pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

**Northcentral Regional Office**
**CLEAN WATER PROGRAM**

# NPDES PERMIT FACT SHEET
# INDIVIDUAL SEWAGE

| | | | |
|---|---|---|---|
| Application Type | **Renewal** | Application No. | **PA0114766** |
| Facility Type | **Non-Municipal** | APS ID | **1034590** |
| Major / Minor | **Minor** | Authorization ID | **1347041** |

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **DTAC Diversified Treatment Alternative Center** | Facility Name | **DTAC Diversified Treatment Alternative Center** |
| Applicant Address | 40 Lawton Lane<br>Milton, PA 17847-9756 | Facility Address | 184 E. Village Drive<br>Williamsport, PA 17702-8023 |
| Applicant Contact | Lisa Olander | Facility Contact | Lisa Olander |
| Applicant Phone | (412) 913-7343 | Facility Phone | (412) 913-7343 |
| Client ID | 357203 | Site ID | 240935 |
| Ch 94 Load Status | Not Overloaded | Municipality | Susquehanna Township |
| Connection Status | No Limitations | County | Lycoming |
| Date Application Received | March 23, 2021 | EPA Waived? | Yes |
| Date Application Accepted | April 1, 2021 | If No, Reason | |

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

## Summary of Review

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.

Additionally, there has been a change in ownership from Behavioral Specialist, Inc. to Diversified Treatment Alternative Center.

| Approve | Deny | Signatures | Date |
|---|---|---|---|
| X | | *Jonathan P. Peterman*<br>Jonathan P. Peterman / Project Manager | August 19, 2021 |
| X | | *Nicholas W. Hartranft*<br>Nicholas W. Hartranft, P.E. / Environmental Engineer Manager | August 30, 2021 |

**Discharge, Receiving Waters and Water Supply Information**

| | | | |
|---|---|---|---|
| Outfall No. | 001 | Design Flow (MGD) | 0.0032 |
| Latitude | 41º 13' 0.47" | Longitude | -77º 6' 43.89" |
| Quad Name | | Quad Code | |
| Wastewater Description: | Sewage Effluent | | |
| Receiving Waters | Bender Run (CWF, MF) | Stream Code | 20955 |
| NHD Com ID | 66916703 | RMI | 0.5100 |
| Drainage Area | 4.29 $mi^2$ | Yield ($cfs/mi^2$) | 0.0746 |
| $Q_{7-10}$ Flow (cfs) | 0.32 | $Q_{7-10}$ Basis | USGS StreamStats |
| Elevation (ft) | 575 | Slope (ft/ft) | 0.231 |
| Watershed No. | 10-A | Chapter 93 Class. | CWF, MF |
| Existing Use | None | Existing Use Qualifier | N/A |
| Exceptions to Use | None | Exceptions to Criteria | None |
| Assessment Status | Attaining Use(s) | | |
| Cause(s) of Impairment | N/A | | |
| Source(s) of Impairment | N/A | | |
| TMDL Status | N/A | Name | N/A |
| Nearest Downstream Public Water Supply Intake | PA-American Water Company | | |
| PWS Waters | West Branch of Susquehanna River | Flow at Intake (cfs) | 682 |
| PWS RMI | 10.5 | Distance from Outfall (mi) | 35 |

Changes Since Last Permit Issuance: The updated $Q_{7-10}$ data was obtained from the updated stream gage information obtained from *Stuckey, M.H., and Roland, M.A., 2011, Selected Streamflow Statistics for Streamgage Locations In and Near Pennsylvania*. A comparative stream analysis was conducted using a comparative stream gage based on basin characteristics. The $Q_{7-10}$ calculations indicate that the $Q_{7-10}$ is 0.32 cfs.

Other Comments: None.

**Treatment Facility Summary**

**Treatment Facility Name:** Diversified Treatment Alternative Center - Nisbet Elementary School

| WQM Permit No. | Issuance Date |
|---|---|
| 4191403 | Original – 08/12/91 |
| 4191403 T-1 | Transfer – 07/11/11 |

| Waste Type | Degree of Treatment | Process Type | Disinfection | Avg Annual Flow (MGD) |
|---|---|---|---|---|
| Sewage | Tertiary | Sequencing Batch Reactor W/Sol Removal | Hypochlorite | 0.0032 |

| Hydraulic Capacity (MGD) | Organic Capacity (lbs/day) | Load Status | Biosolids Treatment | Biosolids Use/Disposal |
|---|---|---|---|---|
| 0.0032 | 3.1 | Not Overloaded | None | Other WWTP |

**Treatment System Components for Outfall 001:**
- One (1) Sequencing Batch Reactor (SBR).
- One (1) Sand Filter.
- One (1) Erosion chlorinator.
- One (1) Chlorine contact tank.
- One (1) Outfall 001.

Sludge use and disposal description and location(s): None listed.

Changes Since Last Permit Issuance: None.
Other Comments: Typical flows from the facility average 600 gpd. Per facility inspection reports, the facility serves no more than 50 people for 5 days a week.

**Anti-Backsliding**

In accordance with 40 CFR 122.44(l)(1) and (2), this permit does not contain effluent limitations, standards, or conditions that are less stringent than the previous permit.

**Chesapeake Bay Requirements**

Since this facility's annual average design flow is 0.0032 MGD, the permittee will be required to monitor and report TN and TP throughout the permit term at a frequency no less than annually in accordance with the Phase II WIP Chesapeake Bay Strategy for Phase V facilities (0.002 MGD to 0.2 MGD) 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. The previous permit contained the results from the Chesapeake Bay Monitoring requirements and removed the monitoring requirements. The summarized results for this monitoring are contained below and the full data set is contained in Appendix D. Since the permittee conducted this monitoring in the previous permit term and the data is summarized in the fact sheet below, the conditions have been met and Chesapeake Bay monitoring will not be required.

## Existing Effluent Limitations and Monitoring Requirements

**Existing Limits – Outfall 001**

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) Measurement Frequency | Required Sample Type |
| | Average Monthly | Average Weekly | Minimum | Average Monthly | Maximum | Instant. Maximum | | |
| Flow (MGD) | Report | XXX | XXX | XXX | XXX | XXX | 1/week | Estimate |
| pH (S.U.) | XXX | XXX | 6.0 | XXX | 9.0 | XXX | 5/week | Grab |
| Dissolved Oxygen | XXX | XXX | Report | XXX | XXX | XXX | 5/week | Grab |
| Total Residual Chlorine (TRC) | XXX | XXX | XXX | 0.5 | XXX | 1.6 | 5/week | Grab |
| Carbonaceous Biochemical Oxygen Demand (CBOD5) | XXX | XXX | XXX | 25 | XXX | 50 | 1/month | Grab |
| Total Suspended Solids | XXX | XXX | XXX | 30 | XXX | 60 | 1/month | Grab |
| Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30 | XXX | XXX | XXX | 2000 Geo Mean | XXX | 10000 | 1/month | Grab |
| Fecal Coliform (CFU/100 ml) May 1 - Sep 30 | XXX | XXX | XXX | 200 Geo Mean | XXX | 1000 | 1/month | Grab |
| Total Nitrogen | Report | XXX | XXX | Report | XXX | XXX | 1/year | Grab |
| Ammonia-Nitrogen | XXX | XXX | XXX | Report | XXX | XXX | 1/month | Grab |
| Total Phosphorus | Report | XXX | XXX | Report | XXX | XXX | 1/year | Grab |

*The existing effluent limits for Outfall 001 were based on a design flow of 0.0032 MGD.

## Development of Effluent Limitations

**Outfall No.** 001 **Design Flow (MGD)** 0.0032
**Latitude** 41º 13' 0.47" **Longitude** -77º 6' 43.89"
**Wastewater Description:** Treated Sewage Effluent

**Technology-Based Limitations**

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

| Pollutant | Limit (mg/l) | SBC | Federal Regulation | State Regulation |
|---|---|---|---|---|
| $CBOD_5$ | 25 | Average Monthly | 133.102(a)(4)(i) | 92a.47(a)(1) |
| | 40 | Average Weekly | 133.102(a)(4)(ii) | 92a.47(a)(2) |
| Total Suspended Solids | 30 | Average Monthly | 133.102(b)(1) | 92a.47(a)(1) |
| | 45 | Average Weekly | 133.102(b)(2) | 92a.47(a)(2) |
| pH | 6.0 – 9.0 S.U. | Min – Max | 133.102(c) | 95.2(1) |
| Fecal Coliform (5/1 – 9/30) | 200 / 100 ml | Geo Mean | - | 92a.47(a)(4) |
| Fecal Coliform | 1,000 / 100 ml | IMAX | - | 92a.47(a)(4) |

| | | | | |
|---|---|---|---|---|
| (5/1 – 9/30) | | | | |
| 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) |

**Water Quality-Based Limitations**

To establish whether or not water-quality based effluent limitations (WQBELs) are required, the Department models in-stream conditions. In order to determine limitations for CBOD5, ammonia-N and dissolved oxygen, the Department utilizes the WQM 7.0 v1.0b model and in order to determine limitations for toxics, the Department utilizes the Toxics Management Spreadsheet. The Toxics Management Spreadsheet was not utilized in this review.

**WQM 7.0 for Windows, Version 1.0b, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen**

The previous model was run using the latest information on Q7-10 stream flow, background water quality, average annual design flow, and other discharge characteristics. There have been no changes to the watershed or discharge characteristics, therefore the previous modeling is still valid. The existing technology-based effluent limits for $CBOD_5$ (25 mg/l) and for NH3-N (25 mg/l) were used as inputs for the modeling. The DO minimum daily average criterion from §93.7 (5.0 mg/L for CWF) was used for the in-stream objective for the model. The summary of the output is as follows:

| Parameter | Effluent Limit | | |
|---|---|---|---|
| | 30 Day Average | Maximum | Minimum |
| **CBOD5** | 25 | N/A | N/A |
| **Ammonia-N** | 25 | 50 | N/A |
| **Dissolved Oxygen** | N/A | N/A | 3 |

The previous model did not recommend water-quality based effluent limitations with regards to CBOD5, ammonia-nitrogen, and dissolved oxygen. Refer to Appendix A for the WQM 7.0 inputs and results. The existing limits will remain.

**Best Professional Judgment (BPJ) Limitations**

See the Dissolved Oxygen section below.

**Additional Considerations**

None

## Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit and reflect the most stringent limitations amongst the abovementioned 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) and/or BPJ.

**Proposed Limits - Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date**

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) Measurement Frequency | Required Sample Type |
| | Average Monthly | Average Weekly | Minimum | Average Monthly | Maximum | Instant. Maximum | | |
| Flow (MGD) | Report | XXX | XXX | XXX | XXX | XXX | 1/week | Estimate |
| pH (S.U.) | XXX | XXX | 6.0 | XXX | 9.0 | XXX | 1/day | Grab |
| Dissolved Oxygen | XXX | XXX | Report | 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) | XXX | XXX | XXX | 25 | XXX | 50 | 1/month | Grab |
| Total Suspended Solids | XXX | XXX | XXX | 30 | XXX | 60 | 1/month | Grab |
| Fecal Coliform (No./100 ml) Oct 1 - Apr 30 | XXX | XXX | XXX | 2000 Geo Mean | XXX | 10000 | 1/month | Grab |
| Fecal Coliform (No./100 ml) May 1 - Sep 30 | XXX | XXX | XXX | 200 Geo Mean | XXX | 1000 | 1/month | Grab |
| Ammonia-Nitrogen | XXX | XXX | XXX | Report | XXX | XXX | 1/month | Grab |
| E. Coli | XXX | XXX | XXX | XXX | XXX | Report | 1/year | Grab |

*The proposed effluent limits for Outfall 001 were based on a design flow of 0.0032 MGD.

## Effluent Limit Determination for Outfall 001

**General Information**
All effluent limits were then rounded down in accordance with the rounding rules established in the *Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001)*, Chapter 5 - Specifying Effluent Limitations in NPDES Permits. The existing monitoring frequencies and sample types for these parameters generally correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3 and will remain.

**Flow**
Reporting of the weekly maximum flow is consistent with monitoring requirements for other treatment plants and will remain.

**Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)**
The results of the WQM 7.0 model show that the previously applied secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for $CBOD_5$ are protective of water quality and will remain.

**Total Suspended Solids (TSS)**
The previously applied technology based secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for TSS will remain as well.

**pH**
CFR Title 40 §133.102(c) and 25 PA Code §95.2(1) provide the basis of effluent limitations for pH.

**Total Residual Chlorine (TRC)**
In accordance with 25 Pa. Code 92a.48(b)(2), a best available technology (BAT) value of 0.5 mg/l was used in the TRC Spreadsheet. The attached TRC model indicates that the technology-based effluent limit of 0.5 mg/L (Average Monthly) and 1.6 mg/L (Instantaneous Maximum) are protective of water quality. The existing limits will remain.

**Fecal Coliforms**
The existing fecal coliform limits with I-max limits were previously updated from the previous Chapter 92 code to correspond with what is specified in the updated 25 PA Code § 92a.47 (a)(4)&(5). The existing effluent limits will remain.

**Ammonia-Nitrogen (NH3-N)**
The results of the WQM 7.0 model show that the existing monitoring requirement for ammonia-nitrogen is appropriate and will remain.

**Dissolved Oxygen (DO)**
25 PA Code §93.7 provides specific water quality criteria for DO and monitoring for this parameter will ensure that the facility is not creating or contributing to an in-stream excursion below these water quality standards. Additionally, the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) lists DO under the self-monitoring requirements for sewage discharges and monitoring of DO is consistent with other discharges of this size and type.

**E. Coli**
25 PA Code § 92a.61 provide the basis of monitoring requirements for E. Coli. Yearly monitoring will be required going forward.

## Compliance History

**Summary of Inspections** -The most recent Clean Water Program onsite inspections for this facility were a Compliance Evaluation Inspection on 7/1/19. Some minor effluent exceedances were noted during this inspection.

**WMS Query Summary** - A WMS Query was run at *Reports - Violations & Enforcements – Open Violations for Client Report* to determine whether there are any unresolved violations associated with the client that will affect issuance of the permit (per CSL Section 609). This query revealed no open violations.

**eDMRs Summary** - Upon review of the eDMR's, the facility has generally been in compliance with the existing effluent limits. There was a minor exceedance of TRC effluent limits in February of 2021. The issue was resolved by the next month.

## Compliance History

**DMR Data for Outfall 001 (from July 1, 2020 to June 30, 2021)**

| Parameter | JUN-21 | MAY-21 | APR-21 | MAR-21 | FEB-21 | JAN-21 | DEC-20 | NOV-20 | OCT-20 | SEP-20 | AUG-20 | JUL-20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow (MGD) Average Monthly | 0.0006 | 0.0006 | 0.0006 | 0.0006 | 0.0006 | 0.0006 | 0.0006 | 0.0006 | 0.0006 | 0.0006 | 0.0006 | 0.0006 |
| pH (S.U.) Minimum | 7.3 | 7.3 | 7.4 | 7.5 | 7.6 | 7.6 | 7.8 | 7.0 | 7 | 6.8 | 6.9 | 6.6 |
| pH (S.U.) Maximum | 8.4 | 8.9 | 8.4 | 8.0 | 8.4 | 8 | 8.2 | 8.1 | 7.3 | 7.3 | 7.2 | 6.9 |
| DO (mg/L) Minimum | 7.3 | 6.0 | 6.2 | 8.6 | 7.8 | 8.6 | 10 | 8.6 | 7.6 | 6.2 | 6.4 | 6.2 |
| TRC (mg/L) Average Monthly | 0.4 | 0.3 | 0.3 | 0.5 | 0.7 | 0.1 | 0.5 | 0.4 | 0.5 | 0.2 | 0.1 | 0.1 |
| TRC (mg/L) Instantaneous Maximum | 0.6 | 0.5 | 0.9 | 0.8 | 1 | 0.8 | 0.7 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 |
| CBOD5 (mg/L) Average Monthly | 2 | 2.1 | 2.2 | 2 | 2 | 2.1 | 2 | 2.2 | 2 | 2 | 2 | 2 |
| CBOD5 (mg/L) Instantaneous Maximum | 2 | 2.1 | 2.2 | 2 | 2 | 2.1 | 2 | 2.2 | 2 | 2 | 2 | 2 |
| TSS (mg/L) Average Monthly | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| TSS (mg/L) Instantaneous Maximum | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Fecal Coliform (CFU/100 ml) Geometric Mean | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 8 |
| Fecal Coliform (CFU/100 ml) Instantaneous Maximum | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 8 |
| Total Nitrogen (lbs/day) Average Monthly | | | | | | | 0.03 | | | | | |
| Total Nitrogen (mg/L) Average Monthly | | | | | | | 6 | | | | | |
| Ammonia (mg/L) Average Monthly | 0.1 | 0.1 | 4 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Phosphorus (lbs/day) Average Monthly | | | | | | | 0.015 | | | | | |
| Total Phosphorus (mg/L) Average Monthly | | | | | | | 3 | | | | | |

## Compliance History

**Effluent Violations for Outfall 001, from: August 1, 2020 To: June 30, 2021**

| Parameter | Date | SBC | DMR Value | Units | Limit Value | Units |
|---|---|---|---|---|---|---|
| TRC | 02/28/21 | Avg Mo | 0.7 | mg/L | 0.5 | mg/L |

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

# APPENDIX A

## WQM 7.0 MODEL RESULTS

# 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 |
|---|---|---|---|---|---|---|---|---|
| 10A | 20955 | BENDER RUN | **0.550** | 575.00 | 4.29 | 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** | 0.075 | 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 |
|---|---|---|---|---|---|---|---|
| BSI, Inc | PA0114766 | 0.0032 | 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 |

# 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 |
|---|---|---|---|---|---|---|---|---|
| 10A | 20955 | BENDER RUN | 0.100 | 520.00 | 4.50 | 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 | 0.075 | 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 Hydrodynamic Outputs

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 10A | 20955 | BENDER 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** | | | | | | | | | | | | |
| 0.550 | 0.32 | 0.00 | 0.32 | .005 | 0.02315 | .436 | 8.08 | 18.53 | 0.09 | 0.298 | 20.08 | 7.00 |
| **Q1-10 Flow** | | | | | | | | | | | | |
| 0.550 | 0.20 | 0.00 | 0.20 | .005 | 0.02315 | NA | NA | NA | 0.07 | 0.381 | 20.12 | 7.00 |
| **Q30-10 Flow** | | | | | | | | | | | | |
| 0.550 | 0.44 | 0.00 | 0.44 | .005 | 0.02315 | NA | NA | NA | 0.11 | 0.251 | 20.06 | 7.00 |

# WQM 7.0 Wasteload Allocations

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 10A | 20955 | BENDER 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 |
|---|---|---|---|---|---|---|---|
| 0.550 | BSI, Inc | 9.59 | 50 | 9.59 | 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 |
|---|---|---|---|---|---|---|---|
| 0.550 | BSI, Inc | 1.91 | 25 | 1.91 | 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) | | |
| 0.55 | BSI, Inc | 25 | 25 | 25 | 25 | 3 | 3 | 0 | 0 |

# 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 | 0.64 | Use Inputted Reach Travel Times | ☐ |
| Q30-10/Q7-10 Ratio | 1.36 | Temperature Adjust Kr | ☑ |
| D.O. Saturation | 90.00% | Use Balanced Technology | ☑ |
| D.O. Goal | 6 | | |

# WQM 7.0 Effluent Limits

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 10A | 20955 | BENDER 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) |
|---|---|---|---|---|---|---|---|
| 0.550 | BSI, Inc | PA0114766 | 0.003 | CBOD5 | 25 | | |
| | | | | NH3-N | 25 | 50 | |
| | | | | Dissolved Oxygen | | | 3 |

# WQM 7.0 D.O.Simulation

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 10A | 20955 | BENDER RUN |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (°C) | Analysis pH |
|---|---|---|---|
| 0.550 | 0.003 | 20.076 | 7.000 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 8.077 | 0.436 | 18.527 | 0.092 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 2.35 | 0.202 | 0.38 | 0.704 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 8.163 | 20.461 | Owens | 6 |
| **Reach Travel Time (days)** | | | |
| 0.298 | | | |

**Subreach Results**

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.030 | 2.34 | 0.37 | 8.23 |
| 0.060 | 2.32 | 0.37 | 8.23 |
| 0.089 | 2.31 | 0.36 | 8.23 |
| 0.119 | 2.29 | 0.35 | 8.23 |
| 0.149 | 2.28 | 0.34 | 8.23 |
| 0.179 | 2.27 | 0.34 | 8.23 |
| 0.209 | 2.25 | 0.33 | 8.23 |
| 0.238 | 2.24 | 0.32 | 8.23 |
| 0.268 | 2.23 | 0.32 | 8.23 |
| 0.298 | 2.21 | 0.31 | 8.23 |

# APPENDIX B

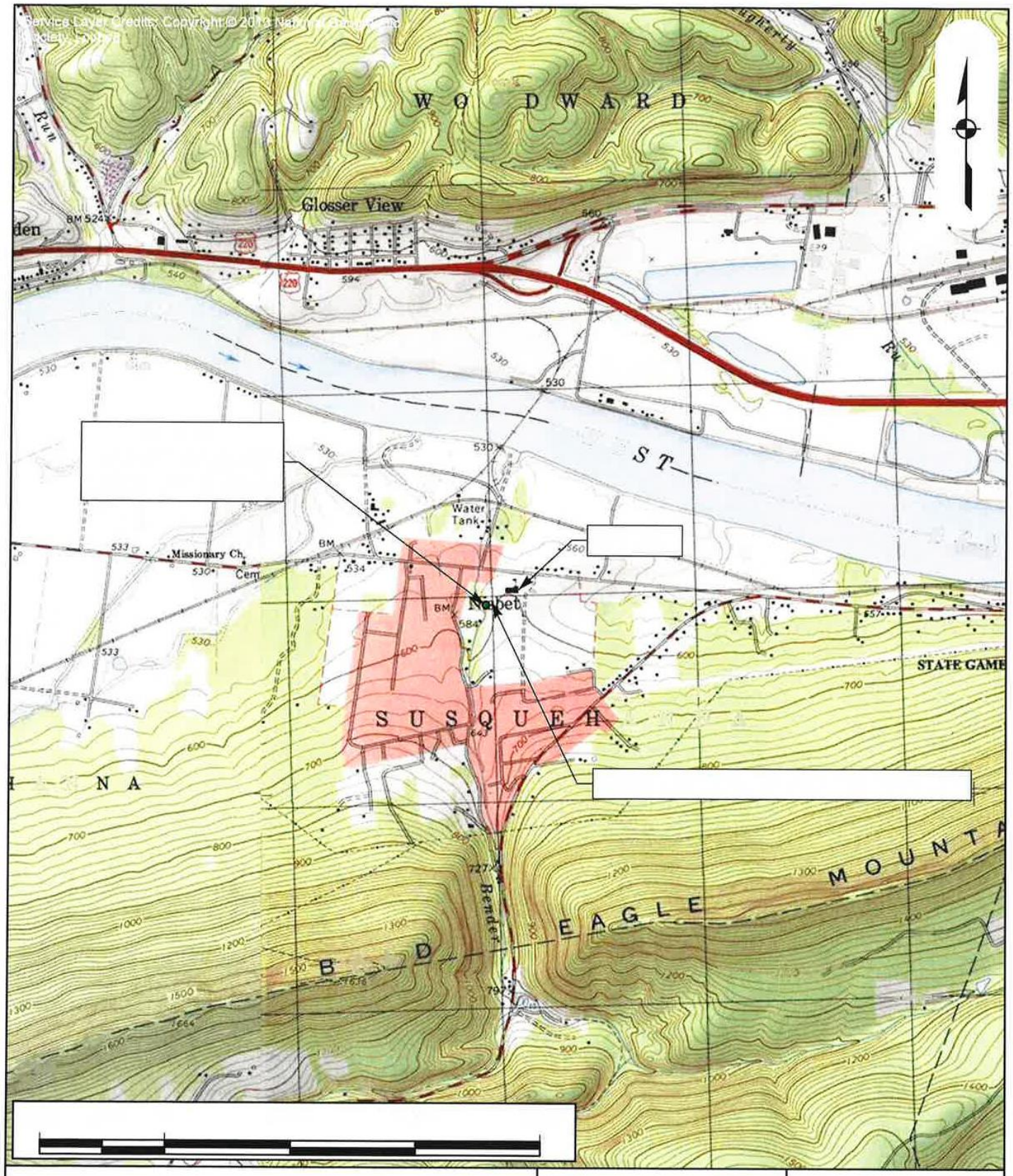
TRC ANALYSIS SPREADSHEET

| | | | | | | |
|---|---|---|---|---|---|---|
| 1A | B | C | D | E | F | G |
| 2 | **TRC EVALUATION** | | | **DTAC** | | |
| 3 | **Input appropriate values in B4:B8 and E4:E7** | | | | | |
| 4 | 0.32 | = Q stream (cfs) | | 0.5 | = CV Daily | |
| 5 | 0.0032 | = 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 Discharge | | 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) | |
| 10 | Source | Reference | AFC Calculations | | Reference | CFC Calculations |
| 11 | TRC | 1.3.2.iii | WLA afc = 20.640 | | 1.3.2.iii | WLA cfc = 20.114 |
| 12 | PENTOXSD TRG | 5.1a | LTAMULT afc = 0.373 | | 5.1c | LTAMULT cfc = 0.581 |
| 13 | PENTOXSD TRG | 5.1b | LTA_afc= 7.691 | | 5.1d | LTA_cfc = 11.694 |
| 14 | | | | | | |
| 15 | Source | | Effluent Limit Calculations | | | |
| 16 | PENTOXSD TRG | 5.1f | AML MULT = 1.231 | | | |
| 17 | PENTOXSD TRG | 5.1g | AVG MON LIMIT (mg/l) = 0.500 | | BAT/BPJ | |
| 18 | | | 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) |

# APPENDIX C

FACILITY MAP AND SCHEMATIC


WOODWARD
Glosser View
Missionary Ch
Cem
Water Tank
Nagel
SUSQUEH
EAGLE
Bender
STATE GAME
JHA
Companies

# APPENDIX D

## eDMR NUTRIENT DATA

| DMR RECEIVED DATE | REPORT STATUS | DMR VERSION 1 LATE IND | OUTFALL | DISCHARGE | MONITORING LOCATION | PARAMETER CODE | PARAMETER | LOAD UNITS | LOAD 1 VALUE | LOAD 1 LIMIT | LOAD 1 SBC | CONC UNITS | CONC 2 VALUE | CONC 2 LIMIT | CONC 2 SBC | SAMPLE FREQUENCY | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 04/10/2019 | Submitted | Yes | 001 | Yes | Final Effluent | 00600 | Total Nitrogen | lbs/day | 1.7 | Monitor and Report | Average Monthly | mg/L | 1.7 | Monitor and Report | Average Monthly | 1/year | Grab |
| 01/06/2020 | Submitted | No | 001 | Yes | Final Effluent | 00600 | Total Nitrogen | lbs/day | 0.17 | Monitor and Report | Average Monthly | mg/L | 33 | Monitor and Report | Average Monthly | 1/year | Grab |
| 12/21/2020 | Submitted | No | 001 | Yes | Final Effluent | 00600 | Total Nitrogen | lbs/day | 0.03 | Monitor and Report | Average Monthly | mg/L | 6 | Monitor and Report | Average Monthly | 1/year | Grab |
| 04/10/2019 | Submitted | Yes | 001 | Yes | Final Effluent | 00665 | Total Phosphorus | lbs/day | 3.2 | Monitor and Report | Average Monthly | mg/L | 3.2 | Monitor and Report | Average Monthly | 1/year | Grab |
| 01/06/2020 | Submitted | No | 001 | Yes | Final Effluent | 00665 | Total Phosphorus | lbs/day | 0.014 | Monitor and Report | Average Monthly | mg/L | 2.8 | Monitor and Report | Average Monthly | 1/year | Grab |
| 12/21/2020 | Submitted | No | 001 | Yes | Final Effluent | 00665 | Total Phosphorus | lbs/day | 0.015 | Monitor and Report | Average Monthly | mg/L | 3 | Monitor and Report | Average Monthly | 1/year | Grab |