pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0028452**
Facility Type	**Municipal**	APS ID	**1110462**
Major / Minor	**Minor**	Authorization ID	**1478676**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Dunkard Township & Bobtown Municipal Authority**	Facility Name	**Dunkard Bobtown STP**
Applicant Address	PO Box 352	Facility Address	State Route 2008, 455 Plant Road
	Bobtown, PA 15315-0352		Dilliner, PA 15327
Applicant Contact	Frank Greenwood	Facility Contact	Frank Greenwood
Applicant Phone	(724) 998-5982	Facility Phone	(724) 998-5982
Client ID	65653	Site ID	442724
Ch 94 Load Status	Not Overloaded	Municipality	Dunkard Township
Connection Status	No Limitations	County	Greene
Date Application Received	March 28, 2024	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: Permit Renewal

Summary of Review

Applicant requests renewal of an NPDES permit to discharge treated sewage from Dunkard Bobtown STP.

Sewage from Dunkard Township is collected and treated with primary settling, trickling filtration, clarification and UV disinfection.

No upgrades are proposed at this renewal.

Last year's DMR data shows the discharge is in compliance with the permit effluent limitations except one-time Ammonia exceedance. According to the Operations Section, currently there are no open violations or pending enforcements. However, based on the compliance check summary report there were multiple effluent limit violations of Ammonia Nitrogen reported during the current permit term. Operations Section will be addressing these issues accordingly.

No industrial dischargers are listed in the application.

Sludge use and disposal description and location(s): Sludge is disposed at Landfill. CBF Landfill is listed as the site name.

X		*Sara Abraham* Sara Reji Abraham, E.I.T. / Project Manager	May 7, 2024
X		*Pravin Patel* Pravin C. Patel, P.E. / Environmental Engineer Manager	05/07/2024

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.

Act 14 Notifications:

Dunkard Township - February 26, 2024
Greene County - February 26, 2024

Permit Conditions:

A. No Stormwater
B. Acquire Necessary Property Rights
C. Proper Sludge Disposal
D. Chlorine Optimization
E. Operator Notification
F. Solids Management

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.15
Latitude	39º 44' 41.41"	Longitude	-79º 59' 19.78"
Quad Name	Morgantown North	Quad Code	2106
Wastewater Description:	Treated Sewage Effluent		
Receiving Waters	Dunkard Creek (WWF)	Stream Code	41420
NHD Com ID	99418898	RMI	6.82
Drainage Area	225.78 sq.mi.	Yield (cfs/mi^2)	0.00568
Q_{7-10} Flow (cfs)	1.2824	Q_{7-10} Basis	Previous fact sheet
Elevation (ft)	838.3	Slope (ft/ft)	0.0017
Watershed No.	19-G	Chapter 93 Class.	WWF
Assessment Status	Impaired		
Cause(s) of Impairment	mercury, non-native fish/shellfish/zooplankton, osmotic pressure, total dissolved solids (TDS)		
Source(s) of Impairment	source unknown, subsurface (hardrock)		
TMDL Status	Final	Name	Dunkard Creek
Nearest Downstream Public Water Supply Intake	Dunkard Valley Water Authority		
PWS Waters	Monongahela River	Flow at Intake (cfs)	12.5

Treatment Facility Summary

Treatment Facility Name: Dunkard Bobtown STP

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Trickling Filter With Solids Removal	UV	0.15

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.15	250	Not Overloaded		

Compliance History

DMR Data for Outfall 001 (from March 1, 2023 to February 29, 2024)

Parameter	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23
Flow (MGD) Average Monthly	0.05164	0.11405	0.04981	0.04208	0.04745	0.02589	0.05784	0.03978	0.03894	0.03679	0.02901	0.07209
Flow (MGD) Daily Maximum	0.20802	0.46507	0.22832	0.31342	0.19587	0.06190	0.37632	0.19461	0.17422	0.0881	0.06463	0.39782
pH (S.U.) Instantaneous Minimum	6.5	6.8	6.2	6.3	6.2	6.3	6.3	6.3	6.3	6.3	6.2	6.2
pH (S.U.) Instantaneous Maximum	7.5	7.8	7.7	7.7	7.3	7.1	7.5	7.3	7.3	7.5	7.0	7.3
DO (mg/L) Instantaneous Minimum	5.1	7.0	4.6	4.8	4.2	4.2	4.2	4.4	4.3	4.5	5.9	6.8
CBOD5 (lbs/day) Average Monthly	3.2	4.4	4.9	1.9	3.7	1.9	4.4	3.0	4.1	2.5	0.8	1.9
CBOD5 (lbs/day) Weekly Average	6.0	6.5	8.4	2.0	10.2	2.4	8.8	6.7	8.2	4.5	1.0	3.8
CBOD5 (mg/L) Average Monthly	6.0	9.3	8.9	9.6	8.5	9.0	11.2	7.7	8.2	6.6	3.7	5.1
CBOD5 (mg/L) Weekly Average	7.1	17.1	13.4	12.0	10.5	10.4	14.1	10.5	10.2	7.9	4.7	6.5
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	86.6	61.5	61.9	48.1	66.9	62.9	35.8	54.1	82.7	51.2	94.8	88.6
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	102.2	103.9	137.7	63.2	104.4	75.9	49.1	109.4	178.9	67.2	151.2	95.3
BOD5 (mg/L) Raw Sewage Influent Average Monthly	223.6	115.3	119.2	247.1	220.7	310.0	115.9	150.7	251.0	185.9	423.8	266.4
TSS (lbs/day) Average Monthly	3.1	5.7	10.1	1.5	3.8	2.8	6.0	4.1	12.4	3.5	1.3	1.9

TSS (lbs/day) Raw Sewage Influent Average Monthly	87.9	49.5	56.4	40.6	40.2	49.4	30.7	41.9	43.7	57.8	43.8	47.8
TSS (lbs/day) Raw Sewage Influent Daily Maximum	138.7	69.5	95.8	64.8	62.5	60.9	59.9	69.1	68.7	140.9	53.4	58.2
TSS (lbs/day) Weekly Average	6.4	11.5	17.5	1.8	10.2	3.8	18.0	7.1	26.9	4.8	1.6	3.3
TSS (mg/L) Average Monthly	5.3	12.4	15.5	7.8	9.0	13.1	12.2	12.3	24.8	11.8	5.8	5.0
TSS (mg/L) Raw Sewage Influent Average Monthly	253.5	97.2	103.5	221.5	151.2	254.0	84.0	121.0	137.6	153.0	197.0	140.8
TSS (mg/L) Weekly Average	6.0	30.0	26.0	12.0	17.0	19.5	18.0	23.0	35.0	19.0	6.0	5.0
Fecal Coliform (No./100 ml) Geometric Mean	3	6	9	4	8	11	24	5	10	24	2	3
Fecal Coliform (No./100 ml) Instantaneous Maximum	5	75	87	18	94	74	57	21	65	445	6	19
Total Nitrogen (mg/L) Daily Maximum			55.2									
Ammonia (lbs/day) Average Monthly	1.6	3.1	2.5	1.2	0.8	0.9	1.3	0.7	0.9	1.5	0.3	0.6
Ammonia (lbs/day) Weekly Average	3.1	6.7	6.0	2.1	2.1	1.7	2.7	0.9	1.5	2.7	1.0	1.3
Ammonia (mg/L) Average Monthly	4.6	7.2	5.3	6.8	3.9	4.2	4.1	2.5	3.5	5.0	1.3	2.3
Ammonia (mg/L) Weekly Average	6.8	17.6	9.5	14.2	11.7	6.8	6.2	4.2	5.8	7.9	3.6	6.3
Total Phosphorus (mg/L) Daily Maximum			8.8									
UV Dosage (mjoules/cm^2) Average Monthly	76	79	73	78	74	75	74	74	73	71	76	78

Compliance History

Effluent Violations for Outfall 001, from: April 1, 2023 To: February 29, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Ammonia	10/31/23	Wkly Avg	11.7	mg/L	8.3	mg/L

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .15
Latitude 39º 44' 42.00" **Longitude** -79º 59' 20.00"
Wastewater Description: Treated 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)

Comments: TRC is not required since disinfection is via UV radiation.

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
NH3-N	7.38	Average Monthly	WQM 7.0
CBOD5	25	Average Monthly	WQM 7.0
DO	3.0	Average Monthly	WQM 7.0

* Previous WQM 7.0 report is attached. Also, the original Pollution Report is attached for Reference.

Best Professional Judgment (BPJ) Limitations

Dissolved Oxygen minimum limitation of 4.0 mg/L will be implemented based on the SOP/ best professional judgment. This limit was in the previous permit.

Anti-Backsliding

The limits for NH3N will remain at 5.5 due to anti-backsliding. The DO limit will remain at 4.0 mg/l due to anti-backsliding.

Disinfection

UV radiation is the method of disinfection. UV dosage shall be reported in millijoules/cm2.

Total Dissolved Solids (TDS)

TDS discharge concentration is reported as 467 mg/l (which is < 1000 mg/l) and is not a concern and monitoring is not included similar to the existing permit.

Mass Loadings

Mass loading limits are applicable for publicly owned treatment works. The existing average monthly and average weekly mass loading limits are continued for CBOD5, TSS, and NH_3-N in the draft permit.

TN and TP Monitoring

Nutrient monitoring is required to establish the nutrient load from the waste water 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 existing monitoring is continued in the draft permit.

E. Coli Monitoring

E. Coli monitoring (quarterly) is included in the draft permit based on DEP SOP/ Chapter 92a.61. This is a new requirement.

Monitoring Frequency Considerations

For pH, Dissolved Oxygen (DO) and Ultraviolet dosage (UV), a monitoring frequency of 1/day has been imposed similar to the existing permit. 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.

Influent Monitoring

For POTWs with design flows greater than 2,000 GPD, influent BOD5 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. The existing requirement is continued in the draft permit.

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POLLUTION REPORT

(I) Project Description

New Discharge (POINT)
Existing Discharge

Change
Preliminary

A. NPDES Application/Permit No. PA0028452
Part II permit Nos. 3073404

B. Applicant, Case Name or Permittee: DUNKARD BOBTOWN MUNICIPAL AUTHORITY

Municipality: DUNKARD TWP
County: GREENE

C. Type Waste

[X] Sewage
[ ] Industrial
[ ] Mine

D. Source and characteristics

TREATED SEWAGE FROM THE DUNKARD BOBTOWN STP

E. USGS Quad: MORGANTOWN NORTH

F. Latitude (or in. N) 21.7" PROPOSED RELOCATION OUTFALL 001 39°45'16"
Longitude (or in. W) 15.9" 79°59'20"

(II) Water Uses and Criteria

A. Receiving waters DUNKARD CRK Stream code 41420
Chapter 93 classification WWF R.M.I. 6.818
D.A. 225.78 sq.mi. Yield .00568 cfs/sq.mi.
Flow 1.2824 cfs. Based on data from BVL 12 P385 DUNKARD CREEK AT SHANNOPIN 03072000
Elevation 838.3 ft.

Exceptions to standard water use lists:
Add None
Delete —

Water Quality Criteria–Exceptions to Specific Criteria:
Add None
Delete —

Impoundment N/A
Special Downstream Uses:

B. Secondary Waters MONONGAHELA RIVER R.M.I.
Distance from discharge 6.818 mi. Ch. 93 classification WWF
D.A. sq.mi. Yield cfs/sq.mi.
Flow 480 cfs. Based on data from U.S. ARMY CORP OF ENGINEERS
Elevation 778 ft. Stream Code 37185

Exceptions to standard water use lists: —
Add
Delete —

Water Quality Criteria–Exceptions to Specific Criteria: —
Add
Delete —

Impoundment
Special Downstream Uses:
Downstream PWS: location
distance from discharge mi. intake mgd.
stream flow at intake cfs.

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(5)

EVALUATION OF THE PROPOSED
RELOCATION OF THE DBMA STP OUTFALL-
DISCHARGE TO DUNKARD CRK
DISCHARGE FLOW = 150,000GPD

WQM 6.3
MODEL
ANALYSIS

"EMPR MODE"

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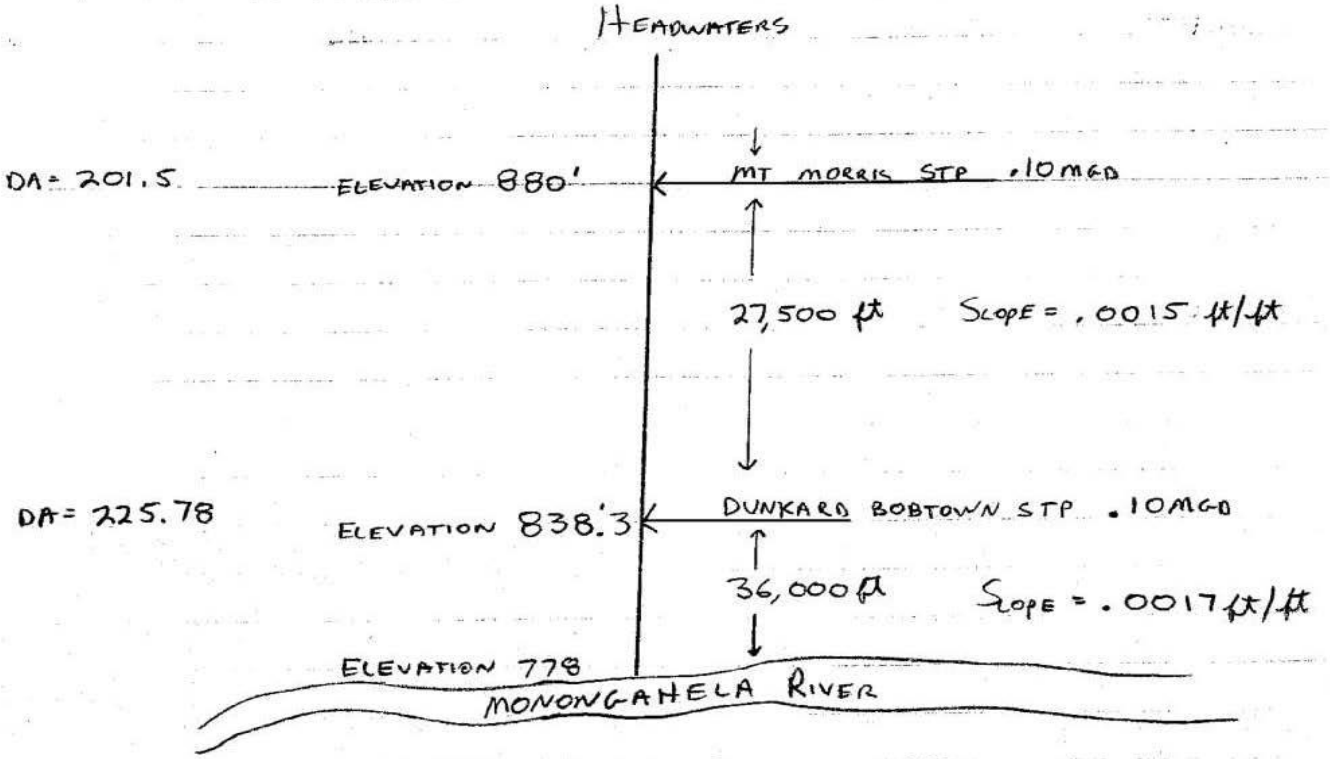
DISCHARGES WITH POSSIBLE INTERACTION TO THE DBMA STP. 8

FACILITY	NPDES #	STREAM	FLOW
① MT MORRIS STP	PA0096512	DUNKARD CRK	.10 MGD



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SLOPES & ELEVATIONS

(1)

SLOPE BETWEEN MT MORRIS & DBMA STP

$\Delta S \quad \frac{880 - 860_{CONTOUR}}{15000'} = .00133 ft/ft$

$\Delta S \quad \frac{860_{CONTOUR} - 840_{CONTOUR}}{11,500} = .00174 ft/ft$

.00133
+ .00174
.00307 ÷ 2 = .0015 ft/ft AVERAGE

ELEVATION AT DBMA STP

UPSTREAM CONTOUR = 840 SLOPE = .0017 4 DISTANCE = 1000'
1000' × .0017 = 1.7' 840 − 1.7' = **838.3'**

ELEVATION AT MT MORRIS = 880'
ELEVATION AT DBMA STP = 838.3
41.7 DROP

DISTANCE BETWEEN
DISCHARGES = 27,500'

AVE SLOPE = 41.7'/27,500' = **.0015 ft/ft**

SLOPE BETWEEN DBMA STP & MONONGAHELA RIVER

ELEVATION AT DBMA STP = 838.3'
ELEVATION of RIVER = 778 (POOL ELEVATION)
60.3

DISTANCE = 36,000'

$SLOPE = \frac{60.3}{36,000} =$ **.0017 ft/ft**

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(10)

DRAINAGE AREAS

MT MORRIS STP

FROM PAST POLLUTION REPORT D.A. DETERMINED BY PLANIMETERING D.A. BETWEEN THE DISCHARGE PT AND GAGING STATION AT SHANNOPIN, PA.

GAGING STATION D.A. = 229 mi^2
LESS PLANIMETERED AREA = −7.5 mi^2
UPSTREAM DA = 201.5

DUNKARD BOBTOWN STP

TOTAL DRAINAGE AREA TO GAGING STATION 229 mi^2
PLANIMETER AREA BETWEEN DBMA STP DISCHARGE AND GAGING STATION TO SUBTRACT OUT.

LESS AREA PLANIMETERED = −3.22
GAGING STATION D.A = 229
− 3.22
UPSTREAM D.A DBMA STP = 225.78 mi^2

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VELOCITIES AND TRAVEL TIMES (11)

DATA FROM THE USGS FIELD RECORDS FOR STATION 03072000 DUNKARD CRK AT SHANNOPIN PA WAS OBTAINED BY TELEPHONE FROM JOE LEZINSKI ON 4/8/85 BY HAL SNYDER. THE DATA IS CONTAINED IN APPENDIX D AND WAS USED TO ESTABLISH A Q_{7-10} VELOCITY AND TRAVEL TIME FOR THE MT-MORRIS STP DISCHARGE. THIS DATA WILL BE USED TO ESTABLISH VELOCITIES AND TRAVEL TIMES FOR THE FOLLOWING STREAM SEGMENTS

① MT MORRIS STP TO DUNKARD-BOBTOWN STP

② DUNKARD BOBTOWN STP TO MONONGAHELA RIVER

FROM SOLVED EQUATION IN APPENDIX D

$$y = aX^b \qquad -1.1824$$
$$y = 1.5784\ X$$

Y = VELOCITY
X = FLOW

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VELOCITIES AND TRAVEL TIMES (12)

MT MORRIS STP TO DBMA STP

TOTAL FLOW = TOTAL DA × YIELD + MT MORRIS FLOW

REACH (1) TOTAL FLOW = 201.5 × .00568 + (1.55 × .1)

TOTAL FLOW = 1.30 CFS

$Y = 1.5784 (1.30)^{-1.1824}$

VELOCITY = 1.1574 FPS AFTER DISCHARGE

DISTANCE TO DBMA STP = 27,500 ft

TRAVEL TIME = $\frac{27{,}500' / 1.1574 \text{ FPS}}{86{,}400 \text{ sec/DAY}}$ = .2750 days

DUNKARD BOBTOWN STP TO MONONGAHELA R.

REACH (2)

TOTAL FLOW = TOTAL DA × YIELD + MT MORRIS FLOW + DBMA STP FLOW

TOTAL FLOW = (225.78 × .00568) + .155 + .155

TOTAL FLOW = 1.5924 CFS

$V = 1.5784 (1.5924)^{-1.1824}$

VELOCITY = .9105 FPS AFTER DISCHARGE

DISTANCE TO MONONGAHELA RIVER = 36 000'

TRAVEL TIME = $\frac{36{,}000' / .9105 \text{ FPS}}{86{,}400 \text{ Sec/DAY}}$ = .4576 DAYS

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SUMMER DEPTHS (13)

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*********************************************
*                                           *
*   LEAST SQUARES EXPONENTIAL REGRESSION    *
*         Y=A*EXP(B*X)                      *
*                                           *
*********************************************
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DETERMINATION of Q_{7-10} DEPTHS AT Q_{7-10} FLOWS BELOW FACIT DISCHARGE

X = FLOW Y = DEPTH

INPUT LIST

#	--X--	--Y--
1	1.2	.1764
2	1.76	.2689
3	2.1	.29565

} FROM USGS DATA APPENDIX D

THE COEFFICIENTS FOR THE EXPRESSION

Y = A * EXP(B * X)

WERE COMPUTED AS FOLLOWS:

A = 8.890652E-02
AND B = .5916035

THE CORRELATION COEFFICIENT, R ,WAS FOUND TO BE .9780284

THE FOLLOWING SOLVES FOR Y USING THE VALUE ' 1.3 ' FOR X :

Y = A * EXP(B * X)
= 8.890652E-02 * EXP(.5916035 * 1.3)
DEPTH = .1918416 JUST BELOW MT MORRIS

THE FOLLOWING SOLVES FOR Y USING THE VALUE ' 1.5924 ' FOR X :

Y = A * EXP(B * X)
= 8.890652E-02 * EXP(.5916035 * 1.5924)
DEPTH = .2280705 JUST BELOW DUNKARD BOBTOWN STP

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COMPUTED W/D RATIOS AFTER DISCHARGES

① AT MT MORRIS STP (JUST BELOW DISCHARGE)

FLOW = 1.30 CFS
VELOCITY = 1.1574 FPS
DEPTH = .19184 (PREVIOUS POLLUTION REPORT USED .1936')

1.30 CFS = 1.1574(.19184')(W)
W = 5.855' PREVIOUS POLLUTION REPORT USED 5.8'
W/D = 5.855/.19184 = **30.5 TO 1**

② AT DUNKARD BOBTOWN STP (JUST BELOW DISCHARGE)

FLOW = 1.5924 CFS
VELOCITY = .9105 FPS
DEPTH = .22807'

1.5924 = .9105(.22807 × W)
W = 7.67'
W/D = 7.67'/.22807 = **33.62 TO 1**

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AVAILABLE STREAM DATA (15)

A PRIORITY WATER BODY SURVEY WAS CONDUCTED ON DUNKARD CREEK. THE REPORT IS DATED SEPT 1985 DATA FROM SAMPLING STATION 1 WILL BE USED AS STREAM BACKGROUND QUALITY. STATION 1, REFER TO APPENDIX C, IS UPSTREAM OF MOUNT MORRIS.

NOTE. STATIONS 1 THRU 4 INDICATE HIGH pH VALUES:

STATION	1	7.8
"	2	8.1
"	3	7.9
"	4	6.9

SEVERAL TREATED MINE DISCHARGES ENTER DUNKARD CRIC. MANY OF THESE DISCHARGES HAVE A HIGH pH due to THE ADDITION of ALKALINE SUBSTANCES USED TO PRECIPITATE METALS.

FROM STATION 3 *AMD BEGINS TO AFFECT DUNKARD CREEK.

AMD = ACID MINE DRAINAGE

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DUNKARD CREEK EVALUATION FROM MOUTH TO PERRY ELEMENTARY SCHOOL STP
FILE: DUNKARD CREEK.WQM6.3

HEADWATERS AND TRIBUTARY DATA

NO. OF REACHES : 2

RH	Q7-10 (CFS)	T (C)	PH	DO (MG/L)	CBOD5 (MG/L)	NH3-N (MG/L)
HW	1.144	25	7.8	7.12	.5	.07
1	0					
2	.1379	25	7.8	7.12	.5	.07

STREAM CHARACTERISTICS

RCH	Q7-10 CFS	T (C)	PH	DO MG/L	CBOD5 MG/L	NH3-N MG/L
1	1.14	25	7.8	7.12	.5	.07
2	1.28	25	7.8	7.12	.5	.07

Q 1-10/Q 7-10 = .64
Q30-10/Q 7-10 = 1.46

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DUNKARD CREEK EVALUATION FROM MOUTH TO PERRY ELEMENTARY SCHOOL STP
FILE: DUNKARD CREEK.WQM6.3

DISCHARGER DATA
Q7-10 DESIGN CONDITIONS

RH	Q MGD	T (C)	PH	DO MG/L	CBOD5 MG/L	NH3-N MG/L	KC
1	.1	20	7	2	25	25	1.5
2	.15	20	7	2	25	25	1.5

REACH CHARACTERISTICS

RH	D.O. GOAL	KN (/D)	RCH. SL. (FT/FT)	RCH. LEN. (FT.)	DRAIN AREA (MI^2)	W/D
1	5	.6	1.5E-03	27500	201.5	30.5
2	5	.6	1.7E-03	36000	225.7	33.6

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DUNKARD CREEK EVALUATION FROM MOUTH TO PERRY ELEMENTARY SCHOOL STP
FILE: DUNKARD CREEK.WQM6.3

REACH CHARACTERISTICS

RH	KR (/D)	TT (DAYS)
1	0	.275
2	0	.4576

NH3-N DISCHARGE ALLOCATIONS AT Q30-10

DIS	Q (MGD)	IND. CONC. (MG/L)	ALL. CONC. (MG/L)	CRIT. RCH.	PCT. RED. (%)
1	.1	10.57	7.35	2	30.5
2	.15	8.4	5.84	2	30.5

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Dunkard Bobtown STP

NPDES Permit No.

DUNKARD CREEK EVALUATION FROM MOUTH TO PERRY ELEMENTARY SCHOOL STP
FILE: DUNKARD CREEK.WQM6.3

NH3-N DISCHARGE ALLOCATIONS AT Q1-10

DIS	Q (MGD)	IND. CONC. (MG/L)	ALL. CONC. (MG/L)	CRIT. RCH.	PCT. RED. (%)
1	.1	24.19	20.03	2	17.2
2	.15	20.86	17.27	2	17.2

MULTIPLE DISCHARGE LIMITATIONS
(TOTAL) DISCHARGE = .1 MGD
TEMP = 24.4 PH = 7.6
CBOD-5= 3.42 NH3-N= .94 D.O. = 6.51
KC'= 1.259 KN= .6 D.O.GOAL = 5
KR= 16.5 (TSIVOGLOU)
DIS. 1 RCH. 1 TRVL TIME:.275

TR.TM. (DAYS)	CBOD-5 (MG/L)	NH3-N (MG/L)	D.O. (MG/L)
.028	3.28	.92	6.97
.055	3.14	.89	7.12
.083	3.01	.87	7.12
.11	2.89	.85	7.12
.138	2.77	.83	7.12
.165	2.65	.82	7.12
.193	2.54	.8	7.12
.22	2.44	.78	7.12
.248	2.33	.76	7.12
.275	2.24	.74	7.12

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DUNKARD CREEK EVALUATION FROM MOUTH TO PERRY ELEMENTARY SCHOOL STP
FILE: DUNKARD CREEK.WQM6.3

MULTIPLE DISCHARGE LIMITATIONS

(TOTAL) DISCHARGE = .25 MGD
TEMP = 23.8 PH = 7.5
CBOD-5= 5.26 NH3-N= 1.4 D.O. = 6.41
KC'= 1.338 KN= .6 D.O.GOAL = 5
KR= 14.712 (TSIVOGLOU)
DIS. 2 RCH. 2 TRVL TIME:.458

TR.TM. (DAYS)	CBOD-5 (MG/L)	NH3-N (MG/L)	D.O. (MG/L)
.046	4.89	1.35	6.88
.092	4.54	1.3	7.12
.137	4.22	1.25	7.12
.183	3.93	1.21	7.12
.229	3.65	1.16	7.12
.275	3.39	1.12	7.12
.32	3.15	1.08	7.12
.366	2.93	1.04	7.12
.412	2.73	1	7.12
.458	2.53	.97	7.12

EFFLUENT LIMITATIONS DISPLAY

DIS #	Q MGD	NH3-N TOX. 1 DAY	30 DAY	DISS. OXYGEN C-BOD5 30-DAY	NH3-N 30-DAY	EFF. D.O.
1	.1	14.7	7.3	25	7.3	2
2	.15	11.7	5.8	25	5.8	2

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NPDES Permit No.

DUNKARD CREEK EVALUATION FROM MOUTH TO PERRY ELEMENTARY SCHOOL STP
FILE: DUNKARD CRK2.WQM6.3

WINTER

HEADWATERS AND TRIBUTARY DATA

NO. OF REACHES : 2

RH	Q7-10 (CFS)	T (C)	PH	DO (MG/L)	CBOD5 (MG/L)	NH3-N (MG/L)
HW	2.289	5	7.8	10.5	.5	.07
1	0					
2	.2758	5	7.8	10.5	.5	.07

STREAM CHARACTERISTICS

RCH	Q7-10 CFS	T (C)	PH	DO MG/L	CBOD5 MG/L	NH3-N MG/L
1	2.29	5	7.8	10.5	.5	.07
2	2.56	5	7.8	10.5	.5	.07

Q 1-10/Q 7-10 = .64
Q30-10/Q 7-10 = 1.46

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DUNKARD CREEK EVALUATION FROM MOUTH TO PERRY ELEMENTARY SCHOOL STP
FILE: DUNKARD CRK2.WQM6.3

DISCHARGER DATA
Q7-10 DESIGN CONDITIONS

RH	Q MGD	T (C)	PH	DO MG/L	CBOD5 MG/L	NH3-N MG/L	KC
1	.1	15	7	2	25	25	1.5
2	.15	15	7	2	25	25	1.5

REACH CHARACTERISTICS

RH	D.O. GOAL	KN (/D)	RCH. SL. (FT/FT)	RCH. LEN. (FT.)	DRAIN AREA (MI^2)	W/D
1	5	.6	1.5E-03	27500	201.531	
2	5	.6	1.7E-03	36000	225.726.7	

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DUNKARD CREEK EVALUATION FROM MOUTH TO PERRY ELEMENTARY SCHOOL STP
FILE: DUNKARD CRK2.WQM6.3

REACH CHARACTERISTICS

RH	KR (/D)	TT (DAYS)
1	0	.5801
2	0	.9201

NH3-N DISCHARGE ALLOCATIONS AT Q30-10

DIS	Q (MGD)	IND. CONC. (MG/L)	ALL. CONC. (MG/L)	CRIT. RCH.	PCT. RED. (%)
1	.1	25	25	0	0
2	.15	25	25	0	0

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DUNKARD CREEK EVALUATION FROM MOUTH TO PERRY ELEMENTARY SCHOOL STP
FILE: DUNKARD CRK2.WQM6.3

NH3-N DISCHARGE ALLOCATIONS AT Q1-10

DIS	Q (MGD)	IND. CONC. (MG/L)	ALL. CONC. (MG/L)	CRIT. RCH.	PCT. RED. (%)
1	.1	50	50	0	0
2	.15	50	50	0	0

MULTIPLE DISCHARGE LIMITATIONS
(TOTAL) DISCHARGE = .1 MGD
TEMP = 5.6 PH = 7.7
CBOD-5= 2.05 NH3-N= 1.65 D.O. = 9.96
KC'= 1.093 KN= .6 D.O.GOAL = 5
KR= 7.822 (TSIVOGLOU)
DIS. 1 RCH. 1 TRVL TIME:.58

TR.TM. (DAYS)	CBOD-5 (MG/L)	NH3-N (MG/L)	D.O. (MG/L)
.058	1.98	1.63	10.5
.116	1.92	1.61	10.5
.174	1.86	1.59	10.5
.232	1.8	1.57	10.5
.29	1.74	1.56	10.5
.348	1.68	1.54	10.5
.406	1.63	1.52	10.5
.464	1.58	1.5	10.5
.522	1.53	1.49	10.5
.58	1.48	1.47	10.5

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DUNKARD CREEK EVALUATION FROM MOUTH TO PERRY ELEMENTARY SCHOOL STP
FILE: DUNKARD CRK2.WQM6.3

MULTIPLE DISCHARGE LIMITATIONS

(TOTAL) DISCHARGE = .25 MGD
TEMP = 6.3 PH = 7.6
CBOD-5= 3.24 NH3-N= 3.19 D.O. = 9.83
KC'= 1.222 KN= .6 D.O.GOAL = 5
KR= 7.317 (TSIVOGLOU)
DIS. 2 RCH. 2 TRVL TIME:.92

TR.TM. (DAYS)	CBOD-5 (MG/L)	NH3-N (MG/L)	D.O. (MG/L)
.092	3.05	3.13	10.5
.184	2.87	3.07	10.5
.276	2.7	3.01	10.5
.368	2.55	2.95	10.5
.46	2.4	2.9	10.5
.552	2.26	2.84	10.5
.644	2.13	2.79	10.5
.736	2	2.73	10.5
.828	1.89	2.68	10.5
.92	1.78	2.63	10.5

EFFLUENT LIMITATIONS DISPLAY

DIS #	Q MGD	NH3-N TOX. 1 DAY	30 DAY	DISS. OXYGEN C-BOD5 30-DAY	NH3-N 30-DAY	EFF. D.O.
1	.1	50	25	25	25	2
2	.15	50	25	25	25	2

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III. Effluent Limitations:

A. Outfall 001 @ DUNKARD CREEK B. Discharge Volume .150

Parameter	lbs/day			mg/l		
(Sewage) / (Industrial Waste)	Monthly Avg. / Daily Avg.	Weekly Avg.	Daily Max. / Daily Max.	Monthly Avg. / Daily Avg.	Weekly Avg. / Daily Max.	Instan. Max. / Instan. Max.
1. $CBOD_5$	31.3	46.9		25	38	50
2. TSS	37.5	56.3		30	45	60
3. NH_3-N						
4. 5/1 TO 10/31	6.8	10.3		5.5	8.3	11.0
5. 11/1 TO 4/30	20.6	30.9		16.5	24.8	33.0
6. pH				6.0	TO	9.0
7. FECAL COLIFORMS						
8. 5/1 TO 9/30				200/100 ML		
9. 10/1 TO 4/30				~~10,000~~/100ML		RCA
10.				2000/100ML		
11.						
12.						

Effluent Limitation Rational

1. EPA Guidelines
2. Regulation:
3. Water Quality Criteria WQM 6.3 CHAPT 93

Approvals

Reviewer Planning/WQ Raymond E. Lattimer RENEWAL Date 2/25/02 REG / 1/17/07 REG

Geologist or Aquatic Biologist Date

Chief Planning/WQ L R Balta Date 7/10/97

31 RENEWAL LRB 3/6/02 DJF 2/20/07

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NPDES Permit Fact Sheet
Dunkard Bobtown STP
NPDES Permit No. PA0028452

WQM7.0 OUTPUT

NPDES Permit Fact Sheet
PA0028462
Dunkard Bobtown STP

NPDES Permit No.

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
	19G	41420	DUNKARD CREEK	**12.030**	880.00	201.50	0.00150	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	0.006	0.00	0.00	0.275	1.157	30.5	5.90	0.20	20.00	7.80	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
Mt Morris STP	PA0096512	0.1000	0.1000	0.1000	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

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NPDES Permit No.

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
19G	41420	DUNKARD CREEK	**0.100**	778.10	251.00	0.00170	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	0.00	0.000	0.000	35.0	0.00	0.00	20.00	7.80	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

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WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19G	41420	DUNKARD CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
12.030	1.21	0.00	1.21	.1547	0.00150	.2	5.89	29.46	1.16	0.276	20.57	7.60
6.810	1.35	0.00	1.35	.3868	0.00170	.23	8.31	36.14	0.91	0.450	21.11	7.46
Q1-10 Flow												
12.030	0.77	0.00	0.77	.1547	0.00150	NA	NA	NA	0.79	0.405	20.83	7.52
6.810	0.87	0.00	0.87	.3868	0.00170	NA	NA	NA	0.71	0.577	21.54	7.38
Q30-10 Flow												
12.030	1.64	0.00	1.64	.1547	0.00150	NA	NA	NA	1.52	0.209	20.43	7.64
6.810	1.84	0.00	1.84	.3868	0.00170	NA	NA	NA	1.26	0.324	20.87	7.52

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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	85.00%	Use Balanced Technology	☑
D.O. Goal	6		

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WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19G	41420	DUNKARD CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
12.030	Mt Morris STP	5.33	32	5.33	24.9	2	22
6.810	DBMA STP	5.62	26.62	6.1	20.71	2	22

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
12.030	Mt Morris STP	1.29	14.96	1.29	9.48	2	37
6.810	DBMA STP	1.3	11.65	1.33	7.38	2	37

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)		
12.03	Mt Morris STP	25	25	9.48	9.48	3	3	0	0
6.81	DBMA STP	25	25	7.38	7.38	3	3	0	0

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19G	41420	DUNKARD CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
12.030	0.100	20.567	7.595
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
5.891	0.200	29.456	1.157
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.61	0.846	1.08	0.731
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.648	16.720	Tsivoglou	6
Reach Travel Time (days)			
0.276			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.028	4.50	1.05	7.70
0.055	4.39	1.03	7.70
0.083	4.29	1.01	7.70
0.110	4.19	0.99	7.70
0.138	4.09	0.97	7.70
0.165	3.99	0.95	7.70
0.193	3.90	0.93	7.70
0.220	3.81	0.92	7.70
0.248	3.72	0.90	7.70
0.276	3.63	0.88	7.70

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
6.810	0.250	21.110	7.462
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
8.312	0.230	36.138	0.911
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
6.34	1.022	1.67	0.762
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.122	15.108	Tsivoglou	6
Reach Travel Time (days)			
0.450			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.045	6.04	1.62	7.52
0.090	5.75	1.56	7.63
0.135	5.48	1.51	7.63
0.180	5.22	1.46	7.63
0.225	4.98	1.41	7.63
0.270	4.74	1.36	7.63
0.315	4.52	1.32	7.63
0.360	4.30	1.27	7.63
0.405	4.10	1.23	7.63
0.450	3.91	1.19	7.63

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NPDES Permit No.

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19G	41420	DUNKARD CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
12.030	Mt Morris STP	PA0096512	0.100	CBOD5	25		
				NH3-N	9.48	18.96	
				Dissolved Oxygen			3

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)
6.810	DBMA STP	PA0028452	0.150	CBOD5	25		
				NH3-N	7.38	14.76	
				Dissolved Oxygen			3

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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
19G	41420	DUNKARD CREEK	**12.030**	880.00	201.50	0.00150	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	0.012	0.00	0.00	0.275	1.157	30.5	5.90	0.20	5.00	7.80	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
Mt Morris STP	PA0096512	0.1000	0.1000	0.1000	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	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

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Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
19G	41420	DUNKARD CREEK	0.100	778.10	251.00	0.00170	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	0.00	0.000	0.000	35.0	0.00	0.00	5.00	7.80	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	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	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

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NPDES Permit No.

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19G	41420	DUNKARD CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
12.030	2.42	0.00	2.42	.1547	0.00150	.2	11.11	55.57	1.16	0.276	5.90	7.68
6.810	2.71	0.00	2.71	.3868	0.00170	.23	14.78	64.25	0.91	0.450	6.87	7.58
Q1-10 Flow												
12.030	1.55	0.00	1.55	.1547	0.00150	NA	NA	NA	1.44	0.221	6.36	7.63
6.810	1.73	0.00	1.73	.3868	0.00170	NA	NA	NA	1.20	0.341	7.74	7.51
Q30-10 Flow												
12.030	3.29	0.00	3.29	.1547	0.00150	NA	NA	NA	2.92	0.109	5.67	7.71
6.810	3.69	0.00	3.69	.3868	0.00170	NA	NA	NA	2.31	0.178	6.42	7.62

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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	85.00%	Use Balanced Technology	☑
D.O. Goal	6		

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WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19G	41420	DUNKARD CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
12.030	Mt Morris STP	10.31	50	10.31	50	0	0
6.810	DBMA STP	10.95	50	12.31	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
12.030	Mt Morris STP	2.66	25	2.66	25	0	0
6.810	DBMA STP	2.73	25	2.83	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)		
12.03	Mt Morris STP	25	25	25	25	3	3	0	0
6.81	DBMA STP	25	25	25	25	3	3	0	0

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19G	41420	DUNKARD CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
12.030	0.100	5.902	7.680
Reach Width (ft)	Reach Depth (ft)	Reach WDRatio	Reach Velocity (fps)
11.114	0.200	55.571	1.157
Reach CBOD5 (mg/L)	Reach Kc (1/days)	Reach NH3-N (mg/L)	Reach Kn (1/days)
3.38	0.627	1.50	0.237
Reach DO (mg/L)	Reach Kr (1/days)	Kr Equation	Reach DO Goal (mg/L)
7.928	11.808	Tsivoglou	6
Reach Travel Time (days)			
0.276			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.028	3.35	1.49	8.24
0.055	3.32	1.48	8.24
0.083	3.29	1.47	8.24
0.110	3.26	1.46	8.24
0.138	3.23	1.46	8.24
0.165	3.20	1.45	8.24
0.193	3.18	1.44	8.24
0.220	3.15	1.43	8.24
0.248	3.12	1.42	8.24
0.276	3.09	1.41	8.24

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
6.810	0.250	6.874	7.579
Reach Width (ft)	Reach Depth (ft)	Reach WDRatio	Reach Velocity (fps)
14.778	0.230	64.250	0.911
Reach CBOD5 (mg/L)	Reach Kc (1/days)	Reach NH3-N (mg/L)	Reach Kn (1/days)
4.63	0.866	3.04	0.255
Reach DO (mg/L)	Reach Kr (1/days)	Kr Equation	Reach DO Goal (mg/L)
7.850	10.779	Tsivoglou	6
Reach Travel Time (days)			
0.450			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.045	4.53	3.01	8.24
0.090	4.44	2.97	8.24
0.135	4.34	2.94	8.24
0.180	4.25	2.91	8.24
0.225	4.16	2.87	8.24
0.270	4.07	2.84	8.24
0.315	3.99	2.81	8.24
0.360	3.90	2.78	8.24
0.405	3.82	2.75	8.24
0.450	3.74	2.71	8.24

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NPDES Permit No.

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19G	41420	DUNKARD CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
12.030	Mt Morris STP	PA0096512	0.100	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

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)
6.810	DBMA STP	PA0028452	0.150	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	0.15	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	31.3	47.6	XXX	25.0	38.0	50	1/week	8-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/week	8-Hr Composite
Total Suspended Solids	37.6	56.3	XXX	30.0	45.0	60	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	Report Daily Max	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
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

Outfall 001 , Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia-Nitrogen Nov 1 - Apr 30	20.7	31.0	XXX	16.5	24.8	33	1/week	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	6.9	10.3	XXX	5.5	8.3	11	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite
Ultraviolet light dosage (mjoules/cm²)	XXX	XXX	XXX	Report	XXX	XXX	1/day	Measured