pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0252921**
Facility Type	**Non-Municipal**	APS ID	**891930**
Major / Minor	**Minor**	Authorization ID	**1391800**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Dana Mining Company of Pennsylvania, LLC**	Facility Name	**4 West Deep Mine Portal STP**
Applicant Address	966 Crafts Run Road	Facility Address	Bald Hill Road
	Maidsville, WV 26541-8145		Bobtown, PA 15315
Applicant Contact	Mr. Brandon Simpson	Facility Contact	Mr. Scott Gibson
Applicant Phone	304.376.1257	Facility Phone	304.288.2433
Client ID	136272	Site ID	624403
Ch 94 Load Status		Municipality	Dunkard Township
Connection Status		County	Greene
Date Application Received	April 5, 2022	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: Application for the renewal of an NPDES permit for the discharge of treated Sewage.

Summary of Review

The applicant has applied for a renewal of an existing NPDES Permit, PA025291, which was previously issued by the Department on November 29, 2016. That permit expired on November 30, 2021. Application data indicates that the facility has not discharged since 2019.

WQM Permit No. 3005402, issued on December 23, 2005, and later amended on April 3, 2008, authorized construction of a STP with an annual average design flow of 0.009 MGD. The existing facility consists of an aerated flow EQ tank, 3 Chromaglass CA-30 SBRs (parallel operation), fixed media filtration, sludge processing tank, and chlorine disinfection.

The receiving stream, UNT to Dunkard Creek, is currently classified as a WWF, located in State Watershed No. 19-G.

The applicant has complied with Act 14 Notifications and no comments were received.

Sludge use and disposal description and location(s): Sludge is pumped from the sludge holding tank by an approved waste hauler. No sludge has been wasted in the past 4 years, as the facility is not currently in operation.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-

Approve	Deny	Signatures	Date
X		William C. Mitchell, E.I.T. / Environmental Engineering Specialist	October 3, 2022
X		Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	October 28, 2022

Summary of Review
day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.009
Latitude	39º 45' 21.98"	Longitude	-80º 00' 25.66"
Quad Name	Garrads Fort	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Dunkard Creek (WWF)	Stream Code	UNT to 41420
NHD Com ID	99418730	RMI	8.8 on 41420
Drainage Area	220	Yield (cfs/mi^2)	0.02922
Q_{7-10} Flow (cfs)	6.43	Q_{7-10} Basis	USGS StreamStats Version 1.2.22 (Attachment # 1)
Elevation (ft)	859	Slope (ft/ft)	
Watershed No.	19-G	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	NONE	Exceptions to Criteria	NONE
Assessment Status	Impaired		
Cause(s) of Impairment	SILTATION		
Source(s) of Impairment	HABITAT MODIFICATION - OTHER THAN HYDROMODIFICATION		
TMDL Status	Final	Name	Dunkard Creek

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

Nearest Downstream Public Water Supply Intake	Southwestern PA Water Authority, PWS ID No. 5300017		
PWS Waters	Monongahela River	Flow at Intake (cfs)	530
PWS RMI	71.18	Distance from Outfall (mi)	24.8

Changes Since Last Permit Issuance: No Discharge Since 2019.

Other Comments: This discharge is to an UNT of Dunkard Creek, which shows up as a steam in USGS StreamStats but is not shown or number in eMapPA. Limits for this facility will again be evaluated (WQM 7.0 Version 1.1 & TRC_CALC) as a direct discharge to Dunkard Creek, Stream Code 41420, RMI 8.8.

This discharge is tributary to the Dunkard Creek Watershed, which has a Final TMDL, and is impaired by metals and pH. This facility is not expected to contribute to the stream impairment for which abandoned mine drainage is source of such impairment. No WLAs have been developed for this sewage discharge and they are not expected to contribute to the stream impairment for these pollutants. No limitations or monitoring requirements for iron, manganese, or aluminum will be placed on this facility. If this facility becomes operational again monitoring for these metals on an annual basis should be considered to confirm that this facility is not contributing to stream impairment.

Treatment Facility Summary

Treatment Facility Name: 4 W Deep Mine Portal STP

WQM Permit No.	Issuance Date
3005402	12/23/2005
3005402 A-1	11/16/2007

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	SBRs	Chlorine Disinfection	0.009

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.009		Inactive	Sludge Holding Tank	Pumped/Hauled Off-site

Changes Since Last Permit Issuance: Application indicates no discharge since 2019.

Other Comments: WQM Permit No. 3005402, issued December 23, 2005, and later amended on April 3, 2008, authorized construction of a STP with an annual average design flow of 0.009 MGD. The existing facility consists of an aerated flow EQ tank, 3 Chromaglass CA-30 SBRs (parallel operation), fixed media filtration, sludge holding tank, and chlorine disinfection.

Compliance History

Operations Compliance Check Summary Report

Facility: 4 West Deep Mine Portal STP (Dana Mining Co.)

NPDES Permit No.: PA0252921

Compliance Review Period: 9/1/2017-9/19/2022

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
3319907	12/20/2021	Administrative/File Review	PA Dept of Environmental Protection	Violation(s) Noted
3265743	09/23/2021	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted
3057662	07/21/2020	Administrative/File Review	PA Dept of Environmental Protection	No Violations Noted
2942386	10/08/2019	Administrative/File Review	PA Dept of Environmental Protection	Violation(s) Noted

Violation Summary:

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE
944809	12/20/2021	302.202	Operator Certification - Failure to submit annual system fee	01/13/2022
864512	10/08/2019	302.202	Operator Certification - Failure to submit annual system fee	10/22/2019

Open Violations by Client ID:

No open violations for Client ID 136272

Enforcement Summary:

ENF ID	ENF TYPE	EXECUTED DATE	ENF FINALSTATUS	ENF CLOSED DATE
401382	NOV	12/20/2021	Comply/Closed	01/13/2022
379535	NOV	10/08/2019	Administrative Close Out	10/22/2019

Effluent Violation Summary:

No effluent exceedances indicated on eDMRs submitted during the review period.

Compliance Status: Facility is currently in compliance with no enforcements pending.

Completed by: Amanda Schmidt

Completed date: 9/19/22

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.009
Latitude 39º 45' 21.98" **Longitude** -80º 00' 25.66"
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)

Comments: The discharge was evaluated using WQM 7.0 Version 1.1 & TRC_CALC (Attachments 2 & 3) to evaluate $CBOD_5$, Ammonia Nitrogen, Dissolved Oxygen, and TRC parameters. The modeling results show the above technology based effluent limitations for $CBOD_5$ and TRC are appropriate.

For existing discharges, if WQM modeling results for summer indicates that an average monthly limit of 25 mg/L (ammonia-nitrogen) is acceptable, the application manager will generally establish a year-round monitoring requirement for ammonia-nitrogen (Section I.A, Note 5, SOP for Clean Water Program, Establishing Effluent Limitations for Individual Sewage Permits, Final November 9, 2012, Revised March 24, 2021, Version 1.9).

Water Quality-Based Limitations

Comments: NO WQBELs will be established at this time for this facility (Department Models WQM 7.0 Version 1.1 & TRC_CALC).

Best Professional Judgment (BPJ) Limitations

Comments: A minimum Dissolved Oxygen (DO) limit of 4.0 mg/L should be established based on BPJ to ensure adequate operation and maintenance (Section I.A, Note 6, SOP for Clean Water Program, Establishing Effluent Limitations for Individual Sewage Permits, Final November 9, 2012, Revised March 24, 2021, Version 1.9)

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 (l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the

time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.

The facility is not seeking to revise the previously permitted effluent limits.

Additional Considerations

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Departments Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits (Document No. 362-0400-001).

Sewage discharges will include monitoring, at a minimum, for *E. Coli*, in new and reissued permits, with a monitoring frequency of 1/year for facilities with a design flows of 0.002 – 0.05 MGD per Chapter 92a.61.

Nutrient monitoring is required 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). A 1/year monitoring requirement for Total N and Total Phosphorus has been added to the permit per Chapter 92a.61.

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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	0.009	XXX	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	Grab
TSS	XXX	XXX	XXX	30	XXX	60	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	Report	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

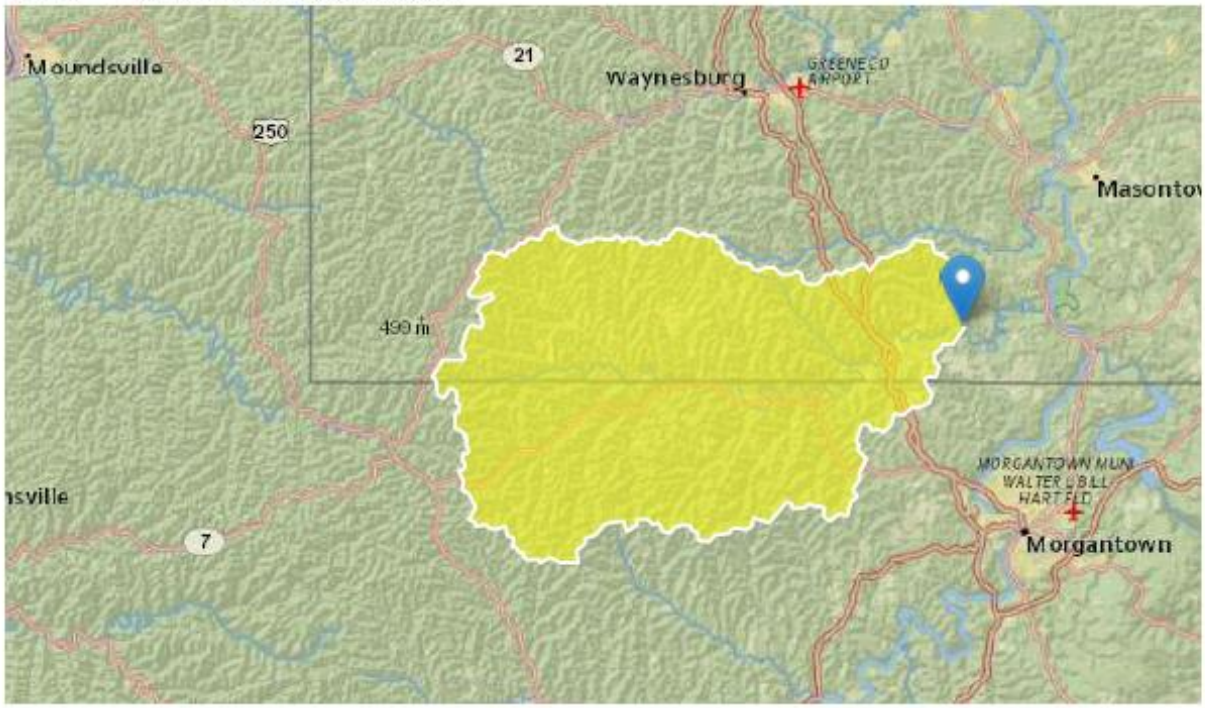
Compliance Sampling Location: Outfall 001

Other Comments: N/A

Attachment #1 – USGS StreamStats Report

StreamStats Report - PA0252921

Region ID: PA
Workspace ID: PA20220927133746027000
Clicked Point (Latitude, Longitude): 39.75542, -80.00527
Time: 2022-09-27 09:38:12 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	220	square miles
ELEV	Mean Basin Elevation	1222	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (220 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	220	square miles	2.26	1400
ELEV	Mean Basin Elevation	1222	feet	1050	2580

Low-Flow Statistics Flow Report [100.0 Percent (220 square miles) Low Flow Region 4]

PII: Prediction Interval-Lower, Plu: 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	13.3	ft^3/s	43	43
30 Day 2 Year Low Flow	20	ft^3/s	38	38
7 Day 10 Year Low Flow	6.43	ft^3/s	66	66
30 Day 10 Year Low Flow	9.19	ft^3/s	54	54
90 Day 10 Year Low Flow	14.5	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: 4.10.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment #2 – WQM 7.0 Version 1.1 – Warmer Period

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	**8.800**	859.00	220.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.029	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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
4 W D Mine STP	PA0252921	0.0000	0.0090	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

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	**8.400**	856.00	221.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.029	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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
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												
8.800	6.43	0.00	6.43	.0139	0.00142	.794	49.49	62.33	0.16	0.149	24.99	7.00
Q1-10 Flow												
8.800	4.11	0.00	4.11	.0139	0.00142	NA	NA	NA	0.13	0.191	24.98	7.00
Q30-10 Flow												
8.800	8.74	0.00	8.74	.0139	0.00142	NA	NA	NA	0.19	0.126	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	6		

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
8.800	4 W D Mine STP	11.09	50	11.09	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
8.800	4 W D Mine STP	1.37	25	1.37	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)		
8.80	4 W D Mine STP	25	25	25	25	3	3	0	0

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
8.800	0.009	24.989	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
49.486	0.794	62.332	0.164
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.05	0.035	0.05	1.028
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.232	2.213	Tsivoglou	6
Reach Travel Time (days)			
0.149			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.015	2.05	0.05	7.54
0.030	2.05	0.05	7.54
0.045	2.05	0.05	7.54
0.060	2.04	0.05	7.54
0.075	2.04	0.05	7.54
0.089	2.04	0.05	7.54
0.104	2.04	0.05	7.54
0.119	2.04	0.05	7.54
0.134	2.04	0.05	7.54
0.149	2.04	0.05	7.54

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)
8.800	4 W D Mine STP	PA0252921	0.000	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

Attachment # 3 – TRC_CALC

PA0252921_ TRC_CALC

TRC EVALUATION

6.43	= Q stream (cfs)	0.5	= CV Daily
0.009	= 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)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 147.341	1.3.2.iii	WLA cfc = 143.639
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 54.903	5.1d	LTA_cfc = 83.505

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)**