pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0218316**
Facility Type	**Municipal**	APS ID	**1093833**
Major / Minor	**Minor**	Authorization ID	**1449121**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Dunbar Township Municipal Authority Fayette County**	Facility Name	**Dunbar Township Municipal Authority STP**
Applicant Address	1257 University Drive	Facility Address	546 Adelaide Rd
	Dunbar, PA, 15431-0815		Connellsville, PA 15425
Applicant Contact	Lewis Falton	Facility Contact	Same as Applicant
Applicant Phone	(724) 626-1941	Facility Phone	Same as Applicant
Client ID	74736	Site ID	528539
Ch 94 Load Status	Not Overloaded	Municipality	Dunbar Township
Connection Status	No Limitations	County	Fayette
Date Application Received	July 25, 2023	EPA Waived?	Yes
Date Application Accepted	August 1, 2023	If No, Reason	

Purpose of Application: Renewal of NPDES Permit.

Summary of Review

Dunbar Township Municipal Authority (DTMA) has submitted for renewal of NPDES Permit PA0218316. NPDES Permit PA0218316 was last issued on December 23, 2018 and authorizes a discharge of 0.450 MGD from the DTMA sewage treatment plant (STP).

WQM permit No. 2600403 issued on October 24, 2000 authorized construction of the plant to treat an average design flow of 0.30 MGD. The existing treatment process consists of Bar screen, Influent Trough, SBRs, Sludge holding tanks, and Ultraviolet disinfection. The receiving stream, Youghiogheny River, is classified as a warm water fishery (WWF) per CH93 designation.

WQM permit 2600403 A-1 issued on July 15, 2011 authorized a plant expansion to handle the new designed flow of 0.45 MGD.

This facility is serving the Dunbar Township which treats raw sewer influent with no bypass or overflows within the collection system. The separated system has an estimated capacity of 1,500 EDUs.

Since this facility is located within the floodplain of the Youghiogheny River per eMapPA; Part C7 for “Develop an Operation and Maintenance Plan” will be included on this renewal permit.

Per application and CH94 reports, no industrial or commercial users are served by this facility.

No hydraulic or organic overloads are projected to occur within the next five years per CH94 report for 2022.

Approve	Deny	Signatures	Date
X		Hazim Aldalli	
		Hazim Aldalli / Environmental Engineering Specialist	November 7, 2023
X		Mahbuba Iasmin	
		Mahbuba Iasmin, Ph.D. P.E. / Environmental Engineering Manager	May 23, 2024

Summary of Review

Operations compliance report mentioned that facility is in compliance with no open enforcement. The report shows inconsistent violations for Fecal Coliform. Inspection reports reviewed did not identify this problem or any other violations.

Recent eDMRs (2020-2022) for Fecal Coliform did not show limit exceedances.

Per application and CH94 reports, no changes/upgrades are implemented or proposed for the next five years; thus no Act 537 needed.

An appropriate evidence of the Act – 14 PL 834, municipal notifications were provided by April 27, 2023 letters and no comments were received.

Sludge use and disposal description and location(s): Sludge is aerobically digested and dewatered using a belt filter press prior to ultimate disposal at a permitted landfill with County Hauling Corp. Last year total sludge/biosolids production was 15.43 Dry Tons. This facility didn't receive any additional sludge from other sources.

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)	0.45
Latitude	40º 2' 45"	Longitude	-79º 36' 50"
Quad Name	Connellsville	Quad Code	40079A5
Wastewater Description:	Sewage Effluent		
Receiving Waters	Youghiogheny River (WWF)	Stream Code	37456
NHD Com ID	69917161	RMI	41.35
Drainage Area	1370	Yield (cfs/mi^2)	0.33
Q_{7-10} Flow (cfs)	460	Q_{7-10} Basis	USACE As of Dec. 1, 2017
Elevation (ft)	2233	Slope (ft/ft)	*N/A
Watershed No.	19-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None.	Exceptions to Criteria	None.
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	Westmoreland County Municipal Authority - McKeesport		
PWS Waters	Youghiogheny River	Flow at Intake (cfs)	510
PWS RMI	1.8	Distance from Outfall (mi)	>40.0

Changes Since Last Permit Issuance:

- Elevation, drainage area, and low flow yield were all updated to match USGS Stream Stats new data (see Attachment A).
- DEP updated its WQM 7.0 criteria for Ammonia-Nitrogen (NH_3-N) in 2019. Limits and conditions of this permit need to be redeveloped to an adequate level to protect water quality.
- *E. Coli* monitoring requirements will be introduced to this renewal which is in compliance with DEP SOP No. BCW-PMT-033 revised March 24, 2021.

Other Comments: * Hydraulic slope will depend on locks and dam operation.

Treatment Facility Summary

Treatment Facility Name: Dunbar Township Municipal Authority STP

WQM Permit No.	Issuance Date
2600403 A-2	02/12/2013
2600403 A-1	07/15/2011
2600403	10/24/2000

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with Ammonia Reduction	Sequencing Batch Reactor	Ultraviolet	0.219

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.45	750	Projected Organic Overload	Belt Filtration	Combination of methods

Changes Since Last Permit Issuance: None.

Other Comments: None.

Operations Compliance Check Summary Report

Facility: Dunbar Township Municipal Authority STP
NPDES Permit No.: PA0218316
Compliance Review Period: 8/15/2018-8/15/2023
Inspection Summary:

INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
06/16/2022	Compliance Evaluation	PA Dept of Environmental Protection	Violation(s) Noted
12/10/2018	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted

Violation Summary:

VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE
06/16/2022	92A.44	NPDES - Violation of effluent limits in Part A of permit	8/16/2023

The following additional violations are shown on the mobile inspection report for the CEI on 6/16/22:
25 Pa. Code 252.4(a): Failure to register on-site laboratory
Since field measurements are being taken at the facility Dunbar Township must register the on-site lab to be in compliance. This was noted in the past two inspections and needs addressed as soon as possible.

25 Pa. Code 92a.41(a)(10): Failure to use an NIST thermometer.
Need an NIST thermometer placed in the composite sampler.

25 Pa. Code 92a.41(a)(10): Failure to maintain proper sample temperature.
Power was out.

25 Pa. Code 92a.41(a)(12): Failure to submit monitoring reports or properly complete monitoring reports.
Late DMR 1/2022

25 Pa. Code 92a.41(a)(12): Failure to submit a required DMR supplemental report.
Make sure you are using the state influent/process control supplemental form to record influent BOD, influent TSS, DO, settleability, and mixed liquor suspended solids.

25 Pa. Code 92a.41(a)(8): Failure to provide information or records required by the permit or otherwise needed to
determine compliance.
Three years of records must be kept onsite to include Chapter 94 reports and five years worth of sludge records at a minimum.

25 Pa. Code 92a.41(a)(9): Failure to provide access to facility or records
Three years of records must be kept onsite to include Chapter 94 reports and five years worth of sludge records at a minimum.

P.L. 1987, No. 394, Sec 611: Failure to properly operate facilities in compliance with terms and conditions of a WQM permit.

Open Violations by Client ID:
No open violations for Client ID 74736.

Enforcement Summary:
NOV was issued after inspection on 6/16/22.

Effluent Violation Summary:

MON_PD_END	OUTFALL	PARAMETER	SAMPLE	PERMIT	UNIT	STAT_BASE_CODE
Jun-23	1	Fecal Coliform	> 301	200	No./100 ml	Geometric Mean
Jun-23	1	Fecal Coliform	12100	1000	No./100 ml	Instantaneous Maximum
May-23	1	Fecal Coliform	1200	1000	No./100 ml	Instantaneous Maximum
Aug-22	1	Fecal Coliform	3850	1000	No./100 ml	Instantaneous Maximum
Jul-21	1	Fecal Coliform	1628	1000	No./100 ml	Instantaneous Maximum
Jul-19	1	Fecal Coliform	2310	1000	No./100 ml	Instantaneous Maximum
Dec-18	1	Flow	0.382	0.3	MGD	Average Monthly
Nov-18	1	Flow	0.379	0.3	MGD	Average Monthly
Oct-18	1	Flow	0.379	0.3	MGD	Average Monthly
Sep-18	1	Flow	0.52	0.3	MGD	Average Monthly

Compliance Status: Facility has no open violations or pending enforcements at this time. Follow up inspections will be conducted as necessary regarding exceedances that have occurred since last inspection.
Completed by: Amanda Schmidt
Completed date: 8/15/23

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.45
Latitude 40º 2' 45" **Longitude** -79º 36' 50"
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 (No./100 ml)	Report	IMAX	-	92a.61
D.O. (mg/L)	4.0	Min	-	BPJ
NH_3-N (mg/L)	25	Average Monthly	-	BPJ
	50	IMAX		
Total N (mg/L)	Report	Average Monthly	-	92a.61
Total P (mg/L)	Report	Average Monthly	-	92a.61

Comments: The existing discharge was evaluated using WQM 7.0 to evaluate the $CBOD_5$, Ammonia Nitrogen and Dissolved Oxygen parameters.

The Total Suspended Solids, pH, and Fecal Coliform parameters are not evaluated using WQM 7.0. The bases for the proposed technology-based limitations are listed in the above table.

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (see Attachment B):

Parameter	Limit (mg/l)	SBC	Model
CBOD5 (May1-Oct 31)	25	Average Monthly	WQM7.0
CBOD5 (Nov 1- Apr 30)	25	Average Monthly	WQM7.0
NH3-N (May1-Oct 31)	25	Average Monthly	WQM7.0
NH3-N (Nov 1- Apr 30)	25	Average Monthly	WQM7.0
Dissolved Oxygen	4.0	Minimum	WQM7.0

Best Professional Judgment (BPJ) Limitations

A minimum Dissolved Oxygen (DO) limit of 4.0 mg/L should be established based on Best Professional Judgment (BPJ) to ensure adequate operation and maintenance. Due to antibacksliding, the current limit for Dissolved Oxygen of 5.0 mg/L will be carried over into the renewed permit.

Per DEP-SOP – *Establishing Effluent Limitations for Individual Sewage Permits* Revised, March 24, 2021, for existing discharges, if WQM modeling results for summer indicates that an average monthly limit of 25 mg/L is acceptable, the application manager will generally establish a year-round monitoring requirement for ammonia-nitrogen, at a minimum.

DEP WQM 7.0 ver. 1.1 was used to determine the newly imposed limit for Ammonia-Nitrogen (NH_3-N) of 25.0 mg/L year round.

Checking on the eDMR, the facility can meet the newly imposed NH_3-N limit of 25 mg/L. As the plant has achieved effluent sampling results of NH_3-N lower than this limit, no compliance schedule is necessary.

TN and TP Monitoring

Per SOP (No. BCW-PMT-033: *Establishing Effluent Limitations for Individual Sewage Permits*):

- Nutrient monitoring is required, at a minimum, to establish the nutrient load from the wastewater treatment facility and the impacts that load may have on the quality of the receiving stream(s). Sewage discharges with design flows > 2,000 gpd require monitoring, at a minimum, for Total Nitrogen and Total Phosphorus in new and reissued permits.

The receiving stream is not impaired with nutrients. Annual monitoring is recommended.

Total Dissolved Solids (TDS) and its Major Constituents

Total Dissolved Solids (TDS) and its major constituents including sulfate, chloride, and bromide have emerged as pollutants of concern. The conservative nature of these solids allows them to accumulate in surface waters and they may remain a concern even if the immediate downstream public water supply is not directly impacted. Bromide has been linked to formation of disinfection byproducts at increased levels in public water systems.

Because of actions associated with Triennial Review 13, the Environmental Quality Board has directed DEP to collect additional data if the Bromide is greater than 1 mg/l (i.e., <0.10 mg/l as of 7/25/2023) and the TDS is greater than 1000 mg/l (i.e., 400 mg/l as of 7/25/2023).

Monitoring is not required for Bromide, Chloride, and Sulfate. Bromide is less than 1 mg/l.

E. Coli

Pursuant to 25 Pa. code § 92a.61(b) quarterly monitoring for *E. Coli* will be imposed at Outfall 001 to determine if *E. Coli* will be a pollutant of concern, which is consistent with DEP SOP No. BCW-PMT-033 revised on March 24, 2021.

Disinfection

Ultraviolet (UV) disinfection is used therefore Total Residual Chlorine (TRC) limits are not applicable. Routine monitoring of UV intensity will be at the same monitoring frequency that is used for TRC. Part C33 will be added to the permit document.

Mass Loadings

Mass loading limits are applicable for publicly owned treatment works. Current policy requires average monthly mass loading limits be established for $CBOD_5$, TSS, and NH_3-N and average weekly mass loading limits be established for $CBOD_5$ and TSS.

Average monthly mass loading limits (lbs/day) are determined based on the formula: design flow (MGD) x concentration limit (mg/L) x conversion factor (8.34).

Influent Monitoring

For POTWs with design flows greater than 2,000 GPD, influent BOD_5 and TSS monitoring must be established in the permit, and the monitoring should be consistent with the same frequency and sample type as is used for other effluent parameters.

Monitoring Frequency Considerations

For pH, Dissolved Oxygen (DO) and UV, a monitoring frequency of 1/day will be imposed.

In general, less frequent monitoring may be established only when the permittee demonstrates that there will be no discharge on days where monitoring is not required. The permittee may remain in compliance with the permit by using a No Discharge Indicator (NODI) code on the “Daily Effluent Monitoring” supplemental form to identify the lack of a discharge on a particular day.

The daily monitoring frequencies are consistent with current policy and Table 6-3 of DEP’s Technical Guidance for the Development and Specification of Effluent Limitations.

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.

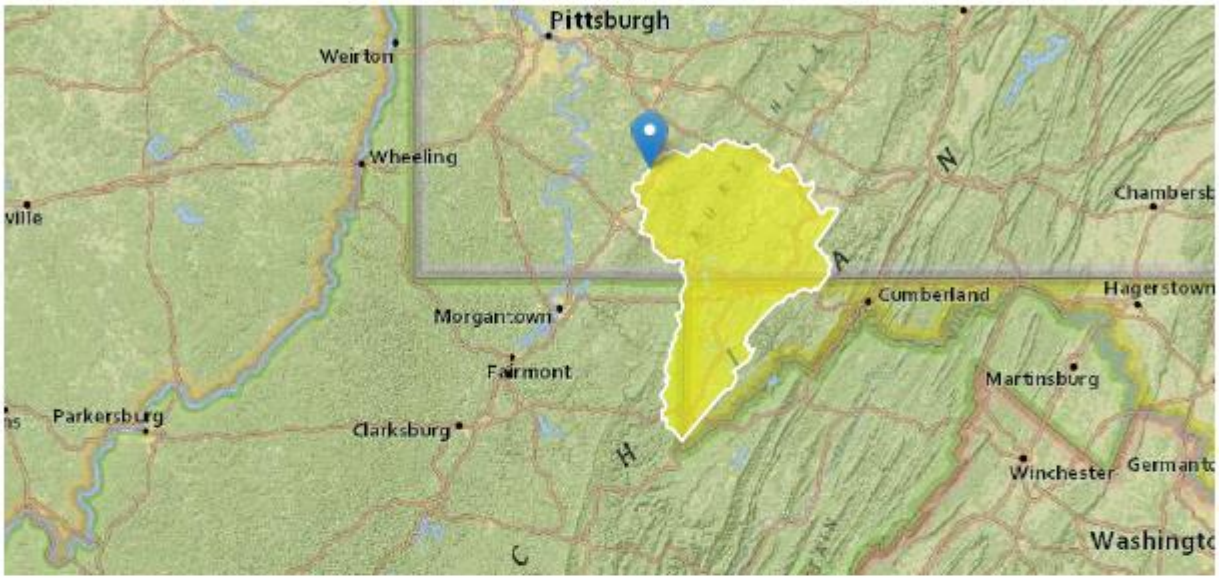
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5	93.0	142.0	XXX	25	38	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	1/week	8-Hr Composite
TSS	112.0	168.0	XXX	30	45	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ammonia-Nitrogen	93.0	XXX	XXX	25	XXX	50	1/week	8-Hr Composite
Ultraviolet light Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite

Compliance Sampling Location: Outfall 001.
Other Comments: None.

ATTACHMENT A:
USGS StreamStats

StreamStats Report

Region ID: PA
Workspace ID: PA20230907181737187000
Clicked Point (Latitude, Longitude): 40.04678, -79.61363
Time: 2023-09-07 14:18:04 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1370	square miles
ELEV	Mean Basin Elevation	2233	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [99.9 Percent (1370 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1370	square miles	2.26	1400
ELEV	Mean Basin Elevation	2233	feet	1050	2580

Low-Flow Statistics Flow Report [99.9 Percent (1370 square miles) Low Flow Region 4]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	177	ft^3/s	43	43
30 Day 2 Year Low Flow	252	ft^3/s	38	38
7 Day 10 Year Low Flow	86.1	ft^3/s	66	66
30 Day 10 Year Low Flow	113	ft^3/s	54	54
90 Day 10 Year Low Flow	188	ft^3/s	41	41

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Application Version: 4.17.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

ATTACHMENT B:
WQM7.0 Model Results (Summer)

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
19D	37456	YOUGHIOGHENY RIVER	**41.350**	2233.00	1370.00	0.00100	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	0.330	0.00	460.00	0.000	0.000	0.0	0.00	0.00	0.00	0.00	25.00	7.00
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
Dunbar STP	PA0218316	0.4500	0.4500	0.4500	0.000	20.00	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
19D	37456	YOUGHIOGHENY RIVER	**36.680**	2218.00	1390.00	0.00100	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	0.330	0.00	460.00	0.000	0.000	0.0	0.00	0.00	0.00	0.00	25.00	7.00
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
Dunbar STP	PA0218316	0.0000	0.0000	0.0000	0.000	20.00	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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19D	37456	YOUGHIOGHENY 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												
41.350	460.00	0.00	460.00	.6962	0.00100	1.13	353.59	312.82	1.15	0.248	24.99	7.00
Q1-10 Flow												
41.350	294.40	0.00	294.40	.6962	0.00100	NA	NA	NA	0.90	0.318	24.99	7.00
Q30-10 Flow												
41.350	625.60	0.00	625.60	.6962	0.00100	NA	NA	NA	1.37	0.208	24.99	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
19D	37456	YOUGHIOGHENY RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
41.350	0.450	24.992	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
353.591	1.130	312.824	1.153
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.03	0.022	0.04	1.028
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.237	6.053	Tsivoglou	5
Reach Travel Time (days)			
0.248			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.025	2.03	0.04	7.54
0.050	2.03	0.04	7.54
0.074	2.03	0.04	7.54
0.099	2.03	0.03	7.54
0.124	2.03	0.03	7.54
0.149	2.03	0.03	7.54
0.173	2.02	0.03	7.54
0.198	2.02	0.03	7.54
0.223	2.02	0.03	7.54
0.248	2.02	0.03	7.54

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19D	37456	YOUGHIOGHENY 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
41.350	Dunbar STP	6.77	50	6.77	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
41.350	Dunbar STP	1.34	25	1.34	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)		
41.35	Dunbar STP	25	25	25	25	4	4	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19D	37456	YOUGHIOGHENY 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)
41.350	Dunbar STP	PA0218316	0.450	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

ATTACHMENT B:
WQM7.0 Model Results (Winter)

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
19D	37456	YOUGHIOGHENY RIVER	**41.350**	2233.00	1370.00	0.00100	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	0.660	0.00	460.00	0.000	0.000	0.0	0.00	0.00	0.00	0.00	5.00	7.00
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
Dunbar STP	PA0218316	0.4500	0.4500	0.4500	0.000	15.00	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	12.51	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
19D	37456	YOUGHIOGHENY RIVER	**36.680**	2218.00	1390.00	0.00100	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	0.660	0.00	460.00	0.000	0.000	0.0	0.00	0.00	0.00	0.00	5.00	7.00
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
Dunbar STP	PA0218316	0.0000	0.0000	0.0000	0.000	15.00	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	12.51	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
19D	37456	YOUGHIOGHENY 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												
41.350	460.00	0.00	460.00	.6962	0.00100	1.13	353.59	312.82	1.15	0.248	5.02	7.00
Q1-10 Flow												
41.350	294.40	0.00	294.40	.6962	0.00100	NA	NA	NA	0.90	0.318	5.02	7.00
Q30-10 Flow												
41.350	625.60	0.00	625.60	.6962	0.00100	NA	NA	NA	1.37	0.208	5.01	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
19D	37456	YOUGHIOGHENY RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
41.350	0.450	5.015	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
353.591	1.130	312.824	1.153
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.03	0.025	0.04	0.221
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
12.497	3.769	Tsivoglou	5
Reach Travel Time (days)			
0.248			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.025	2.03	0.04	11.45
0.050	2.03	0.04	11.45
0.074	2.03	0.04	11.45
0.099	2.03	0.04	11.45
0.124	2.03	0.04	11.45
0.149	2.03	0.04	11.45
0.173	2.03	0.04	11.45
0.198	2.03	0.04	11.45
0.223	2.03	0.04	11.45
0.248	2.03	0.04	11.45

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19D	37456	YOUGHIOGHENY 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
41.350	Dunbar STP	20.59	50	20.59	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
41.350	Dunbar STP	4.08	25	4.08	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)		
41.35	Dunbar STP	25	25	25	25	4	4	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19D	37456	YOUGHIOGHENY 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)
41.350	Dunbar STP	PA0218316	0.450	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4