Restrictions
- Chesapeake Bay Nutrient Definitions
- Solids Management for Non-Lagoon Treatment Systems
- Onlot Nitrogen Offsets
- High Flow Management

| Tools and References Used to Develop Permit | |
|---|---|
| | |
| ☒ | WQM for Windows Model (see Attachment ) |
| ☐ | Toxics Management Spreadsheet (see Attachment ) |
| ☐ | TRC Model Spreadsheet (see Attachment ) |
| ☐ | Temperature Model Spreadsheet (see Attachment ) |
| ☐ | Water Quality Toxics Management Strategy, 361-0100-003, 4/06. |
| ☐ | Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97. |
| ☐ | Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98. |
| ☐ | Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96. |
| ☐ | Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97. |
| ☐ | Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97. |
| ☐ | Pennsylvania CSO Policy, 386-2000-002, 9/08. |
| ☐ | Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03. |
| ☐ | Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97. |
| ☐ | Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97. |
| ☐ | Implementation Guidance Design Conditions, 386-2000-007, 9/97. |
| ☐ | Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004. |
| ☐ | Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997. |
| ☐ | Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99. |
| ☐ | Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004. |
| ☐ | Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97. |
| ☐ | Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008. |
| ☐ | Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994. |
| ☐ | Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09. |
| ☐ | Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97. |
| ☐ | Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999. |
| ☐ | Design Stream Flows, 386-2000-003, 9/98. |
| ☐ | Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98. |
| ☐ | Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97. |
| ☐ | Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07. |
| ☒ | SOP: |
| ☐ | Other: |

# Attachment A

# Stream Stats/Gauge Data

**Table 1.** List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

[Latitude and Longitude in decimal degrees; mi², square miles]

| Streamgage number | Streamgage name | Latitude | Longitude | Drainage area (mi²) | Regulated[1] |
|---|---|---|---|---|---|
| 01541303 | West Branch Susquehanna River at Hyde, Pa. | 41.005 | -78.457 | 474 | Y |
| 01541308 | Bradley Run near Ashville, Pa. | 40.509 | -78.584 | 6.77 | N |
| 01541500 | Clearfield Creek at Dimeling, Pa. | 40.972 | -78.406 | 371 | Y |
| 01542000 | Moshannon Creek at Osceola Mills, Pa. | 40.850 | -78.268 | 68.8 | N |
| 01542500 | WB Susquehanna River at Karthaus, Pa. | 41.118 | -78.109 | 1,462 | Y |
| 01542810 | Waldy Run near Emporium, Pa. | 41.579 | -78.293 | 5.24 | N |
| 01543000 | Driftwood Branch Sinnemahoning Creek at Sterling Run, Pa. | 41.413 | -78.197 | 272 | N |
| 01543500 | Sinnemahoning Creek at Sinnemahoning, Pa. | 41.317 | -78.103 | 685 | N |
| 01544000 | First Fork Sinnemahoning Creek near Sinnemahoning, Pa. | 41.402 | -78.024 | 245 | Y |
| 01544500 | Kettle Creek at Cross Fork, Pa. | 41.476 | -77.826 | 136 | N |
| 01545000 | Kettle Creek near Westport, Pa. | 41.320 | -77.874 | 233 | Y |
| 01545500 | West Branch Susquehanna River at Renovo, Pa. | 41.325 | -77.751 | 2,975 | Y |
| 01545600 | Young Womans Creek near Renovo, Pa. | 41.390 | -77.691 | 46.2 | N |
| 01546000 | North Bald Eagle Creek at Milesburg, Pa. | 40.942 | -77.794 | 119 | N |
| 01546400 | Spring Creek at Houserville, Pa. | 40.834 | -77.828 | 58.5 | N |
| 01546500 | Spring Creek near Axemann, Pa. | 40.890 | -77.794 | 87.2 | N |
| 01547100 | Spring Creek at Milesburg, Pa. | 40.932 | -77.786 | 142 | N |
| 01547200 | Bald Eagle Creek below Spring Creek at Milesburg, Pa. | 40.943 | -77.786 | 265 | N |
| 01547500 | Bald Eagle Creek at Blanchard, Pa. | 41.052 | -77.604 | 339 | Y |
| 01547700 | Marsh Creek at Blanchard, Pa. | 41.060 | -77.606 | 44.1 | N |
| 01547800 | South Fork Beech Creek near Snow Shoe, Pa. | 41.024 | -77.904 | 12.2 | N |
| 01547950 | Beech Creek at Monument, Pa. | 41.112 | -77.702 | 152 | N |
| 01548005 | Bald Eagle Creek near Beech Creek Station, Pa. | 41.081 | -77.549 | 562 | Y |
| 01548500 | Pine Creek at Cedar Run, Pa. | 41.522 | -77.447 | 604 | N |
| 01549000 | Pine Creek near Waterville, Pa. | 41.313 | -77.379 | 750 | N |
| 01549500 | Blockhouse Creek near English Center, Pa. | 41.474 | -77.231 | 37.7 | N |
| 01549700 | Pine Creek below Little Pine Creek near Waterville, Pa. | 41.274 | -77.324 | 944 | Y |
| 01550000 | Lycoming Creek near Trout Run, Pa. | 41.418 | -77.033 | 173 | N |
| 01551500 | WB Susquehanna River at Williamsport, Pa. | 41.236 | -76.997 | 5,682 | Y |
| 01552000 | Loyalsock Creek at Loyalsockville, Pa. | 41.325 | -76.912 | 435 | N |
| 01552500 | Muncy Creek near Sonestown, Pa. | 41.357 | -76.535 | 23.8 | N |
| 01553130 | Sand Spring Run near White Deer, Pa. | 41.059 | -77.077 | 4.93 | N |
| 01553500 | West Branch Susquehanna River at Lewisburg, Pa. | 40.968 | -76.876 | 6,847 | Y |
| 01553700 | Chillisquaque Creek at Washingtonville, Pa. | 41.062 | -76.680 | 51.3 | N |
| 01554000 | Susquehanna River at Sunbury, Pa. | 40.835 | -76.827 | 18,300 | Y |
| 01554500 | Shamokin Creek near Shamokin, Pa. | 40.810 | -76.584 | 54.2 | N |
| 01555000 | Penns Creek at Penns Creek, Pa. | 40.867 | -77.048 | 301 | N |
| 01555500 | East Mahantango Creek near Dalmatia, Pa. | 40.611 | -76.912 | 162 | N |
| 01556000 | Frankstown Branch Juniata River at Williamsburg, Pa. | 40.463 | -78.200 | 291 | N |
| 01557500 | Bald Eagle Creek at Tyrone, Pa. | 40.684 | -78.234 | 44.1 | N |
| 01558000 | Little Juniata River at Spruce Creek, Pa. | 40.613 | -78.141 | 220 | N |
| 01559000 | Juniata River at Huntingdon, Pa. | 40.485 | -78.019 | 816 | LF |
| 01559500 | Standing Stone Creek near Huntingdon, Pa. | 40.524 | -77.971 | 128 | N |
| 01559700 | Sulphur Springs Creek near Manns Choice, Pa. | 39.978 | -78.619 | 5.28 | N |
| 01560000 | Dunning Creek at Belden, Pa. | 40.072 | -78.493 | 172 | N |

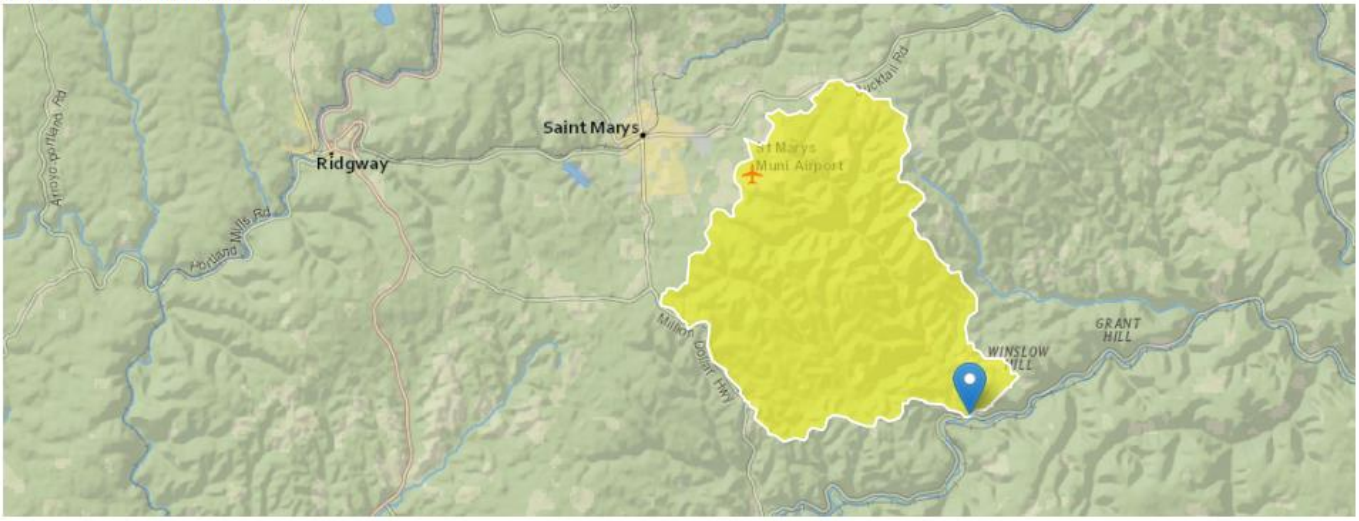
**Table 2.** Selected low-flow statistics for streamgage locations in and near Pennsylvania.—Continued

[ft³/s; cubic feet per second; —, statistic not computed; <, less than]

| Streamgage number | Period of record used in analysis[1] | Number of years used in analysis | 1-day, 10-year (ft³/s) | 7-day, 10-year (ft³/s) | 7-day, 2-year (ft³/s) | 30-day, 10-year (ft³/s) | 30-day, 2-year (ft³/s) | 90-day, 10-year (ft³/s) |
|---|---|---|---|---|---|---|---|---|
| 01530500 | 1940–2008 | 69 | 5.0 | 6.1 | 11.0 | 7.6 | 13 | 9.0 |
| 01531000 | [2]1981–2008 | 28 | 138 | 147 | 237 | 169 | 296 | 203 |
| 01531000 | [3]1905–1979 | 68 | 86.3 | 97.0 | 175 | 116 | 219 | 161 |
| 01531500 | [2]1981–2008 | 28 | 550 | 592 | 1,030 | 733 | 1,340 | 952 |
| 01531500 | [3]1915–1979 | 65 | 539 | 571 | 990 | 675 | 1,230 | 928 |
| 01532000 | 1915–2008 | 94 | 2.2 | 2.8 | 9.7 | 4.6 | 14.4 | 9.4 |
| 01532850 | 1967–1979 | 13 | .1 | .2 | .4 | .3 | .8 | .7 |
| 01533400 | [2]1981–2008 | 28 | 602 | 648 | 1,110 | 790 | 1,430 | 1,060 |
| 01533500 | 1942–1958 | 17 | .4 | .6 | 1.5 | .8 | 2.0 | 1.7 |
| 01533950 | 1962–1978 | 17 | .2 | .3 | 1.0 | .6 | 1.4 | 1.0 |
| 01534000 | 1915–2008 | 94 | 15.2 | 17.3 | 35.9 | 24.2 | 51.0 | 38.7 |
| 01534300 | 1960–2008 | 49 | 1.1 | 1.7 | 5.1 | 2.8 | 7.6 | 4.8 |
| 01534500 | [2]1961–2008 | 48 | 16.7 | 18.8 | 29.2 | 21.9 | 35.8 | 27.6 |
| 01534500 | [3]1941–1959 | 19 | 18.8 | 23.0 | 33.3 | 25.6 | 39.2 | 34.9 |
| 01536000 | [2]1961–2008 | 48 | 28.7 | 32.7 | 51.7 | 40.8 | 68.1 | 54.3 |
| 01536000 | [3]1940–1959 | 20 | 77.8 | 93.9 | 119 | 105 | 138 | 124 |
| 01536500 | [2]1981–2008 | 28 | 828 | 872 | 1,450 | 1,030 | 1,830 | 1,350 |
| 01536500 | [3]1901–1979 | 79 | 778 | 811 | 1,350 | 927 | 1,640 | 1,260 |
| 01537000 | 1943–1993 | 51 | 1.3 | 2.0 | 4.9 | 3.1 | 6.4 | 4.7 |
| 01537500 | 1941–1990 | 50 | .2 | .3 | 1.9 | .5 | 3.1 | 1.6 |
| 01538000 | 1921–2008 | 88 | 3.1 | 3.6 | 7.1 | 5.0 | 9.3 | 7.5 |
| 01539000 | 1940–2008 | 69 | 15.4 | 16.8 | 36.8 | 21.1 | 51.1 | 36.8 |
| 01539500 | 1942–1958 | 17 | .1 | .3 | 1.4 | 1.0 | 3.3 | 2.3 |
| 01540200 | 1965–1981 | 17 | 0 | 0 | .3 | .1 | .3 | .1 |
| 01540500 | [2]1981–2008 | 28 | 1,080 | 1,120 | 1,870 | 1,320 | 2,330 | 1,690 |
| 01540500 | [3]1906–1979 | 74 | 927 | 978 | 1,660 | 1,160 | 2,050 | 1,590 |
| 01541000 | 1915–2008 | 94 | 25.3 | 27.9 | 50.7 | 35.3 | 66.6 | 49.6 |
| 01541200 | [2]1967–2008 | 40 | 34.6 | 45.2 | 66.0 | 63.1 | 100 | 92.4 |
| 01541200 | [3]1957–1965 | 9 | 22.9 | 24.7 | 44.7 | 27.7 | 58.2 | 36.4 |
| 01541303 | 1980–2008 | 29 | 53.4 | 58.5 | 94.0 | 74.4 | 123 | 102 |
| 01541308 | 1969–1979 | 11 | 1.3 | 1.3 | 1.9 | 1.6 | 2.4 | 2.1 |
| 01541500 | [2]1962–2008 | 47 | 39.0 | 41.9 | 66.5 | 51.9 | 86.3 | 70.6 |
| 01541500 | [3]1915–1960 | 46 | 14.9 | 21.3 | 41.9 | 28.5 | 55.0 | 42.9 |
| 01542000 | 1942–1993 | 52 | 8.1 | 9.1 | 14.8 | 11.3 | 17.8 | 14.6 |
| 01542500 | [2]1967–2008 | 33 | 216 | 235 | 326 | 285 | 435 | 402 |
| 01542500 | [3]1941–1965 | 20 | — | 131 | 189 | 152 | 243 | 221 |
| 01542810 | 1966–2008 | 43 | .1 | .1 | .3 | .2 | .5 | .3 |
| 01543000 | 1915–2008 | 94 | 2.9 | 4.2 | 16.0 | 9.6 | 27.4 | 19.2 |
| 01543500 | 1940–2008 | 69 | 10.7 | 14.5 | 44.9 | 26.6 | 74.9 | 50.5 |
| 01544000 | [2]1957–2008 | 52 | 3.3 | 6.9 | 19.0 | 11.2 | 31.1 | 19.0 |
| 01544500 | 1942–2008 | 67 | 4.2 | 4.9 | 12.5 | 7.5 | 17.4 | 11.7 |
| 01545000 | [2]1964–2008 | 45 | 6.8 | 8.2 | 21.2 | 12.0 | 32.7 | 20.7 |
| 01545500 | [2]1963–2008 | 46 | 217 | 238 | 446 | 306 | 629 | 428 |
| 01545500 | [3]1909–1961 | 53 | 125 | 141 | 278 | 190 | 387 | 296 |
| 01545600 | 1966–2008 | 43 | 1.2 | 1.5 | 4.4 | 2.4 | 6.7 | 4.2 |

## StreamStats Report

**Region ID:** PA
**Workspace ID:** PA20250401093756945000
**Clicked Point (Latitude, Longitude):** 41.31545, -78.38599
**Time:** 2025-04-01 05:38:21 -0400




Benezette WWTP PA0263711 Modeling Point #1 April 2025

Collapse All

### Basin Characteristics

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| DRNAREA | Area that drains to a point on a stream | 55.7 | square miles |
| FOREST | Percentage of area covered by forest | 95.1072 | percent |
| GLACIATED | Percentage of basin area that was historically covered by glaciers | 0 | percent |
| PRECIP | Mean Annual Precipitation | 44 | inches |

### Low-Flow Statistics

#### Low-Flow Statistics Parameters [Low Flow Region 5]

| Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit |
|---|---|---|---|---|---|
| DRNAREA | Drainage Area | 55.7 | square miles | 4.84 | 982 |
| FOREST | Percent Forest | 95.1072 | percent | 41 | 100 |
| GLACIATED | Percent of Glaciation | 0 | percent | 0 | 100 |
| PRECIP | Mean Annual Precipitation | 44 | inches | 33.1 | 47.1 |

#### Low-Flow Statistics Flow Report [Low Flow Region 5]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

| Statistic | Value | Unit | SE | ASEp |
|---|---|---|---|---|
| 7 Day 2 Year Low Flow | 4.35 | ft^3/s | 38 | 38 |
| 30 Day 2 Year Low Flow | 6.8 | ft^3/s | 33 | 33 |

| Statistic | Value | Unit | SE | ASEp |
|---|---|---|---|---|
| 7 Day 10 Year Low Flow | 1.39 | ft^3/s | 57 | 57 |
| 30 Day 10 Year Low Flow | 2.63 | ft^3/s | 51 | 51 |
| 90 Day 10 Year Low Flow | 4.51 | ft^3/s | 41 | 41 |

*Low-Flow Statistics Citations*

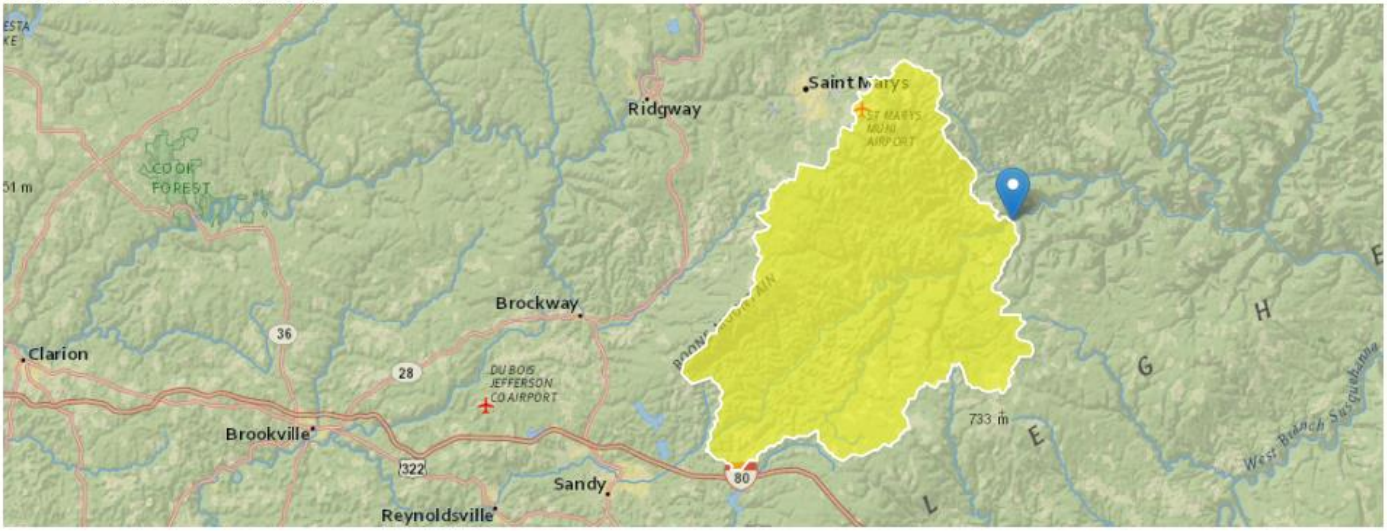
**Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)**



Application Version: 4.28.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

## StreamStats Report

**Region ID:** PA
**Workspace ID:** PA20250401094201302000
**Clicked Point (Latitude, Longitude):** 41.32415, -78.34391
**Time:** 2025-04-01 05:42:25 -0400




Benezette WWTP PA0263711 Modeling Point #2 PA0263711

Collapse All

### Basin Characteristics

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| DRNAREA | Area that drains to a point on a stream | 236 | square miles |
| FOREST | Percentage of area covered by forest | 95.5272 | percent |
| GLACIATED | Percentage of basin area that was historically covered by glaciers | 0 | percent |
| PRECIP | Mean Annual Precipitation | 44 | inches |

### Low-Flow Statistics

#### Low-Flow Statistics Parameters [Low Flow Region 5]

| Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit |
|---|---|---|---|---|---|
| DRNAREA | Drainage Area | 236 | square miles | 4.84 | 982 |
| FOREST | Percent Forest | 95.5272 | percent | 41 | 100 |
| GLACIATED | Percent of Glaciation | 0 | percent | 0 | 100 |
| PRECIP | Mean Annual Precipitation | 44 | inches | 33.1 | 47.1 |

#### Low-Flow Statistics Flow Report [Low Flow Region 5]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

| Statistic | Value | Unit | SE | ASEp |
|---|---|---|---|---|
| 7 Day 2 Year Low Flow | 23.5 | ft^3/s | 38 | 38 |
| 30 Day 2 Year Low Flow | 35.2 | ft^3/s | 33 | 33 |

| Statistic | Value | Unit | SE | ASEp |
|---|---|---|---|---|
| 7 Day 10 Year Low Flow | 8.88 | ft^3/s | 57 | 57 |
| 30 Day 10 Year Low Flow | 15.6 | ft^3/s | 51 | 51 |
| 90 Day 10 Year Low Flow | 24.9 | ft^3/s | 41 | 41 |

*Low-Flow Statistics Citations*

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



Application Version: 4.28.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

# Attachment B

# WQM 7.0 Modeling Output Values

# WQM 7.0 Effluent Limits

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 08A | 24674 | TROUT RUN |

| 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) |
|---|---|---|---|---|---|---|---|
| 2.690 | Benezette | PA0263711 | 0.040 | CBOD5 | 25 | | |
| | | | | NH3-N | 25 | 50 | |
| | | | | Dissolved Oxygen | | | 5 |

# WQM 7.0 Wasteload Allocations

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 08A | 24674 | TROUT RUN |

## NH3-N Acute Allocations

| RMI | Discharge Name | Baseline Criterion (mg/L) | Baseline WLA (mg/L) | Multiple Criterion (mg/L) | Multiple WLA (mg/L) | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|
| 2.690 | Benezette | 16.04 | 50 | 16.04 | 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 |
|---|---|---|---|---|---|---|---|
| 2.690 | Benezette | 1.86 | 25 | 1.86 | 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) | | |
| 2.69 | Benezette | 25 | 25 | 25 | 25 | 5 | 5 | 0 | 0 |

# 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 |
|---|---|---|---|---|---|---|---|---|
| 08A | 24674 | TROUT RUN | **2.690** | 300.00 | 55.70 | 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** | 0.021 | 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 |
|---|---|---|---|---|---|---|---|
| Benezette | PA0263711 | 0.0400 | 0.0400 | 0.0400 | 0.000 | 25.00 | 7.44 |

## 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 |
|---|---|---|---|---|---|---|---|---|
| 08A | 24674 | TROUT RUN | **0.000** | 288.00 | 236.00 | 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** | 0.021 | 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 | 3.00 | 8.24 | 0.00 | 0.00 |
| NH3-N | 25.00 | 0.00 | 0.00 | 0.70 |

# WQM 7.0 D.O.Simulation

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 08A | 24674 | TROUT RUN |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (°C) | Analysis pH |
|---|---|---|---|
| 2.690 | 0.040 | 20.250 | 7.014 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 24.094 | 0.609 | 39.572 | 0.084 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 3.15 | 0.230 | 1.25 | 0.714 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 8.081 | 0.681 | Tsivoglou | 5 |
| **Reach Travel Time (days)** | | | |
| 1.949 | | | |

**Subreach Results**

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.195 | 3.01 | 1.09 | 7.32 |
| 0.390 | 2.88 | 0.95 | 6.75 |
| 0.585 | 2.75 | 0.82 | 6.34 |
| 0.780 | 2.63 | 0.72 | 6.06 |
| 0.975 | 2.51 | 0.62 | 5.88 |
| 1.170 | 2.40 | 0.54 | 5.78 |
| 1.365 | 2.29 | 0.47 | 5.74 |
| 1.559 | 2.19 | 0.41 | 5.75 |
| 1.754 | 2.09 | 0.36 | 5.81 |
| 1.949 | 2.00 | 0.31 | 5.89 |

# WQM 7.0 Hydrodynamic Outputs

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 08A | 24674 | TROUT RUN |

| RMI | Stream Flow (cfs) | PWS With (cfs) | Net Stream Flow (cfs) | Disc Analysis Flow (cfs) | Reach Slope (ft/ft) | Depth (ft) | Width (ft) | W/D Ratio | Velocity (fps) | Reach Trav Time (days) | Analysis Temp (°C) | Analysis pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Q7-10 Flow** | | | | | | | | | | | | |
| 2.690 | 1.18 | 0.00 | 1.18 | .0619 | 0.00084 | .609 | 24.09 | 39.57 | 0.08 | 1.949 | 20.25 | 7.01 |
| **Q1-10 Flow** | | | | | | | | | | | | |
| 2.690 | 0.87 | 0.00 | 0.87 | .0619 | 0.00084 | NA | NA | NA | 0.07 | 2.285 | 20.33 | 7.02 |
| **Q30-10 Flow** | | | | | | | | | | | | |
| 2.690 | 2.15 | 0.00 | 2.15 | .0619 | 0.00084 | NA | NA | NA | 0.12 | 1.408 | 20.14 | 7.01 |

# 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 | 0.74 | Use Inputted Reach Travel Times | ☐ |
| Q30-10/Q7-10 Ratio | 1.83 | Temperature Adjust Kr | ☑ |
| D.O. Saturation | 90.00% | Use Balanced Technology | ☑ |
| D.O. Goal | 5 | | |

# Attachment C

# TRC Evaluation

Benezett WWTP April 2025
PA0263711

| 1A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|
| 2 | **TRC EVALUATION** | | | | | |
| 3 | **Input appropriate values in B4:B8 and E4:E7** | | | | | |
| 4 | 1.179051095 | **= Q stream (cfs)** | | **0.5** | **= CV Daily** | |
| 5 | 0.04 | **= Q discharge (MGD)** | | **0.5** | **= CV Hourly** | |
| 6 | 30 | **= no. samples** | | **1** | **= AFC_Partial Mix Factor** | |
| 7 | 0.3 | **= Chlorine Demand of Stream** | | **1** | **= CFC_Partial Mix Factor** | |
| 8 | 0 | **= Chlorine Demand of Dischar** | | **15** | **= AFC_Criteria Compliance Time (min)** | |
| 9 | **0.5** | **= BAT/BPJ Value** | | **720** | **= CFC_Criteria Compliance Time (min)** | |
| | 0 | **= % Factor of Safety (FOS)** | | **0** | **=Decay Coefficient (K)** | |
| # | Source | Reference | AFC Calculations | | Reference | CFC Calculations |
| # | TRC | **1.3.2.iii** | WLA afc = | 6.097 | **1.3.2.iii** | WLA cfc = 5.937 |
| # | PENTOXSD TRG | **5.1a** | LTAMULT afc = | 0.373 | **5.1c** | LTAMULT cfc = 0.581 |
| # | PENTOXSD TRG | **5.1b** | LTA_afc= | 2.272 | **5.1d** | LTA_cfc = 3.451 |
| # | | | | | | |
| # | 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)** |