Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0032751**
Facility Type	**Non-Municipal**	APS ID	**1152915**
Major / Minor	**Minor**	Authorization ID	**1553282**

Applicant and Facility Information

Applicant Name	**PA DOT Maintenance & Operations Bureau**	Facility Name	**PA DOT Rest Area 18**
Applicant Address	400 North Street 6th Floor	Facility Address	Safety Rest Area Site #18
	Harrisburg, PA 17120-0206		Hadley, PA 16130
Applicant Contact	Nicholaus Sahd	Facility Contact	
Applicant Phone	(717) 951-8685	Facility Phone	
Client ID	189304	Site ID	451603
Ch 94 Load Status	Not Overloaded	Municipality	Deer Creek Township
Connection Status	No Limitations	County	Mercer
Date Application Received	December 23, 2025	EPA Waived?	Yes
Date Application Accepted	January 6, 2026	If No, Reason	-

Purpose of Application: Renewal Application for a Minor Sewage Facility

Summary of Review

The permittee is applying for reissuance of Individual Permit No. **PA0032751.** The facility consists of a Comminutor w/ a bypass bar screen, Equalization Tank (aerated), (2) Extended Aeration Tanks, Final Clarifier, Aerated Sludge Holding Tank, Chlorine Contact (w/ tablet chlorination/dechlorination)/Post-Aeration Tank and an Effluent Tank.

This is an existing discharge with a design hydraulic capacity of 0.0087-MGD – Black Run.

DMRs have been submitted for the past five years. Only one inspection was conducted on November 20, 2024. During this inspection, an administrative review of the facility was performed, and no violations were identified.

Act 14 – Notifications were submitted and received.

There are 13 open violations in WMS for the subject Client ID (189304) as of 01/06/26. These violations fall within the categories below and are under Storage Tanks and WPC NPDES Inspection program.

-Failure to meet underground storage tank system operational requirements,
-Failure to meet aboveground storage tank protective coating requirements,
-Failure to meet aboveground storage tank secondary and/or emergency containment requirements,
-Failure to meet performance standards for new and/or upgraded underground storage tank systems,
-NPDES - Violation of effluent limits in Part A of permit
-NPDES - Failure to properly operate and maintain all facilities which are installed or used by the permittee to achieve compliance.
Sludge use and disposal description and location(s):1.76 dry tons of sewage were disposed of at Municipal WWTP for treatment.

Approve	Deny	Signatures	Date
x		Adebayo Olude Adebayo Olude / Civil Engineer Trainee	January 6, 2026
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	March 4, 2026

Summary of Review

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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.0087
Latitude	41º 28' 20.58"	Longitude	-80º 10' 3.31"
Quad Name	Hadley	Quad Code	41080D2
Wastewater Description:	Sewage Effluent		

Receiving Waters	Black Run (WWF)	Stream Code	58656
NHD Com ID	100476397	RMI	
Drainage Area	3.81	Yield (cfs/mi^2)	0.0396
Q_{7-10} Flow (cfs)	0.151	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)		Slope (ft/ft)	-
Watershed No.	16-G	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)	7	Default - WWF
Temperature (°F)	25	Default
Hardness (mg/L)	100	Default
Other:	-	-

Nearest Downstream Public Water Supply Intake		Aqua Pennsylvania, Inc. - Emlenton	
PWS Waters	Allegheny River	Flow at Intake (cfs)	1,376
PWS RMI	90.0	Distance from Outfall (mi)	>10miles

Changes Since Last Permit Issuance: Elevation was revised using Google Earth. Drainage Area and Q_{7-10} Flow were revised using USGS StreamStats.

Other Comments: The streamflow value used for the receiving stream in this renewal is different from the previous permit. According to USGS Stream Stats, the anticipated low-flow (Q7-10) for the stream is 0.151cfs, whereas the previous model assumed a low-flow of 0.000258 cfs. The basis for the earlier flow value is due to a default low flow yield of 0.1.

Treatment Facility Summary

Treatment Facility Name: PA DOT Rest Area 18

WQM Permit No.	Issuance Date
4317402	05/18/2017
-	-

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Chlorine With Dechlorination	0.0087

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0087	17.5	Not Overloaded		

Changes Since Last Permit Issuance: None

Other Comments: None

Compliance History	
Summary of DMRs:	DMRs were submitted for the past five years. Only one inspection was conducted on November 20, 2024. During this inspection, an administrative review of the facility was performed, and no violations were identified.
Summary of Inspections:	Only one inspection was conducted on November 20, 2024. During this inspection, an administrative review of the facility was performed, and no violations were identified.

Other Comments: None

Compliance History

DMR Data for Outfall 001 (from December 1, 2024 to November 30, 2025)

Parameter	NOV-25	OCT-25	SEP-25	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24
Flow (MGD) Average Monthly	0.0016	0.0014	0.0026	0.0029	0.0028	0.0025	0.0019	0.0013	0.0014	0.0015	0.0014	0.0018
Flow (MGD) Daily Maximum	0.0019	0.0015	0.0029	0.0032	0.0030	0.0027	0.0025	0.0014	0.0016	0.0017	0.0016	0.0021
pH (S.U.) Daily Minimum	6.9	6.8	6.9	6.8	6.9	6.7	6.9	6.7	6.9	6.9	6.7	6.7
pH (S.U.) Instantaneous Maximum	7.4	7.4	7.4	7.4	7.4	7.4	7.5	7.4	7.4	7.4	7.4	7.4
DO (mg/L) Daily Minimum	6.9	6.8	6.8	6.9	6.9	6.7	6.8	6.7	6.8	6.7	6.7	6.8
TRC (mg/L) Average Monthly	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
TRC (mg/L) Instantaneous Maximum	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1
CBOD5 (mg/L) Average Monthly	3.4	4.3	4.0	4.4	3.8	4.1	3.8	4.8	4.1	4.5	4.8	4.6
CBOD5 (mg/L) Instantaneous Maximum	3.4	4.7	4.1	4.6	3.9	4.8	4.6	4.9	4.6	4.9	4.8	4.8
TSS (mg/L) Average Monthly	11.0	11.0	11.0	9.5	10.5	10.5	10.0	11.0	10.5	10.5	11.0	11.0
TSS (mg/L) Instantaneous Maximum	12.0	12.0	12.0	10.0	12.0	11.0	10.0	12.0	12.0	11.0	12.0	12.0
Fecal Coliform (No./100 ml) Average Monthly	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
E. Coli (No./100 ml) Instantaneous Maximum												< 1

Total Nitrogen (mg/L) Average Monthly	19.2	19.4	24.1	18.8	19.1	18.5	18.8	19.3	18.7	19.7	19.2	18.7
Ammonia (mg/L) Average Monthly	7.7	7.7	7.6	7.5	7.4	7.5	7.7	7.1	7.4	7.8	7.5	6.8
Ammonia (mg/L) Instantaneous Maximum	7.9	7.9	7.7	7.5	7.8	8.0	7.8	7.2	7.7	7.8	7.8	7.7
Total Phosphorus (mg/L) Average Monthly	0.680	0.580	0.650	0.915	0.730	0.955	0.910	0.695	0.905	0.935	0.950	0.940
Total Phosphorus (mg/L) Instantaneous Maximum	0.910	0.680	0.660	0.990	0.850	0.990	0.980	0.980	0.910	0.970	0.960	0.990

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .0087
Latitude 41º 28' 15.00" **Longitude** -80º 10' 4.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (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)
E. Coli	Report	IMAX		92a.61

Comments: The limits for pH are technology-based on Chapter 93.7. The limits for Total Suspended Solids and Fecal Coliforms are technology-based on Chapter 92a.47. The limit for TRC is applicable under chapter 92a.48. E. Coli was placed in the previous permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits." With a design flow between 0.002 – 0.05 MGD, a sample frequency of 1/year is being carried forward.

Water Quality-Based Limitations

CBOD5, Ammonia, and Dissolved oxygen are evaluated using WQM 7.0 (Attachment 3). TRC is evaluated using the Department's TRC evaluation spreadsheet (Attachment 4).

The following limitations were determined through water quality modeling:

Parameter	Limit (mg/l)	SBC	Model
CBOD5	25	Average Monthly	WQM 7.0
	50	IMAX	
NH3-N May 1 – Oct 31	8.5	Average Monthly	WQM 7.0
	17.0	IMAX	
NH3-N Nov 1 – Apr 30	25.5	Average Monthly	WQM 7.0
	51.0	IMAX	
Dissolved Oxygen	4.0	Daily minimum	WQM 7.0
TRC	0.5	Average Monthly	TRC Spreadsheet Model
	1.6	IMAX	

Comments: This discharge was evaluated using the WQM 7.0 model to determine appropriate effluent limitations for $CBOD_5$, Ammonia-Nitrogen, and Dissolved Oxygen. The modeling results confirmed that the current $CBOD_5$ limitations remain appropriate, and existing Dissolved Oxygen limits are also adequate for the facility. Outfall 001 discharges to a dry stream, thus a dry stream degradation analysis was performed. The modeling results show that the output of the perennial model is equal to the highlighted inputs found in the dry stream model. As a result, the current permit limits are protective. Therefore, more stringent limits are not proposed in this renewal.

The Department's TRC model was performed. The model indicated an average monthly limit of 0.5 mg/L and an IMAX limit of 1.635 mg/L. The average monthly limit from the model is the same as the current limit. Therefore, the limits will be retained and no compliance schedule for TRC will be imposed.

Best Professional Judgment (BPJ) Limitations

Comments: None

Anti-Backsliding

The previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The previous permit limitations, monitoring requirements, and conditions will be retained.

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	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
TSS	XXX	XXX	XXX	30.0	XXX	60.0	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	25.5	XXX	51.0	2/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	8.5	XXX	17.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	1.0	XXX	2.0	2/month	Grab

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" (386-0400-001), SOPs and/or BPJ.

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

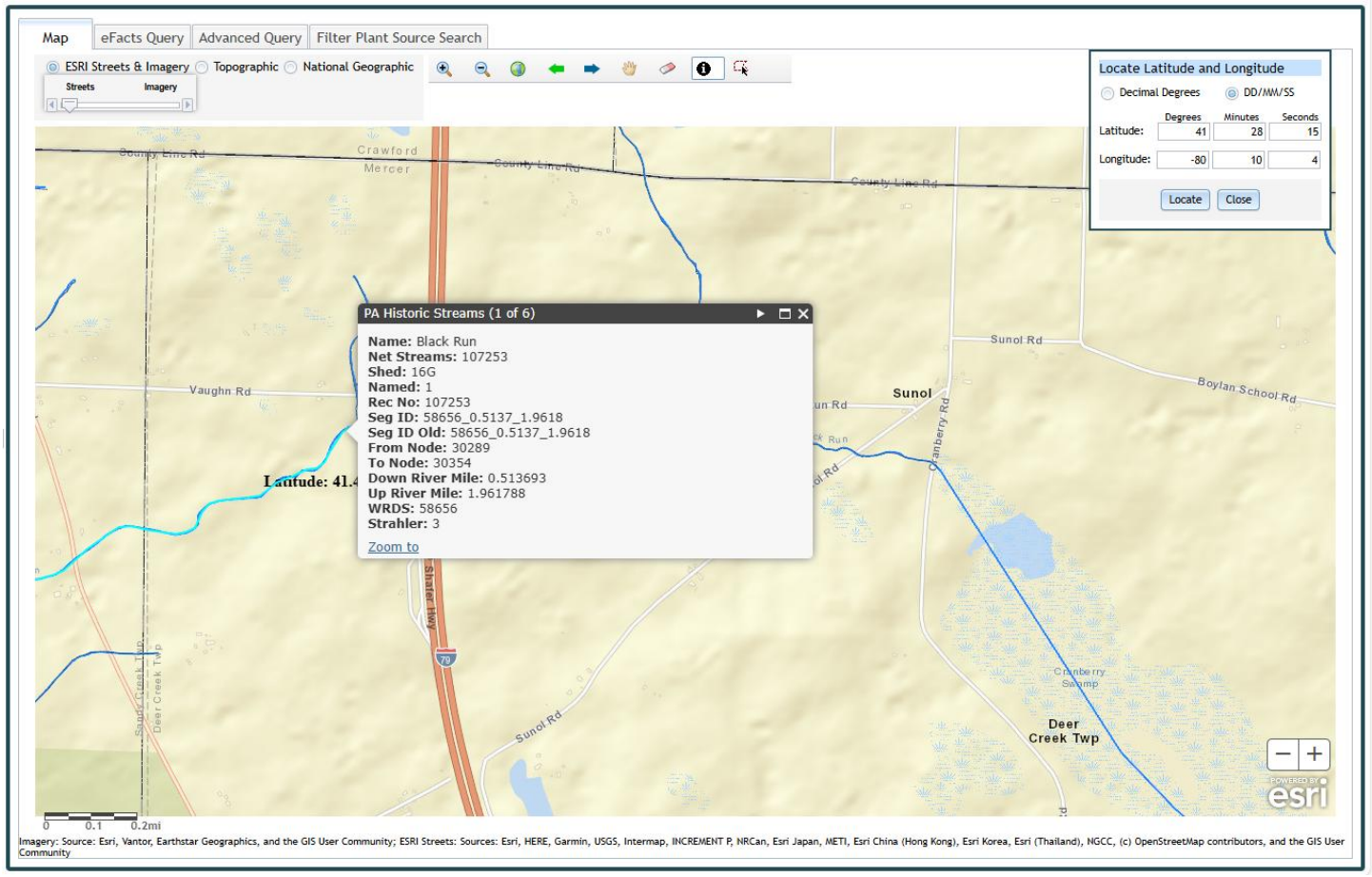
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
TSS	XXX	XXX	XXX	30.0	XXX	60.0	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	25.5	XXX	51.0	2/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	8.5	XXX	17.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	1.0	XXX	2.0	2/month	Grab

Compliance Sampling Location: Outfall 001 after disinfection

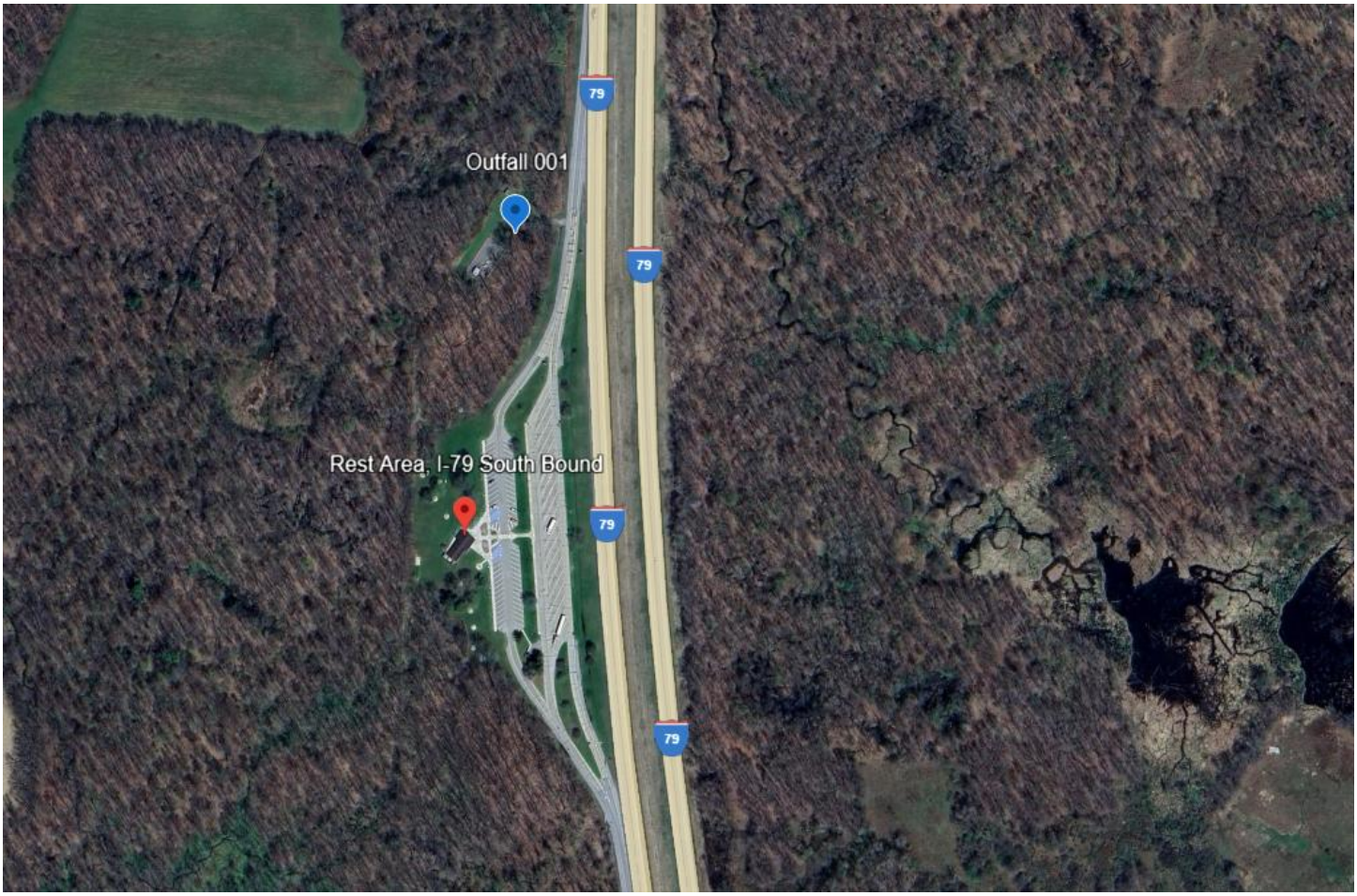
Other Comments: The limits in this renewal are being carried forward from previous permit and therefore retained.

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

Attachment 1
eMAP – Receiving stream location and Designation



Attachment 2
Google Earth Aerial Site View



StreamStats Report

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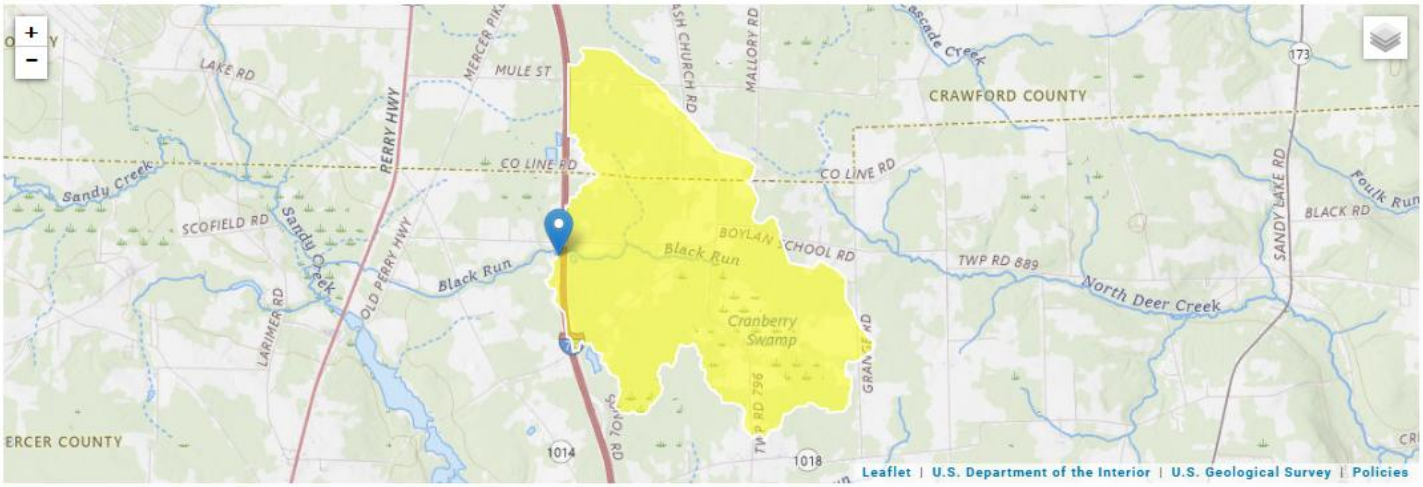
Clicked Point (Latitude, Longitude):	41.47243, -80.16782
Time:	2026-01-06 15:32:56 -0500



StreamStats Update

Starting with version 4.30.0, the StreamStats application uses services that were redeveloped with open-source software components. Users may observe minor variations in computed results when compared to those from previous versions. These differences are expected and do not reflect errors in the underlying data or analytical methods. Users are advised to consider these potential variations when interpreting or comparing results generated across different versions of StreamStats. Please email streamstats@usgs.gov with any questions or concerns. A full list of changes can be found at https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	3.81	square miles
ELEV	Mean Basin Elevation	1406.2	feet
PRECIP	Mean Annual Precipitation	43	inches

StreamStats Report

Region ID:	PA
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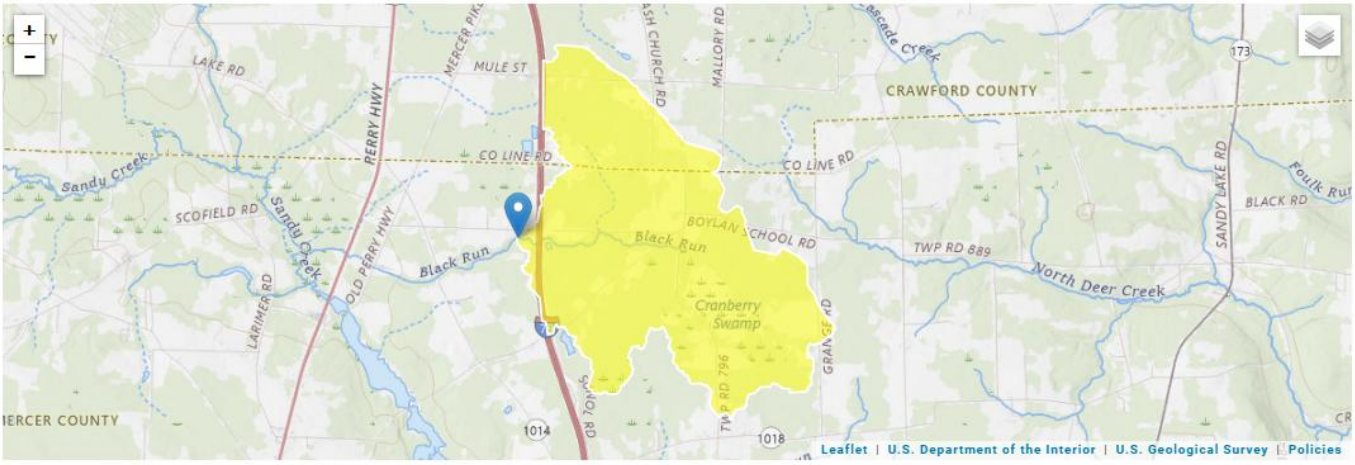
Time:	2026-01-06 15:30:46 -0500



StreamStats Update

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Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	3.84	square miles
ELEV	Mean Basin Elevation	1405.8	feet
PRECIP	Mean Annual Precipitation	43	inches

Attachment 3
WQM 7.0 Modeling Output files (dry stream)

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
16G	58656	BLACK RUN	2.730	1334.00	3.81	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	0.040	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
PA Rest Area18	PA0032751	0.0087	0.0087	0.0087	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	4.00	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
16G	58656	BLACK RUN	2.560	1328.00	3.84	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	0.040	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
16G	58656	BLACK RUN

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
2.730	0.15	0.00	0.15	.0135	0.00668	.384	7.34	19.14	0.06	0.178	20.41	7.00
Q1-10 Flow												
2.730	0.10	0.00	0.10	.0135	0.00668	NA	NA	NA	0.05	0.223	20.61	7.00
Q30-10 Flow												
2.730	0.21	0.00	0.21	.0135	0.00668	NA	NA	NA	0.07	0.152	20.31	7.00

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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	0.64	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		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
16G	58656	BLACK RUN

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.730	PA Rest Area18	15.93	50	15.93	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.730	PA Rest Area18	1.85	25	1.85	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
2.73	PA Rest Area18	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16G	58656	BLACK RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.730	0.009	20.409	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
7.344	0.384	19.142	0.058
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.88	0.740	2.05	0.722
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.895	19.211	Owens	5
Reach Travel Time (days)			
0.178			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.018	3.83	2.02	8.07
0.036	3.78	2.00	8.18
0.053	3.73	1.97	8.18
0.071	3.68	1.94	8.18
0.089	3.63	1.92	8.18
0.107	3.58	1.90	8.18
0.125	3.54	1.87	8.18
0.142	3.49	1.85	8.18
0.160	3.44	1.82	8.18
0.178	3.40	1.80	8.18

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16G	58656	BLACK RUN

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
2.730	PA Rest Area18	PA0032751	0.009	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

Attachment 3
WQM 7.0 Modeling Output files (Perennial)

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
16G	58656	BLACK RUN	**2.730**	1334.00	3.81	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	0.040	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
PA DOT Area 18	PA0032751	0.0087	0.0087	0.0087	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	3.40	2.00	0.00	1.50
Dissolved Oxygen	8.18	8.24	0.00	0.00
NH3-N	1.80	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
16G	58656	BLACK RUN

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
2.730	0.15	0.00	0.15	.0135	0.00172	.398	7.92	19.93	0.05	0.129	20.41	7.00
Q1-10 Flow												
2.730	0.10	0.00	0.10	.0135	0.00172	NA	NA	NA	0.04	0.162	20.61	7.00
Q30-10 Flow												
2.730	0.20	0.00	0.20	.0135	0.00172	NA	NA	NA	0.06	0.110	20.31	7.00

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		

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16G	58656	BLACK RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.730	0.009	20.410	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
7.922	0.398	19.925	0.052
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.11	0.182	0.15	0.722
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.238	16.662	Owens	5
Reach Travel Time (days)			
0.129			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.013	2.11	0.15	8.18
0.026	2.10	0.15	8.18
0.039	2.10	0.14	8.18
0.052	2.09	0.14	8.18
0.065	2.09	0.14	8.18
0.077	2.08	0.14	8.18
0.090	2.08	0.14	8.18
0.103	2.07	0.14	8.18
0.116	2.07	0.14	8.18
0.129	2.06	0.13	8.18

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
16G	58656	BLACK RUN

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.730	PA DOT Area 18	15.93	3.6	15.93	3.6	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.730	PA DOT Area 18	1.85	1.8	1.85	1.8	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
2.73	PA DOT Area 18	3.4	3.4	1.8	1.8	8.18	8.18	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16G	58656	BLACK RUN

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
2.730	PA DOT Area 18	PA0032751	0.009	CBOD5	3.4		
				NH3-N	1.8	3.6	
				Dissolved Oxygen			8.18

Attachment 4

TRC_CALC

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.151	= Q stream (cfs)	0.5	= CV Daily
0.0087	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= 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)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 3.598	1.3.2.iii	WLA cfc = 3.500
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 1.341	5.1d	LTA_cfc = 2.035

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)**