pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0084115**
Facility Type	**Non-Municipal**	APS ID	**773612**
Major / Minor	**Minor**	Authorization ID	**1199775**

Applicant and Facility Information

Applicant Name	**Pilot Travel Center LLC**	Facility Name	**Pilot Travel Center #517 Clarks Ferry**
Applicant Address	5508 Lonas Drive	Facility Address	Route 322/22
	Knoxville, TN 37909-3221		Duncannon, PA 17020
Applicant Contact	Joey Cupp	Facility Contact	Joey Cupp
Applicant Phone	(865) 474-2826	Facility Phone	(865) 474-2826
Client ID	135750	Site ID	444103
Ch 94 Load Status	Not Overloaded	Municipality	Reed Township
Connection Status		County	Dauphin
Date Application Received	August 28, 2017	EPA Waived?	Yes
Date Application Accepted	September 25, 2017	If No, Reason	

Purpose of Application: NPDES permit renewal

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 Pilot Travel Center # 517 wastewater treatment plant located in Reed Township, Dauphin County. The extended aeration treatment plant with design flow of 0.008 mgd provides sanitary services to a truck stop with a restroom and food services. Treated sewage is discharged to Susquehanna River which is classified for warm water fishes (WWF) and Migratory Fishes (MF). The existing NPDES permit was issued on February 27, 2013 with an effective date of March 1, 2013 and expiration date of February 28, 2018. The applicant submitted permit renewal application to the Department on August 28, 2017. The permittee 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 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*

Approve	Deny	Signatures	Date
X		J. Pascal Kwedza, P.E. / Environmental Engineer	April 19, 2019
X		Daniel W. Martin, P.E. / Environmental Engineer Manager	July 1, 2019
X		Maria D. Bebenek, P.E. / Program Manager	July 1, 2019

Summary of Review

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.

1.2 Changes to the existing Permit

- Semi Annual monitoring for Total nitrogen species and Total Phosphorus will replace annual monitoring to collect adequate data for the Chesapeake Bay Program.
- Ammonia-Nitrogen monitoring has been added to the permit to ensure treatment efficiency
- Required sample type has been changed to 24-hour composite for consistency with sampling equipment.

1.3 Existing Permit Limits and Monitoring Requirements

Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs) (1)		Concentrations (mg/L)			Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Total Annual	Minimum	Average Monthly	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25	50	2/month	8-Hr Composite
Total Suspended Solids	XXX	XXX	XXX	30	60	2/month	8-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	1,000	2/month	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	10,000	2/month	Grab
Total Nitrogen	XXX	Report	XXX	Report Annl Avg	XXX	1/year	Calculation
Total Phosphorus	XXX	Report	XXX	Report Annl Avg	XXX	1/year	8-Hr Composite

1.40 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.008
Latitude	40º 24' 15.33"	Longitude	-77º 0' 29.90"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Susquehanna River (WWF, MF)	Stream Code	06685
NHD Com ID	54975269	RMI	86.3
Drainage Area	19700	Yield (cfs/mi^2)	USGS Gage Station
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	Not Assessed		
Cause(s) of Impairment			
Source(s) of Impairment			
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		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	11

Changes Since Last Permit Issuance:

Other Comments:

1.4.1 Water Supply Intake

The nearest downstream water supply intake is approximately 11 miles downstream by Suez Water PA on Susquehanna River in Susquehanna Township, Dauphin County. No impact is expected from this discharge on the intake.

2.0 Treatment Facility Summary

Treatment Facility Name: Pilot Travel Center No 517

WQM Permit No.	Issuance Date

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Hypochlorite	0.008

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.008		Not Overloaded		

Changes Since Last Permit Issuance:

Other Comments:

2.1 Treatment Facility

Treatment plant consists of a pump station, an EQ tank, an aeration tank, a clarifier, sludge holding tank, chlorine contact tank with de-chlorination unit and a post aeration system.

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from March 1, 2018 to February 28, 2019)

Parameter	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18	SEP-18	AUG-18	JUL-18	JUN-18	MAY-18	APR-18	MAR-18
Flow (MGD) Average Monthly	0.00383	0.00379	0.00421	0.0045	0.00444	0.0043	0.00455	0.0044	0.0048	0.00508	0.00467	0.0043
Flow (MGD) Daily Maximum	0.00572	0.00799	0.00629	0.00706	0.00775	0.00787	0.00804	0.00757	0.00867	0.01076	0.00729	0.00894
pH (S.U.) Minimum	7.22	7.26	7.33	7.21	7.06	7.4	7.63	6.66	6.86	6.84	6.65	6.64
pH (S.U.) Maximum	8.44	8.52	8.83	8.72	8.75	8.81	8.33	8.62	8.77	8.68	8.72	8.71
DO (mg/L) Minimum	7.99	8.22	8.05	5.73	5.8	5.65	5.01	5.01	5.13	5.89	4.38	7.54
TRC (mg/L) Average Monthly	< 0.26	< 0.11	< 0.1	< 0.09	< 0.13	< 0.13	< 0.2	< 0.05	< 0.15	< 0.1	< 0.22	< 0.18
TRC (mg/L) Instantaneous Maximum	1.16	1.34	0.29	0.32	0.5	0.48	0.93	0.15	0.99	0.94	2.2	1.23
CBOD5 (mg/L) Average Monthly	8.7	17.9	11	< 4	10	7	6	4.1	12.1	16.2	60.6	18.7
TSS (mg/L) Average Monthly	22.8	67	74	25	19	10.1	20.1	17.7	22.3	43.6	68	26.5
Fecal Coliform (CFU/100 ml) Geometric Mean	< 19	9	10	< 3	< 22	59	332	< 507	106	25	76	< 1
Fecal Coliform (CFU/100 ml) Instant. Maximum	182	10	24	< 10	50	1860	1299.7	> 20000	5600	50	340	< 1
Total Nitrogen (mg/L) Annual Average						45.2						
Total Nitrogen (lbs) Total Annual						653						
Total Phosphorus (mg/L) Annl Average						2.34						
Total Phosphorus (lbs) Total Annl						34						

3.2 Effluent Violations for Outfall 001, from: February 1, 2018 to: December 31, 2018

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
DO	04/30/18	Min	4.38	mg/L	5.0	mg/L
TRC	04/30/18	IMAX	2.2	mg/L	1.6	mg/L
CBOD5	04/30/18	Avg Mo	60.6	mg/L	25	mg/L
TSS	05/31/18	Avg Mo	43.6	mg/L	30	mg/L
TSS	04/30/18	Avg Mo	68	mg/L	30	mg/L
TSS	12/31/18	Avg Mo	74	mg/L	30	mg/L
TSS	01/31/19	Avg Mo	67	mg/L	30	mg/L
Fecal Coliform	08/31/18	Geo Mean	332	CFU/100 ml	200	CFU/100 ml
Fecal Coliform	07/31/18	Geo Mean	< 507	CFU/100 ml	200	CFU/100 ml
Fecal Coliform	08/31/18	IMAX	1299.7	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	06/30/18	IMAX	5600	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	07/31/18	IMAX	> 20000	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	09/30/18	IMAX	1860	CFU/100 ml	1000	CFU/100 ml

Effluent violations for DO, TRC, CBOD5, Fecal coliform and TSS occurred during the past 12 months of operation. The violations need to be addressed satisfactorily prior to final permit issuance. The following paragraph will be added to the cover letter of the draft permit asking the permittee to address violations.

“According to DEP’s records, there are unresolved violation(s) at one or more facilities you own or operate. In accordance with DEP’s Clean Water Program standard operating procedures, an applicant’s compliance history is considered prior to making a final decision on any permit application. Please take the opportunity to address these violations during this draft comment period. DEP may not be able to issue a final permit until the violation(s) are resolved”

The violations appear to be operation related, if structural adjustment to the treatment unit is required to address the violations, the facility will be required to submit a corrective action plan to the Department for approval.

3.3 Summary of Inspections:

The facility has been inspected 5 times during the past permit cycle. A pollution incident occurred on 2/16/17 when a leakage from chlorine contact tank cause sludge accumulation on the ground around the tank. The leakage has been repaired and the ground was cleaned up. It is recommended that the return sludge piping is deteriorating and should be looked at for repair or replacement.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .008
Latitude 40º 24' 15.77" **Longitude** -77º 0' 31.64"
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.

4.1.1 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 averages are not applicable to this discharge

4.2 Water Quality-Based Limitations

4.2.1Receiving 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, the Susquehanna River, is impaired for fish consumption due to PCB.

4.2. 2 Streamflow:

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 ft^3/s and 24100 mi^2 respectively. The discharge is into a side channel of Susquehanna River that is unassessed and runs approximately 0.25 miles after discharge point, before it comingles with main stem. The side channel is created by Haldeman Island. 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} = 1.36
- Q_{1-10} / Q_{7-10} = 0.64

The drainage area at discharge taken from the previous protection report = 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 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

4.2.3 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 = 7.4 (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)

4.2.4 $CBOD_5$:

WQM 7.0 Model was used to analyze the combined discharge from Sheetz and Pilot Travel Center due to the proximity of the discharges to each other. The model results presented in attachment B indicate that, for Pilot Travel Center's discharge of 0.008 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.

4.2.5 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.

4.2.6 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. 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.

4.2.7 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) .

4.2.8 Total Residual Chlorine

The attached TRC results presented in attachment C utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. TRC calculation was done using a PMFs of 0.044 AFC & 0.311 CFC taken from PentoxSD model. The results presented in attachment C indicate that, a technology limit of 0.5 mg/l monthly average and Imax of 1.6 mg/l would be needed to prevent toxicity concerns. This is consistent with the existing permit. DMR and inspection report indicate the facility has been meeting this limit

4.2.9 Toxics

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

4.2.10 Chesapeake Bay Strategy:

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay Foundation requirements to reduce point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP) to the Bay. In the Strategy, sewage dischargers 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. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mdg) will be required to monitor and report TN and TP during permit renewal at a monitoring frequency following Table 6-3 of DEP's Technical Guidance for Development and Specification of effluent Limitations (No. 362-0400-001). Any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away.

EPA published the Chesapeake Bay Total Maximum Daily Load (TMDL) in December of 2010. Despite extensive restoration efforts during the past 25 years, the TMDL was prompted by insufficient progress and continued poor water quality in the Chesapeake Bay and its tidal tributaries.

In order to address the TMDL, Pennsylvania developed in addition to the Bay Strategy, a Chesapeake Watershed Implementation Plan (WIP) Phase 1 in January 2011 and Phase 2 in March 2012. In accordance with the Phase 2 WIP and its supplement, re-issuing permits for significant dischargers follow the same phased approach formulated in the original Bay strategy, whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewal. This facility is, classified as a phase 5, has been monitoring TP and TN annually but will be required to monitor Total Phosphorus, Nitrate-Nitrite as N, Total Kjeldahl Nitrogen and Total Nitrogen semi-annually throughout the next permit cycle collect adequate data for future analysis.

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 Biosolids Management

Sludge is hold up in a sludge holding tank and hauled out by a licensed hauler periodically.

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 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.

5.7 Other Permit requirements

The permit contains the following special conditions:

Stormwater Prohibition, Approval Contingencies, Proper Waste/solids Management, and Chlorine minimization requirement

5.8 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).

5.9 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.

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: Phase 1 through Permit Expiration Date.

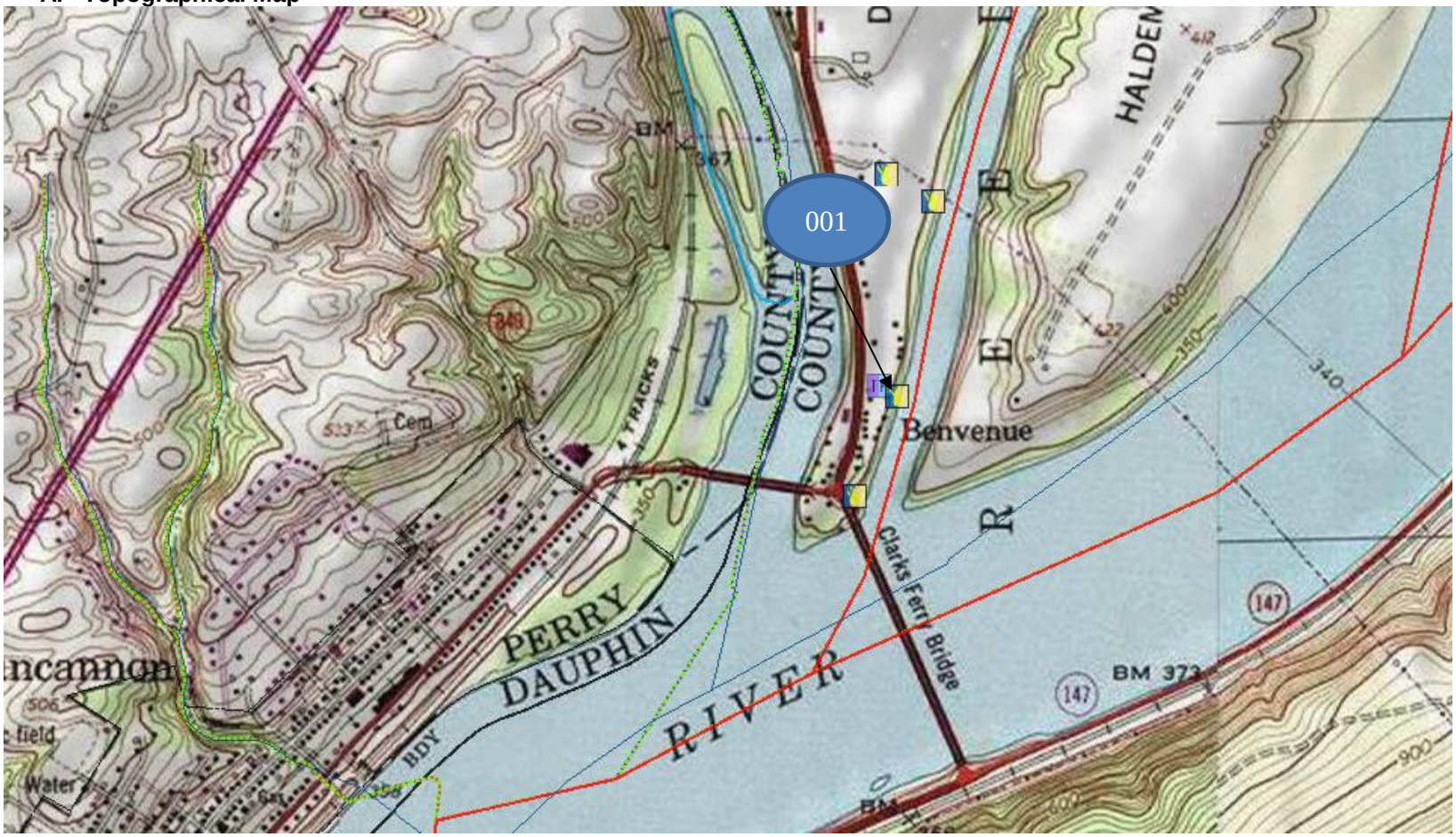
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	24-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	24-Hr Composite
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	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
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	Calculation
TKN	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	24-Hr Composite

Compliance Sampling Location: Outfall 001

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Toxics Screening Analysis 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

Permit No. PA0084115

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	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

Permit No. PA0084115

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

Permit No. PA0084115

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

Permit No. PA0084115

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	315.14	0.00	315.14	.0116	0.01895	NA	NA	NA	0.73	0.001	23.50	8.20
86.300	315.20	0.00	315.20	.024	0.00088	NA	NA	NA	0.62	0.696	23.50	8.20
Q30-10 Flow												
86.310	669.66	0.00	669.66	.0116	0.01895	NA	NA	NA	1.12	0.001	23.50	8.20
86.300	669.80	0.00	669.80	.024	0.00088	NA	NA	NA	0.95	0.456	23.50	8.20

Permit No. PA0084115

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	5		

Permit No. PA0084115

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	1.42	50	1.42	50	0	0
86.300	Pilot Travel Ct	1.42	50	1.42	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	.33	25	.33	25	0	0
86.300	Pilot Travel Ct	.33	25	.33	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

Permit No. PA0084115

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

Permit No. PA0084115

C. TRC Calculation

Copy of TRC_CALC1

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

492.5	= Q stream (cfs)	0.5	= CV Daily
0.008	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.044	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	0.311	= 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 = 558.578	1.3.2.iii	WLA cfc = 3849.000
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 208.140	5.1d	LTA_cfc = 2237.628

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)**