pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0086771**
Facility Type	**Municipal**	APS ID	**829951**
Major / Minor	**Minor**	Authorization ID	**1247820**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Centre Township Municipal Authority**	Facility Name	**Centre Township Dauberville STP**
Applicant Address	449 Bucks Hill Road	Facility Address	1281 Railroad Road
	Mohrsville, PA 19541-9340		Dauberville, PA 19533
Applicant Contact	David Phillips	Facility Contact	David Phillips
Applicant Phone	(610) 926-8833	Facility Phone	(610) 926-8833
Client ID	93104	Site ID	257952
Ch 94 Load Status	Not Overloaded	Municipality	Centre Township
Connection Status	No Limitations	County	Berks
Date Application Received	September 27, 2018	EPA Waived?	Yes
Date Application Accepted	October 16, 2018	If No, Reason	

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

Summary of Review

1.0 General Discussion

This fact sheet supports the re-issuance of an existing NPDES permit for discharge of treated domestic wastewater from Centre Township Municipal Authority(Authority)-Dauberville wastewater treatment plant. The Authority owns, operates, and maintains the wastewater treatment plant. The facility is located in Centre Township, Berks County and serves Centre Township. The sewer collection system is not combined and there is no bypasses or overflows approved in the collection system. There are two pump stations within the collection system denoted as Dauberville and Mohrsville pump stations that help convey influent to the treatment plant. The treatment plant is an extended aeration secondary treatment facility with a hydraulic design capacity of 0.08 MGD and an organic design capacity of 160 lbs/day- BOD_5. The discharge goes to Irish Creek, a tributary to Schuylkill River and is classified for Warm Water Fishery(WWF) and Migratory Fishes(MF). Dauberville Lake is directly upstream of the discharge. The existing NPDES permit was issued on March 6, 2014 with an effective date of April 1, 2014 and expiration date of March 31, 2019. The applicant submitted a timely NPDES renewal application to the Department and is currently operating under the terms and conditions in the existing permit under administrative extension provisions pending Department action on the renewal application. A topographic map showing the discharge location is presented in attachment A.

1.1 Sludge use and disposal description and location(s)

Sludge is digested utilizing 2 digesters and dewatered using reed beds. Sludge is sometimes hauled out to Exeter Township wastewater treatment plant or to the Pioneer Crossing Landfill for further processing and disposal.

Approve	Deny	Signatures	Date
X		J. Pascal Kwedza, P.E. / Environmental Engineer	February 6, 2021
x		Daniel W. Martin, P.E. / Environmental Engineer Manager	February 26, 2021
x		Maria D. Bebenek, P.E./Program Manager	February 26, 2021

Summary of Review

1.2 Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

1.3 Changes to the existing permit

- Effluent sample type has been changed from 8-Hr composite to 24-Hr composite for consistency with influent sample type in the permit. Inspection report indicated the facility has capability and is currently set up for 24-Hr sample collection.
- Total Nitrogen and Total Phosphorus sample type has been changed from grab to 24-Hr composite as well

1.3.1 Existing Permit Limits and Monitoring Requirements

DISCHARGE LIMITATIONS								MONITORING REQUIREMENTS	
	Mass Units lbs/day			Concentrations mg/l					
Discharge Parameter	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Inst. Maximum	Monitoring Frequency	Sample Type
Flow (mgd)	Monitor & Report	XXX	Monitor & Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	XXX	From 6.0 to 9.0 inclusive				1/day	Grab
D.O.	XXX	XXX	XXX	Minimum of 5.0 mg/l at all times				1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	XXX	1.6	1/day	Grab
TSS	20	XXX	XXX	30	XXX	XXX	60	2/month	8-hour comp
$CBOD_5$	16	XXX	XXX	25	XXX	XXX	50	2/month	8-hour comp
NH3N	13	XXX	XXX	20	XXX	XXX	40	2/month	8-hour comp
Fecal Col. (5/1 to 9/30)	XXX	XXX	XXX	200	XXX	XXX	1,000	2/month	Grab
Fecal Col. (10/1 to 4/30)	XXX	XXX	XXX	2,000	XXX	XXX	10,000	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	XXX	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	XXX	1/year	Grab

1.4.0 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.08
Latitude	40º 27' 32"	Longitude	-75º 58' 53"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Irish Creek (WWF, MF)	Stream Code	02153
NHD Com ID	26000296	RMI	0.45
Drainage Area	25 sqmi	Yield (cfs/mi^2)	0.23
Q_{7-10} Flow (cfs)	5.8	Q_{7-10} Basis	USGS Gage Station
Elevation (ft)		Slope (ft/ft)	
Watershed No.	3-B	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired for Aquatic Life		
Cause(s) of Impairment	Siltation		
Source(s) of Impairment	Agriculture and Erosion		
TMDL Status	Developed by DEP, dated August 2012.	Name	Irish Creek TMDL (for Sedimentation)

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

Nearest Downstream Public Water Supply Intake		Borough of Pottstown Water	
PWS Waters	Schuylkill River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	>32

Changes Since Last Permit Issuance: None

Other Comments:

1.4.1 Water Supply Intake

The nearest downstream water supply intake is approximately 32 miles downstream by Borough of Pottstown Water and Sewer Authority on Schuylkill River in West Pottsgrove Township, Chester County. No impact is expected from this discharge.

2.0 Treatment Facility Summary				
Treatment Facility Name: Centre Township Dauberville STP				
WQM Permit No.	**Issuance Date**			
0696407	July 23, 1997			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Hypochlorite	0.08
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.08	160	Not Overloaded	Aerobic Digestion	Combination of methods

Changes Since Last Permit Issuance: None

2.1 Facility description

The treatment system consists of a manual bar screen, an aerated equalization (EQ) tank, 2 aeration tanks and 2 clarification tanks. The treatment plant is run as two trains with a common chlorine contact tank and a post-aeration chamber. There are 2 aerobic digesters and 2 reed beds for sludge processing. Effluent is disinfected with liquid chlorine and de-chlorinated before continuously discharged to Irish Creek. Tablet chlorinator is available as a back-up for disinfection. Reed bed filtrate and digester decant are returned to the EQ tank using lift pumps. Ultrasonic flow meter is used for measuring effluent.

2.2 Chemicals

- Lime or Aluminum Chloride is used for pH adjustment
- Sodium hypochlorite (NaOCl) is used for disinfection.
- Polymer is used in the digester for sludge flocculation and thickening.

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from January 1, 2020 to December 31, 2020)

Parameter	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20
Flow (MGD) Average Monthly	0.03347	0.03239	0.03173	0.03408	0.03674	0.03329	0.03208	0.03147	0.03422	0.03379	0.03366	0.03488
Flow (MGD) Daily Maximum	0.08717	0.05664	0.04788	0.0555	0.0923	0.07303	0.04398	0.03924	0.05599	0.05028	0.04925	0.06875
pH (S.U.) Minimum	6.8	7.14	7.27	7.07	6.36	6.99	7.1	6.7	6.82	6.88	6.67	6.83
pH (S.U.) Instantaneous Maximum	8.27	8.28	8.82	8.29	8.18	7.91	7.89	8.21	7.76	7.96	7.7	7.68
DO (mg/L) Minimum	8.38	6.79	7.1	6.07	5.11	6.11	5.22	5.35	7.38	7.43	7.87	5.14
TRC (mg/L) Average Monthly	< 0.09	0.10	0.14	0.09	< 0.23	< 0.13	0.10	0.13	0.14	0.14	0.08	0.24
TRC (mg/L) Instant. Maximum	0.20	0.52	0.45	0.36	1.25	0.39	0.33	0.45	0.58	0.78	0.21	0.59
CBOD5 (lbs/day) Average Monthly	0.5	< 0.5	0.6	< 0.5	< 2	< 0.8	< 0.6	0.8	0.8	< 0.8	1	4
CBOD5 (mg/L) Average Monthly	2.2	< 2.1	2.3	< 2	< 3.9	< 2	< 2.1	3	3.4	< 3.3	4.8	8.4
BOD5 (lbs/day) Raw Sewage Influent Ave. Monthly	106	66	113	73	82	130	67	58	60	60	79	206
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	120	74	130	96	83	204	71	62	74	68	103	294
BOD5 (mg/L) Raw Sewage Influent Ave. Monthly	516	283	414	291	308	291	233	230	240	216	286	429
TSS (lbs/day) Average Monthly	< 0.9	< 1	< 1	< 1	< 2	< 2	< 1	< 1	< 1	< 1	< 2	8
TSS (lbs/day) Raw Sewage Influent Ave. Monthly	35	28	31	38	55	42	41	45	26	17	22	207
TSS (lbs/day) Raw Sewage Influent Daily Maximum	42	39	39	41	74	64	55	66	28	20	26	330
TSS (mg/L) Average Monthly	< 4	< 4	< 4	< 4	< 6	< 4	< 4	< 4.8	< 4	< 4	< 5.8	16.4

TSS (mg/L) Raw Sewage Influent Ave. Monthly	173	130	116	161	213	96.3	135	177	105	63	79.4	412
Fecal Coliform (CFU/100 ml) Geometric Mean	40	9	< 6	2	14	2	< 3	6	5	5	13	574
Fecal Coliform (CFU/100 ml) Instant. Maximum	204	16	31	3	3000	5	9	12	8	24	34	2500
Ammonia (lbs/day) Average Monthly	< 0.02	< 0.03	< 0.03	< 0.02	< 0.6	< 0.2	< 0.03	< 0.03	< 0.1	< 0.04	< 0.03	< 0.05
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 1.3	< 0.39	< 0.1	< 0.1	< 0.44	< 0.13	< 0.1	< 0.1

3.2 Effluent Violations for Outfall 001, from: February 1, 2020 to: December 31, 2020

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	08/31/20	IMAX	3000	CFU/100 ml	1000	CFU/100 ml

DMR summary for the past 12-month of operation is attached in section 3.1. One DMR violation noted for the past 12 months of operation as shown in section 3.2 above. The violation appears to be one-time occurrence. The facility's compliance record is good

3.4 Summary of Inspections:

The facility has been inspected several times during the permit cycle. No effluent violation noted during plant inspections

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .08
Latitude 40º 27' 49.42" **Longitude** -75º 58' 33.47"
Wastewater Description: Sewage Effluent

4.1 Basis for Effluent Limitations

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

4.1.1 Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: Weekly average limits for Total Suspended Solids and $CBOD_5$ are not applicable to this discharge because sampling frequency is less than weekly.

4.2 Mass-Based Limits

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

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

4.3 Water Quality-Based Limitations

4.3.1 Receiving Stream

The receiving waterbody is Irish Creek and the secondary receiving water body is the Schuylkill River. According to 25 PA § 93.9f, Irish Creek and Schuylkill River are protected for warm water fishes (WWF) and Migratory Fish (MF). They are located in Drainage List F and State Watershed 3-B. Irish Creek has been assigned a stream code of 02153. According to the Department's Integrated Water Quality Monitoring and Assessment Report, Irish Creek is impaired for Aquatic life caused by siltation from Agriculture and erosion. Irish Creek Total Maximum Daily Load **(**TMDL) for sediment was completed and public participation completed in 2012, but it appears the final TMDL was not approved by EPA. Schuylkill River is impaired due to PCB. Schuylkill River PCB TMDL was completed and approved by EPA in April 2007. See TMDL Requirement section of the report for further discussion on TMDL and wasteload allocation for this facility.

4.3.2 Stream flows

The Technical Support Document for Water Quality-Based Toxics Control (TSD) (EPA, 1991) and the Pennsylvania Water Quality Standards PA WQS) recommend the flow conditions to use in calculating water quality-based effluent limits (WQBELs) using steady-state modeling. The TSD and the PA WQS state that WQBELs intended to protect aquatic life uses should be based on the lowest seven-day average flow rate expected to occur once every ten years ($Q_{7\text{-}10}$) for chronic criteria and the lowest one-day average flow rate expected to occur once every ten years ($Q_{1\text{-}10}$) for acute criteria. However, because the chronic criterion for ammonia is a 30-day average concentration not to be exceeded more than once every three years, EPA has used the $Q_{30\text{-}10}$ for the chronic ammonia criterion instead of the $Q_{7\text{-}10}$. The $Q_{30\text{-}10}$ is a biologically based design flow intended to ensure an excursion frequency of once every three years for a 30-day average flow rate. These flows were determined by correlating with the yield of USGS gage No. 01470500 on Schuylkill River near Berne. The $Q_{7\text{-}10}$ and drainage area at the gage is 82. 3 ft^3/s) and 355mi^2 respectively. The resulting yields are as follows:

- $Q_{7\text{-}10}$ = (82.3ft^3/s)/355 mi^2 = 0.23$ft^3/s/ mi^2$
- $Q_{30\text{-}10}$ / $Q_{7\text{-}10}$ = 1.23
- $Q_{1\text{-}10}$ / $Q_{7\text{-}10}$ = 0.84

The drainage area at the point of discharge taken from the previous factsheet = 25 mi^2.

The $Q_{7\text{-}10}$ at discharge = 25 mi^2 x 0.23 $ft^3/s/mi^2$ = 5.8 ft^3/s.

4.3.3 NH_3N Calculations

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

- Discharge pH = 6.9 (DMR median)
- Discharge Temperature = 25 ^{o} C (Default)
- Stream pH = 7.0 (Default)
- Stream Temperature = 20 ^{o}C (Default)
- Background NH_3-N = 0.0 (default)

4.3.4 $CBOD_5$ & NH_3-N

There are no point source discharges closed to this discharge that will interact with it significantly, therefore only this discharge was modelled using WQM 7.0 stream model. The WQM 7.0 stream model results presented in attachment B indicate a limit of 25 mg/l for $CBOD_5$ is adequate to protect the water quality of the stream. This limit is consistent with the existing permit and the facility has been consistently achieving below this limitation. Therefore, a limit of 25mg/l average monthly limit(AML) and 50 mg/l IMAX is recommended for this permit cycle. Mass limit calculation follows the equation presented in section 4.2.

The attached WQM 7.0 stream model result also indicate a limit of 25 mg/l for NH_3-N is necessary to protect aquatic life from toxicity effects. However, the existing limit of 20mg/l required by Delaware River Basin Commission (DRBC) WQ Regulations, 18 CFR Part 410 to non-tidal receiving waters within their jurisdiction is more stringent and will remain in the permit due to anti-backsliding restrictions. Mass limit calculation follows the equation presented in section 4.2.

4.3.5 Dissolved Oxygen

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

4.3.6 Total Residual Chlorine

The results presented in attachment C utilizes the equations and calculations presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The

Guidance References Chapter 92a, Section 92a.48(b) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The calculation was done with acute PMF of 0.5 taken from running DEP's Toxic Management Spreadsheet. The attached result indicates that a technology-based limit of 0.5 mg/l and 1.6 mg/l IMAX would be needed to prevent toxicity concerns. This limit is consistent with the existing permit and the facility is complying with the limitation.

4.3.7 Toxics

There are no parameters of concern associated with this discharge. Therefore, no reasonable potential analysis was conducted for toxic parameters.

4.3.8 Delaware River Basin Commission (DRBC) Requirements

DRBC regulations and policies are applicable to NPDES permits for all facilities within the Delaware River basin. A copy of the draft permit will be forwarded to the DRBC because the facility is designed to discharge a flow of 0.080 MGD to Irish Creek within the jurisdiction of the DRBC. However, the actual discharge flow as an average, is less than 0.05MGD and the discharge is not located in "Special Protection Waters" therefore, the Department will proceed to renew this NPDES permit without waiting for any review by the DRBC. Sewage dischargers that are not in DRBC's "Special Protection Waters" and do not discharge more than 0.05MGD do not trigger DRBC project reviews and do not qualify as docket items for future DRBC hearings.

4.3.9 Influent BOD and TSS Monitoring

The permit will include influent CBOD5 and TSS monitoring at the same frequency as is done for effluent in order to implement Chapter 94.12 and assess percent removal requirements.

4.3.10 Industrial Users

The application indicated the wastewater treatment plant receives industrial wastewater from Apeeling Fruits which is a food processing company. The flow volume is low and is not expected to impact the treatment facility negatively. Therefore, no further action is warranted at this time.

4.3.11 Pretreatment Requirements

The design annual average flow of the treatment plant is 0.08 MGD and the facility receives low flow from a food processing company which does not require compliance with pretreatment standards, however, the permit contains standard conditions requiring the permittee to monitor and control industrial users if applicable.

4.3.12 Nutrient Monitoring

The existing annual monitoring of Total Phosphorus and Total Nitrogen following DEP's SOP will remain in the current permit to continue to collect nutrient data for discharges to waterbodies. This discharge is located outside of the Chesapeake Bay watershed, therefore no Chesapeake Bay TMDL requirement was considered.

4.3.13 Stormwater Monitoring

No stormwater outfall is associated with this facility

4.3.14 Total Suspended Solids(TSS):

There is no water quality criterion for TSS. The existing limits of 30 mg/L based on the minimum level of effluent quality attainable by secondary treatment. will remain in the permit. The facility is meeting the limitation. Mass limit calculation follows the equation presented in section 4.2.

4.3.15 TMDL

The completed Irish Creek TMDL allocated a waste load of 20 lb/day TSS for this facility. It appears the wasteload was based on the design capacity and a concentration of 30mg/l. The facility has been complying with the proposed wasteload

allocation. The discharge does not go directly to the main stem of the Schuylkill River and is not required to comply with the PCB monitoring requirement of the Schuylkill River PCB TMDL.

5.0 Other Requirements

5.1 The permit contains the following special conditions:

1. Stormwater Prohibition. 2. Approval Contingencies, 3. Proper Waste/solids Management, 4. Restriction on receipt of hauled in waste under certain conditions. 5. Chlorine Minimization

5.2 Flow Monitoring

Monitoring of effluent flow volume required in the existing permit will be continued per 40 CFR § 122.44(i)(1)(ii).

5.3 Anti-backsliding

Not applicable to this permit

5.4 Anti-Degradation (93.4)

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

5.5 Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

5.6 303d Listed Streams

The discharge is located on a stream segment that is designated on the 303(d) list as impaired for aquatic life, and the impairment is due to siltation from Agriculture and erosion. Irish Creek TMDL for sediment was completed and public participation completed in 2012, but it appears the final TMDL was not approved by EPA. However, the wasteload allocated to this discharge in the TMDL is in the permit and the facility is in compliance with it. Nothing further is warranted at this time.

5.7 Basis for Effluent and Surface Water Monitoring

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

5.8 Effluent Monitoring

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

6.0 Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

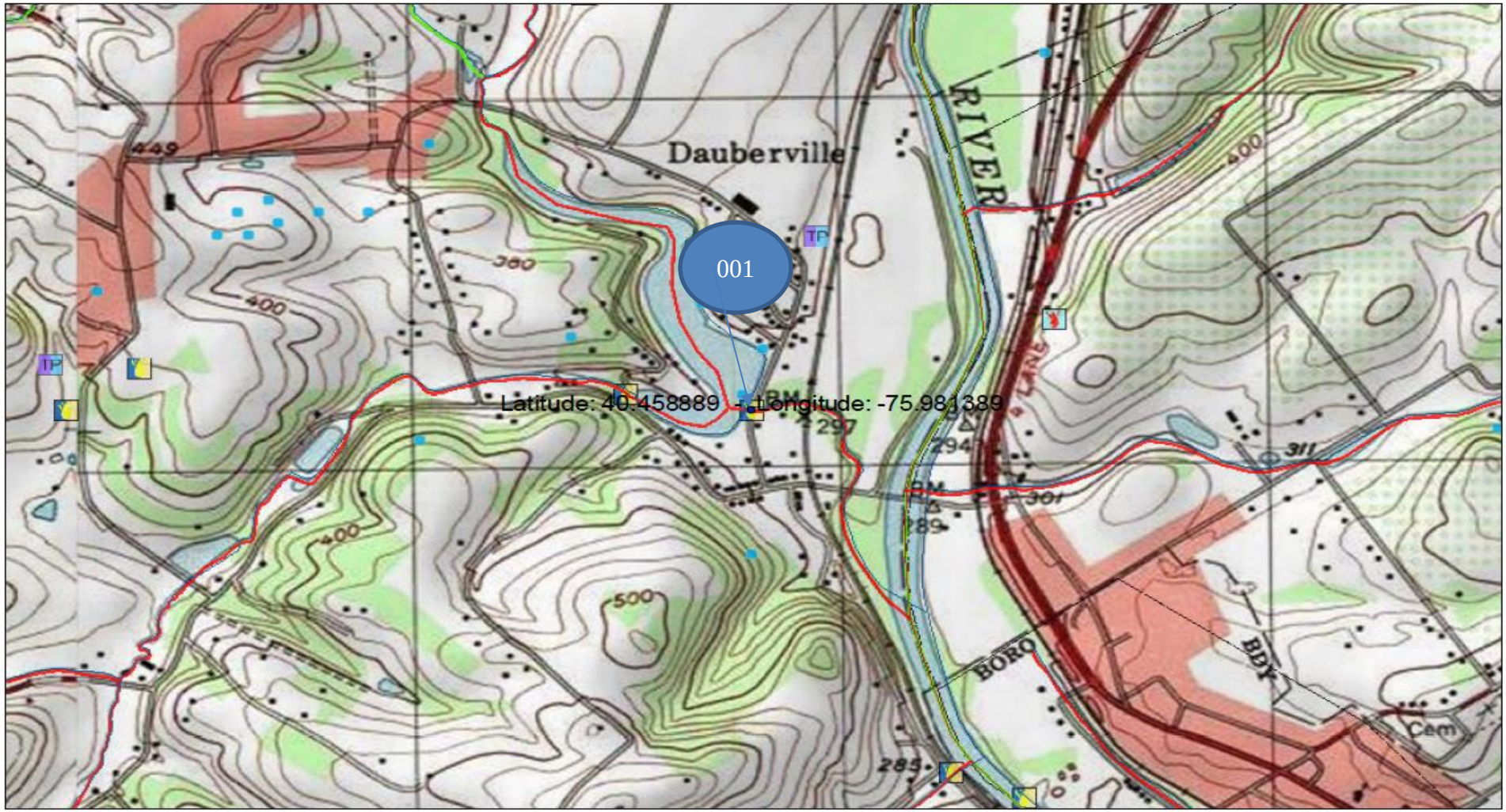
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.50	XXX	1.60	1/day	Grab
CBOD5	16	XXX	XXX	25	XXX	50	2/month	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
TSS	20	XXX	XXX	30	XXX	60	2/month	24-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Total Nitrogen	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	24-Hr Composite
Ammonia	13	XXX	XXX	20	XXX	40	2/month	24-Hr Composite
Total Phosphorus	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	24-Hr Composite

Compliance Sampling Location: At Outfall 001

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

8. Attachments

A. Topographical Map



February 14, 2021

1:18,056
0 0.15 0.3 0.6 mi
0 0.25 0.5 1 km

B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
03B	2153	IRISH CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
0.450	Dauberville STP	PA0086771	0.080	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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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
03B	2153	IRISH CREEK	**0.450**	280.00	25.00	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	0.230	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
Daubenville STP	PA0086771	0.0800	0.0800	0.0800	0.000	25.00	6.90

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

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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
03B	2153	IRISH CREEK	**0.010**	270.00	25.20	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	0.230	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

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WQM 7.0 D.O. Simulation

SWP Basin	Stream Code	Stream Name
03B	2153	IRISH CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.450	0.080	20.105	6.998
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
31.779	0.671	47.363	0.275
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.48	0.300	0.53	0.706
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.175	11.295	Tsivoglou	5
Reach Travel Time (days)			
0.098			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.010	2.48	0.52	8.23
0.020	2.47	0.52	8.23
0.029	2.46	0.52	8.23
0.039	2.46	0.51	8.23
0.049	2.45	0.51	8.23
0.059	2.44	0.51	8.23
0.068	2.43	0.50	8.23
0.078	2.43	0.50	8.23
0.088	2.42	0.50	8.23
0.098	2.41	0.49	8.23

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WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
03B	2153	IRISH CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.450	Dauberville STP	9.6	50	9.6	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
0.450	Dauberville STP	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)		
0.45	Dauberville STP	25	25	25	25	5	5	0	0

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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	0.84	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.23	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

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WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
03B	2153	IRISH CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
0.450	5.75	0.00	5.75	.1238	0.00430	.671	31.78	47.38	0.28	0.098	20.11	7.00
Q1-10 Flow												
0.450	4.83	0.00	4.83	.1238	0.00430	NA	NA	NA	0.25	0.107	20.12	7.00
Q30-10 Flow												
0.450	7.07	0.00	7.07	.1238	0.00430	NA	NA	NA	0.31	0.087	20.09	7.00

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C. TRC Calculation

TRC EVALUATION			
Input appropriate values in A3:A9 and D3:D9			
5.8	= Q stream (cfs)	0.5	= CV Daily
0.08	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.5	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 7.494	1.3.2.iii	WLA cfc = 14.586
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 2.792	5.1d	LTA_cfc = 8.480

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)**

(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Yc*Qs*0.011)/(1.547*Qd)....
....*EXP(-K*CFC_tc/1440)))+Xd+(CFC_Yc*Qs*Xs/1.547*Qd))*(1-FOS/100)

D.