pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0261378**
Facility Type	**Non-Municipal**	APS ID	**698402**
Major / Minor	**Minor**	Authorization ID	**1343191**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Sheetz Inc.**	Facility Name	**Sheetz Clarks Ferry Store 461**
Applicant Address	5700 6th Avenue	Facility Address	54 Bevenue Road
	Altoona, PA 16602-1111		Duncannon, PA 17020
Applicant Contact	David Dodson	Facility Contact	David Dodson
Applicant Phone	(814) 239-1402	Facility Phone	(814) 239-1402
Client ID	36334	Site ID	723673
Ch 94 Load Status	Not Overloaded	Municipality	Reed Township
Connection Status	No Limitations	County	Dauphin
Date Application Received	February 17, 2021	EPA Waived?	Yes
Date Application Accepted	March 3, 2021	If No, Reason	
Purpose of Application	NPDES permit renewal		

Summary of Review

1.0 General Discussion

This fact sheet supports the renewal of an existing NPDES permit for discharge of treated wastewater from the Clark Ferry Sheetz wastewater treatment plant. Sheetz Inc. owns, operates, and maintains the wastewater treatment plant located in Reed Township, Dauphin County. The sequential batch reactor (SBR) tertiary treatment plant discharges treated wastewater to outfall 002 on Susquehanna River, which is classified for warm water fishes (WWF) and migratory fishes. The design capacity of the facility is 0.0075 MGD. The outfall is closed to the existing outfall of Pilot Travel Center's discharge. The existing permit was issued on November 22, 2016 with an expiration date of November 30, 2021. 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):

Digested sludge is hauled out by a licensed hauler periodically to other facilities for further processing.

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-

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	January 27, 2022
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	February 1, 2022
X		*Maria D. Bebenek* Maria D. Bebenek, P.E. / Program Manager	February 1, 2022

Summary of Review

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.

1.3.0 Changes to the existing permit

- Annual monitoring of E. Coli has been added
- Ammonia-Nitrogen monitoring has been added to the permit to ensure treatment efficiency.

1.3.1 Existing permit limits and monitoring requirements

Discharge Parameter	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
	Mass Units			Concentrations			Minimum Measurement Frequency	Required Sample Type
	Total Monthly (lbs/mo)	Daily Maximum (lbs/day)	Total Annual (lbs/year)	Monthly Average (mg/l)	Daily Maximum (mg/l)	Inst. Maximum (mg/l)		
Flow (mgd)	Monitor & Report Avg	Monitor & Report	XXX	XXX	XXX	XXX	1/day	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 Suspended Solids	XXX	XXX	XXX	30	XXX	60	2/month	8-hour comp
$CBOD_5$	XXX	XXX	XXX	25	XXX	50	2/month	8-hour comp
Fecal Coliform (No./100 ml) Nov 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Oct 31	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded

Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Kjeldahl---N	Report	XXX	XXX	Report	XXX	2/month	Grab
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/month	Grab
Total Nitrogen	Report	Report	XXX	Report	XXX	2/month	Grab
Total Phosphorus	Report	Report	XXX	Report	XXX	2/month	Grab
Net Total Nitrogen	Report	38	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	3.8	XXX	XXX	XXX	1/month	Grab

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	.0075
Latitude	40º 24' 31"	Longitude	-77º 0' 28"
Quad Name	Duncannon	Quad Code	1529
Wastewater Description:	Sewage Effluent		
Receiving Waters	Susquehanna River	Stream Code	06685
NHD Com ID	54975269	RMI	86.31
Drainage Area	19700	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	1970	Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	6-C	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining recreational Use, Not attaining fish consumption Use		
Cause(s) of Impairment	Unknown		
Source(s) of Impairment	PCB		
TMDL Status		Name	

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

Nearest Downstream Public Water Supply Intake	Suez Water PA (formerly United Water)		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	>11

Changes Since Last Permit Issuance: None

Water Supply Intake:

The nearest downstream water supply intake is approximately 11 miles downstream by Suez Water Company on the Susquehanna River above Fort Hunter, Dauphin County. The discharge will not impact the intake because of the distance and dilution.

2.0 Treatment Facility Summary

Treatment Facility Name: Sheetz Clarks Ferry

WQM Permit No.	Issuance Date
2221401	11/22/2016
2210401	2/27/2013

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Sequencing Batch Reactor W/Sol Removal	Ultraviolet	0.0075

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0075	156	Not Overloaded	Aerobic Digestion	Combination of methods

Changes Since Last Permit Issuance: Two 500-gallon polyethylene tanks with baffles have been installed on experimental basis as polishing sedimentation tanks under permit No. 2221402

2.1 Treatment Facility Description

The existing 0.0075MGD plant has a grease trap, influent duplex grinder pump station, fine screen, equalization, biological treatment tanks with clarifiers, aerobic digestion tanks and UV for disinfection. The system is a two train 0.0025MGD and 0.005mgd treatment facility with a common UV unit for disinfection. An additional two 5000-gallon equalization tank has been added and Two 500-gallon polyethylene tanks with baffles have been installed on experimental basis as polishing sedimentation tanks to be retained permanently based on performance to replace the membrane filers. An 8-inch gravity line is installed to convey effluent to Susquehanna River. An effluent pump station is added as back-up to pump effluent to the Susquehanna River via 2-inch force main during high river levels to avoid back-up in the effluent line.

2.2 Treatment Chemicals

Soda Ash for alkalinity and pH adjustment and Stern PAC for phosphorus reduction.

3.0 Compliance History

3.1 DMR Data for Outfall 002 (from December 1, 2020 to November 30, 2021)

Parameter	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20
Flow (MGD) Average Monthly	0.00339	0.00335	0.00323	0.00373	0.00467	0.00368	0.00326	0.00331	0.00233	0.00185	0.00198	0.00177
Flow (MGD) Daily Maximum	0.00695	0.00566	0.0059	0.00802	0.00986	0.00609	0.00487	0.00551	0.0044	0.00353	0.00408	0.00309
pH (S.U.) Minimum	6.48	6.76	6.89	6.48	6.7	6.66	6.93	7.1	7.31	6.78	7.28	6.43
pH (S.U.) Maximum	8.59	8.41	8.51	8.35	8.26	8.22	8.25	8.61	8.41	8.3	8.6	8.43
DO (mg/L) Minimum	8.81	6.9	5.61	5.52	5.06	5.35	6.0	5.0	6.12	6.1	7.95	7.69
CBOD5 (mg/L) Average Monthly	< 3.3	< 2.0	< 2.7	< 2.1	< 20.7	< 2.0	6.6	13.1	23.4	5.4	3.6	< 2.2
TSS (mg/L) Average Monthly	17.3	8.2	24.8	18.0	21.8	< 14.2	< 20.7	56.1	72.5	21.4	8.0	< 4.2
Fecal Coliform (No./100 ml) Geometric Mean	< 1	668	3	< 1	92	< 3	< 5	2	138	< 2	9	< 1
Fecal Coliform (No./100 ml) Instant. Maximum	1	9100	5	1	600	10	21	6	208	5	19	2
UV Transmittance (%) Minimum	17	44	37	12	0.01	10	19	0.01	2	0.01	35	12
Nitrate-Nitrite (mg/L) Average Monthly	129	106	117	96.2	28	69.8	112	101.1	125	122	87.9	188
Nitrate-Nitrite (lbs) Total Monthly	84	53	95	64	35	61	52	44	51	50	50	77
Total Nitrogen (mg/L) Average Monthly	142	< 106.51	< 117	98.2	79.6	< 70.3	124	111.9	139	137.91	139	< 188
Total Nitrogen (lbs) Effluent Net Total Monthly	91	< 53	< 95	65	98	< 61	60	50	56	57	79	< 77
Total Nitrogen (lbs) Total Monthly	91	< 53	< 95	65	98	< 61	60	50	56	57	79	< 77
Total Nitrogen (lbs) Effluent Net Total Annual			< 38									
Total Nitrogen (lbs) Total Annual			< 868									

TKN (mg/L) Average Monthly	13.09	< 0.51	< 0.5	1.83	51.6	< 0.5	12.29	10.82	13.9	15.96	51.1	< 0.5
TKN (lbs) Total Monthly	7	< 0.3	< 0.4	1	64	< 0.5	7	5	5	7	29	< 0.2
Total Phosphorus (mg/L) Aver. Monthly	0.55	< 0.18	0.71	0.36	0.59	0.23	1.17	0.9	1.68	0.88	2.44	< 0.13
Total Phosphorus (lbs) Effluent Net Total Monthly	0.3	< 0.09	0.8	0.2	0.7	0.2	0.5	0.4	0.6	0.4	1	< 0.05
Total Phosphorus (lbs) Total Monthly	0.3	< 0.09	0.8	0.2	0.7	0.2	0.5	0.4	0.6	0.4	1	< 0.05
Total Phosphorus (lbs) Effluent Net Total Annual			< 3.0									
Total Phosphorus (lbs) Total Annual			< 6									

3.2 Effluent Violations for Outfall 002, from: January 1, 2021 To: November 30, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TSS	04/30/21	Avg Mo	56.1	mg/L	30.0	mg/L
TSS	03/31/21	Avg Mo	72.5	mg/L	30.0	mg/L
Fecal Coliform	10/31/21	Geo Mean	668	No./100 ml	200	No./100 ml
Fecal Coliform	10/31/21	IMAX	9100	No./100 ml	1000	No./100 ml

3.3 Summary of Discharge Monitoring Reports (DMRs)**:**

DMRs review for the facility for the last 12 months of operation, presented on the table above in section 3.1 indicate permit limits have been met most of the time. Two Fecal Coliform and two TSS effluent violations were noted on DMRs during the period reviewed and presented in section 3.2 above. The violations appear to be operation related. The permittee recently installed a 2 polishing sedimentation tanks to address violations.

3.4 Summary of Inspections:

The facility has been inspected a couple times during last permit cycle. No effluent violations identified during plant inspections, but two notices of violations were sent for DMR violations for TSS on 8/6/2021 and for TSS and DO on 6/27/2019.

4.0 Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** .0075
Latitude 40º 24' 31.00" **Longitude** -77º 0' 28.00"
Wastewater Description: Sewage Effluent

4.1 Basis for Effluent Limitations

In general, the Clean Water Act (AWA) 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.

4.2 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: UV is used for disinfection at the facility, but chlorine has been used as back up during UV breakdowns, therefore TRC monitoring and reporting requirement will be added in part C of the permit. UV light transmittance monitoring is required in the permit. Weekly average limits for CBOD5 and TSS not applicable for this discharge.

4.3 Water Quality-Based Limitations for outfall 002

4.3.1 Receiving Stream

The receiving stream is the Susquehanna River. According to 25 PA § 93.9o, this stream is protected for Warm Water Fishes (WWF) and Migratory Fishes (MF). It is located in Drainage List O and State Watershed 6-C. It has been assigned stream code 06685. According to the Department's Integrated Water Quality Monitoring and Assessment Report, this stream is attaining its and supporting its designated recreational use but it's not attaining its designated use for fish consumption It is impaired for fish consumption by PCBs (cause), the source of the impairment is unknown.

4.3.2 Streamflows

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No. 01570500 on Susquehanna River in Harrisburg. The Q_{7-10} and drainage area at the gage is 2610 ft3/s and 24100mi^2 respectively. The resulting yields are as follows:

- Q_{7-10} = (2610 ft^3/s)/ 24100 mi^2 = 0.10 $ft^3/s/ mi^2$
- Q_{30-10} / Q_{7-10} = 1.17
- Q_{1-10} / Q_{7-10} = 0.95

The drainage area at discharge calculated from streamstats = 19700 mi^2

The Q_{7-10} at discharge = 19700 mi^2 x 0.10 $ft^3/s/mi^2$ = 1970 ft^3/s.

For WQM 7.0 modelling purposes, 25% of the flow will be used

Q_{7-10} model = 1970 ft^3/s. x 0.25 = 492.5 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 computer model of the stream:

* Discharge pH = 6.7 (July -Sept DMR median)
* Discharge Temperature = 25 ^{o} C (Default)
* Stream pH = 8.2 (Taken from WQN station at Harrisburg)
* Stream Temperature = 23.5^{o}C (Taken from WQN station at Harrisburg)
* Background NH_3-N = 0.0 (default)

4.3.4 $CBOD_5$:

WQM 7.0 Model was used to analyze the combined discharge from Sheetz and Pilot Travel Center due to the proximity of their discharges to each other. The model results presented in attachment B indicate that, for Sheetz discharge of 0.0075 MGD, an average monthly limit (AML) of 25mg/l $CBOD_5$ is adequate to protect the water quality of the stream. This limit is consistent with the existing permit and the STP has been consistently achieving below this limitation. Therefore, a limit of 25mg/l AML and 50 mg/l IMAX is recommended for this permit cycle.

4.3.5 NH_3-N:

The attached computer printout of the WQM 7.0 stream model (attachment B) also indicates that no limitation on NH_3 as a monthly average is necessary to protect the aquatic life from toxicity effects. However, twice per month monitoring of ammonia will be required in the permit to ensure treatment efficiency

4.3.6 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. 5mg/l D.O. is the minimum required for warm water fishes and will be continued in the renewed permit with a daily monitoring requirement.

4.3.7 Total Suspended Solids (TSS):

There is no water quality criterion for TSS. A limit of 30 mg/l AML will be required based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 PA § 92a.47(a)(1).

4.3.8 Toxics

A reasonable potential (RP) analysis was done for pollutants in the discharge. The discharge consists mostly of domestic wastewater with no pollutants of concern that need further analysis.

4.3.9 Chesapeake Bay Strategy

The Department formulated a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). Sewage discharges have been prioritized by Central Office based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. These limits may be achieved through a combination of treatment technology, credits, or offsets. Phase 4 (0.2 -0.4mgd) will be required to monitor and report TN and TP during permit renewal monthly and Phase 5(below 0.2mdg) will monitor

during current permit renewal once a year. However, any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. This facility falls in phase 5 but expanded from 0.0025mgd to 0.0075mgd. The Bay strategy requires a net zero load discharge for all plant expansion. The allowable total nitrogen (TN) loads for the facility is 38lbs/yr based on the existing flow of 0.0025mgd and a TN of 5mg/l. The allowable total phosphorus (TP) loads for the facility is 3.8lbs/yr based on the existing flow of 0.0025mgd and a TP of 0.5mg/l. The facility is buying credits to comply with Bay cap load requirements.

4.3.10 Fecal Coliform and E. Coli

The existing Fecal Coliform limit is consistent with the technology limits recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. Annual monitoring of E. Coli is required in the permit following DEP recommendation of 1/year monitoring of E. Coli at a minimum for sewage discharges of 0.002MGD to <0.05MGD.

5.0 Other Requirements

5.1 Anti-backsliding

Not applicable to this permit

5.2 Stormwater:

No storm water outfall is associated with this facility

5.3 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.

5.4 Class A Wild Trout Fisheries

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

5.5 303d Listed Streams

The discharge from this facility is to a stream segment that is not assessed. Susquehanna River is attaining its designated use of Recreational use but not attaining Fish Consumption use. It is impaired for fish consumption by PCB. The source of the impairment is unknown. This discharge does not contribute to the impairment; therefore, no action is warranted at this time.

5.6 Other Permit requirements

The permit contains the following special conditions:

Stormwater Prohibition, Approval Contingencies, collected screenings and other solids handling, condition to abandon use and decommission for consistency with municipal sewage facilities official plan and chlorine minimization.

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 Frequency

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" shall be reported on the DMR.

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 002, 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	Daily Minimum	Average Monthly	Maximum	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
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30.0	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Nov 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Oct 31	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Nitrate-Nitrite (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	Calculation
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite

Outfall 002 , 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	Average Weekly	Daily Minimum	Average Monthly	Maximum	Instant. Maximum		
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite

Compliance Sampling Location: Outfall 002

6.1 Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.

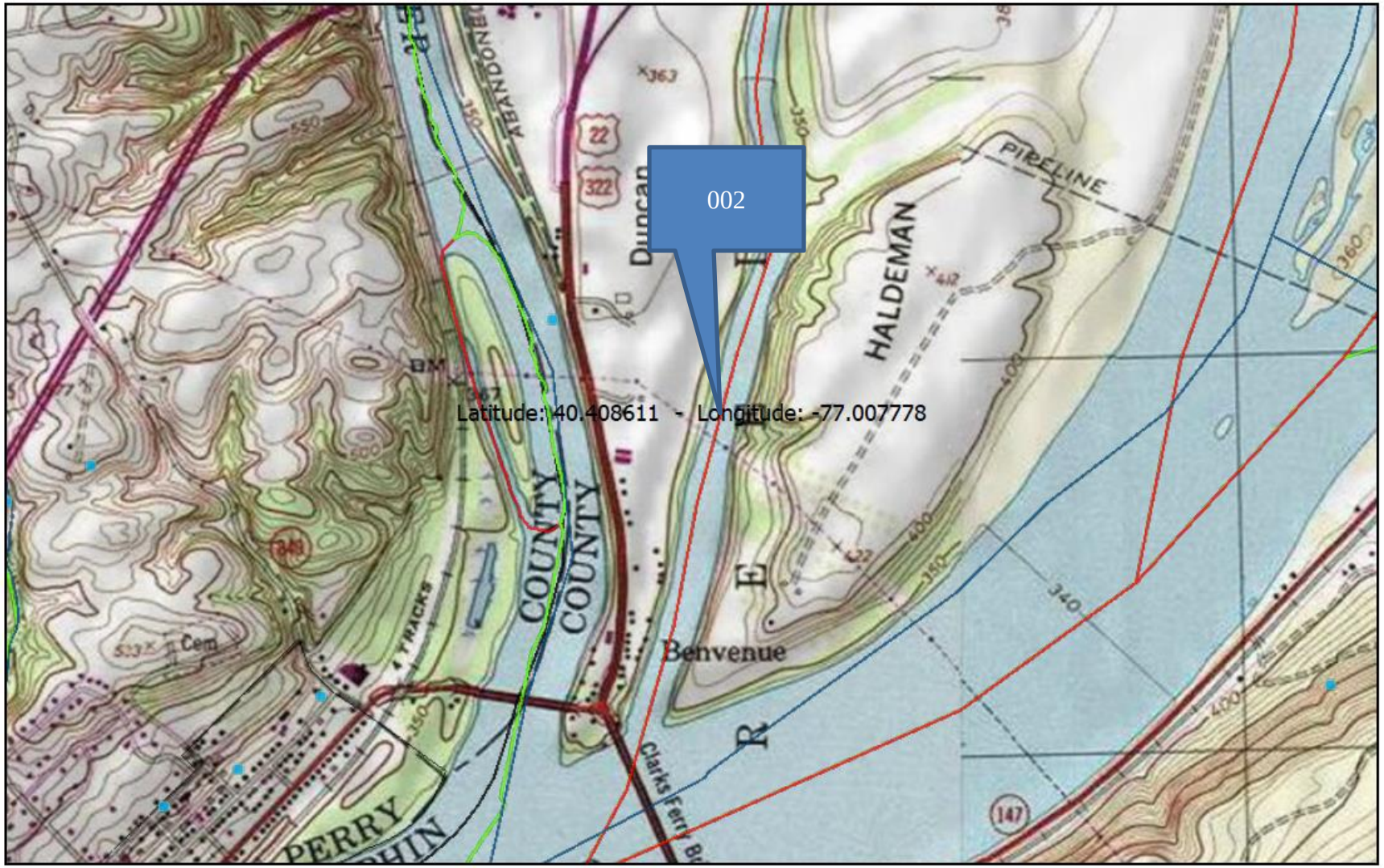
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Total Nitrogen (lbs) Effluent Net	XXX	38 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs) Effluent Net	XXX	3.8 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: Outfall 002

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)
☐	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 limitation for individual sewage permit
☐	Other:

Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
86.310	Sheetz	PA0261378	0.007	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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)
86.300	Pilot Travel Ct	PA0084115	0.008	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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
07K	6685	SUSQUEHANNA RIVER	**86.310**	345.00	19708.00	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	0.100	0.00	492.40	0.000	0.000	0.0	0.00	0.00	23.50	8.20	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
Sheetz	PA0261378	0.0075	0.0075	0.0075	0.000	25.00	6.70

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
07K	6685	SUSQUEHANNA RIVER	**86.300**	344.00	19709.00	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	0.100	0.00	492.50	0.000	0.000	0.0	0.00	0.00	23.50	8.20	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
Pilot Travel Ct	PA0084115	0.0080	0.0080	0.0080	0.000	25.00	7.40

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
07K	6685	SUSQUEHANNA RIVER	**79.230**	311.00	23423.00	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	0.100	0.00	585.60	0.000	0.000	0.0	0.00	0.00	23.50	8.20	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
Dauphin Boro	PA0024350	0.2000	0.2000	0.2000	0.000	20.00	6.80

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

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												
86.310	492.40	0.00	492.40	.0116	0.01895	1.837	284.32	154.8	0.94	0.001	23.50	8.20
86.300	492.50	0.00	492.50	.024	0.00088	1.28	482.85	377.16	0.80	0.542	23.50	8.20
Q1-10 Flow												
86.310	467.78	0.00	467.78	.0116	0.01895	NA	NA	NA	0.92	0.001	23.50	8.20
86.300	467.88	0.00	467.88	.024	0.00088	NA	NA	NA	0.77	0.558	23.50	8.20
Q30-10 Flow												
86.310	576.11	0.00	576.11	.0116	0.01895	NA	NA	NA	1.03	0.001	23.50	8.20
86.300	576.22	0.00	576.22	.024	0.00088	NA	NA	NA	0.87	0.497	23.50	8.20

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	0.95	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.17	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

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
86.310	Sheetz	1.99	50	1.99	50	0	0
86.300	Pilot Travel Ct	1.99	50	1.99	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
86.310	Sheetz	.46	25	.46	25	0	0
86.300	Pilot Travel Ct	.46	25	.46	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)		
86.31	Sheetz	25	25	25	25	5	5	0	0
86.30	Pilot Travel Ct	25	25	25	25	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
86.310	0.007	23.500	8.200
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
284.324	1.837	154.805	0.943
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.00	0.000	0.00	0.916
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.243	90.563	Tsivoglou	5
Reach Travel Time (days)			
0.001			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.000	2.00	0.00	7.74
0.000	2.00	0.00	7.74
0.000	2.00	0.00	7.74
0.000	2.00	0.00	7.74
0.000	2.00	0.00	7.74
0.000	2.00	0.00	7.74
0.000	2.00	0.00	7.74
0.001	2.00	0.00	7.74
0.001	2.00	0.00	7.74
0.001	2.00	0.00	7.74

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
86.300	0.015	23.500	8.200
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
482.852	1.280	377.160	0.797
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.00	0.001	0.00	0.916
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.737	3.570	Tsivoglou	5
Reach Travel Time (days)			
0.542			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.054	2.00	0.00	7.74
0.108	2.00	0.00	7.74
0.163	2.00	0.00	7.74
0.217	2.00	0.00	7.74
0.271	2.00	0.00	7.74
0.325	2.00	0.00	7.74
0.380	2.00	0.00	7.74
0.434	2.00	0.00	7.74
0.488	2.00	0.00	7.74
0.542	2.00	0.00	7.74