pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0103608**
Facility Type	**Non-Municipal**	APS ID	**1020145**
Major / Minor	**Minor**	Authorization ID	**1321069**

Applicant and Facility Information

Applicant Name	**Heather & Shaun Welsh**	Facility Name	**Country Acres MHP**
Applicant Address	11901 Country Acres Trailer Court 2	Facility Address	25622 Country Acres Trailer Court A
	Guys Mills, PA 16327-4207		Guys Mills, PA 16327-4212
Applicant Contact	Heather Welsh	Facility Contact	
Applicant Phone	(814) 795-6040	Facility Phone	
Client ID	327172	Site ID	2202
Ch 94 Load Status	Not Overloaded	Municipality	East Mead Township
Connection Status		County	Crawford
Date Application Received	July 2, 2020	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application .

Summary of Review

The permittee is currently using the eDMR system for reporting.

No changes to the discharge quality or quantity were proposed as part of this renewal.

There are no open violations currently in EFACTS for this permittee as of 11/1/2021

Sludge use and disposal description and location(s): Hauled offsite.

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.

Approve	Deny	Signatures	Date
X		Jordan A. Frey, E.I.T. Jordan A. Frey, E.I.T. / Civil Engineer Trainee	November 1, 2021
X		Justin C. Dickey Justin C. Dickey, P.E. / Environmental Engineer Manager	November 2, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.00875
Latitude	41º 38' 4.10"	Longitude	-80º 1' 53.95"
Quad Name	Blooming Valley	Quad Code	41080F1
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary of Little Sugar Creek (CWF)	Stream Code	52187
NHD Com ID	127343244	RMI	
Drainage Area	0.22	Yield (cfs/mi^2)	0.075 (perennial stream)
Q_{7-10} Flow (cfs)	0.0165	Q_{7-10} Basis	Woodcock Creek @ Blooming Valley
Elevation (ft)	1376	Slope (ft/ft)	0.01496
Watershed No.	16-D	Chapter 93 Class.	CWF
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)	7.0	Default
Temperature (°F)	20	Default
Hardness (mg/L)	100	Default
Other:	0.1	Default

Nearest Downstream Public Water Supply Intake		Aqua Pennsylvania, Inc. - Emlenton	
PWS Waters	Allegheny River	Flow at Intake (cfs)	1390
PWS RMI	90.0	Distance from Outfall (mi)	>25

Changes Since Last Permit Issuance: None.

Other Comments: None.

Treatment Facility Summary

Treatment Facility Name: Country Acres MHP

WQM Permit No.	Issuance Date
2010401	6/16/2010
2071406 T-1 A-1	6/16/ 2010
2071406 T-2	1/24/2018

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia Reduction	Stabilization Lagoon	Hypochlorite	0.009

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0088		Not Overloaded		

Changes Since Last Permit Issuance: An amendment to the WQM permit was issued on January 24, 2018 to correct inadvertently indicating tablet chlorination was being used and to show that a hypochlorinator is in use.

Other Comments: None.

Compliance History

DMR Data for Outfall 001 (from October 1, 2020 to September 30, 2021)

Parameter	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20
Flow (MGD) Average Monthly	0.00627		0.00627		0.00627					0.00627	0.00627	0.00627
Flow (MGD) Daily Maximum	0.0129		0.0129		0.0129					0.0129	0.0129	0.0129
pH (S.U.) Minimum	7.1		7.1		7.1					7.1	7.1	6.25
pH (S.U.) Maximum	7.3		7.3		7.3					7.3	7.3	7.3
DO (mg/L) Minimum	10.5		10.5		10.5					10.0	10.5	10.5
TRC (mg/L) Average Monthly	0.34		0.35		0.35					0.38	0.33	0.38
TRC (mg/L) Instantaneous Maximum	0.43		0.49		0.43					0.43	0.49	0.43
CBOD5 (mg/L) Average Monthly	4.0		4.0		4.0					4.0	3	7.3
TSS (mg/L) Average Monthly	6.75		6.0		5.0					6.25	4.5	7.0
Fecal Coliform (CFU/100 ml) Geometric Mean	23.40		1		1.73					1	1	1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	548		1		3					1	1	1
Total Nitrogen (mg/L) Average Monthly										2.73		
Ammonia (mg/L) Average Monthly	1.72		6.03		3.14					8.135	8.695	3.63
Total Phosphorus (mg/L) Average Monthly										0.174		

Compliance History

Effluent Violations for Outfall 001, from: November 1, 2020 To: September 30, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Ammonia	05/31/21	Avg Mo	3.14	mg/L	3.0	mg/L
Ammonia	07/31/21	Avg Mo	6.03	mg/L	3.0	mg/L

Summary of Inspections: Last inspection performed on November 1, 2017.

Other Comments: None.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .00875
Latitude 41º 38' 3.73" **Longitude** -80º 1' 53.91"
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: None.

Water Quality-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Model
Ammonia Nitrogen May 1 - Oct 31	3.0	Average Monthly	WQM 7.1b
Ammonia-Nitrogen Nov 1 - Apr 30	9.0	Average Monthly	WQM 7.1b

Comments: Ammonia limits are believed to be water quality-based originating from an old Dry Steams Manual. WQM 7.0 modeling does not indicate the need for such stringent limits but the existing limits will remain due to anti-backsliding provisions and the ability of the permittee to meet the existing limits.

TRC analysis was done at the first point of perennial conditions and no WQBEL is needed.

Best Professional Judgment (BPJ) Limitations

Comments: A dissolved oxygen limit of a minimum of 4.0 mg/l, a TRC IMAX limit of 1.6 mg/l, and annual monitoring for total nitrogen and total phosphorus were retained in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Anti-Backsliding

The Ammonia limits are to be retained due to anti-backsliding provisions and the ability of the permittee to meet these existing limits.

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.

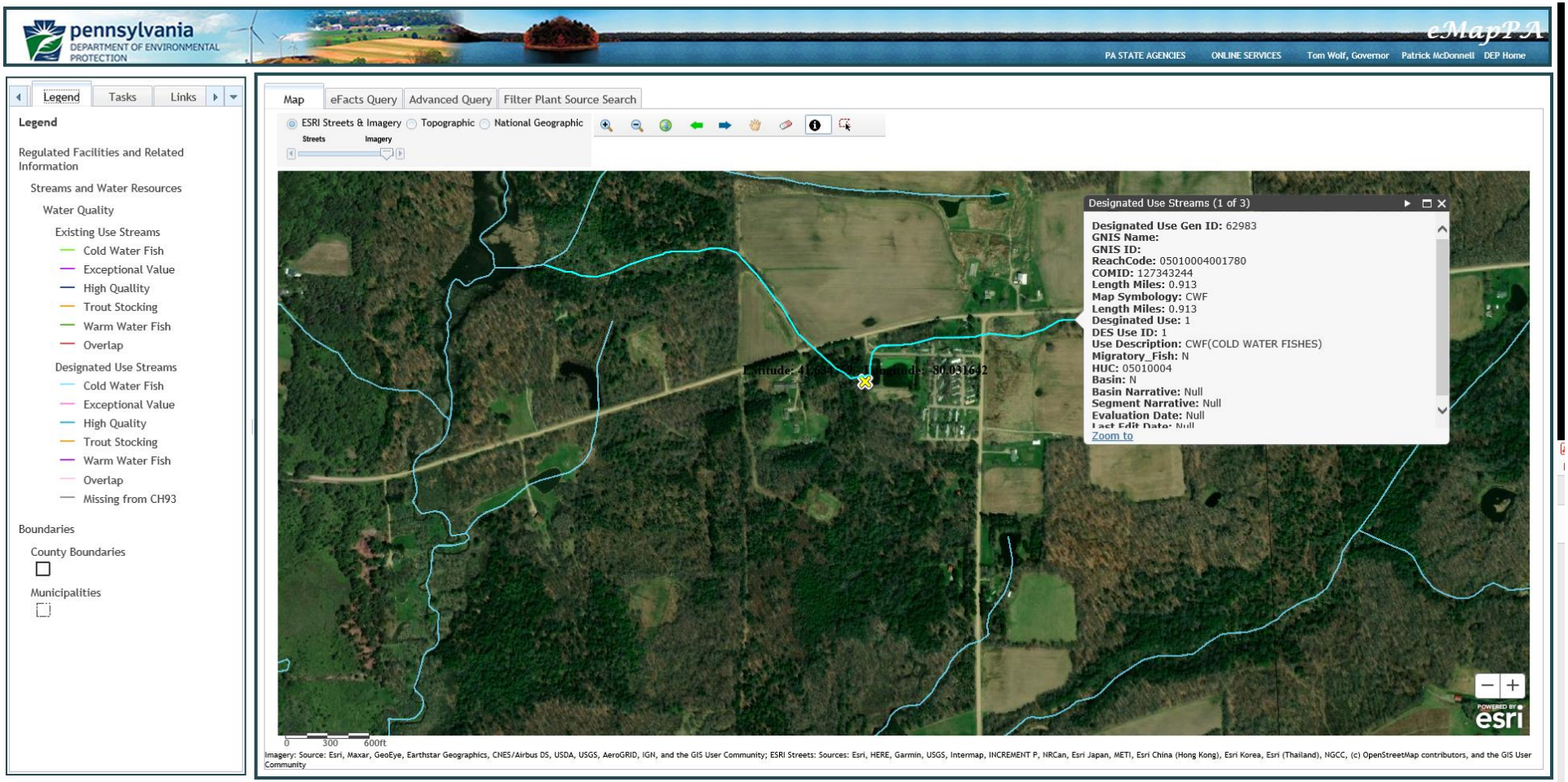
Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

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)	Report	Report Daily Max	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	Report Annl Avg	XXX	XXX	1/year	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	9.0	XXX	18	2/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	3.0	XXX	6	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001, after disinfection.

Other Comments: E. Coli limit added per PADEP SOP for Establishing Effluent Limitations in Individual Sewage Permits.

eMAP with Aerial Imagery and Stream Designation



DRY STREAM REACH

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
16D	52187	Trib 52187 of Little Sugar Creek	**0.520**	1276.00	0.04	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	0.075	0.00	0.00	0.000	0.000	0.0	3.50	0.00	20.00	7.30	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
Country Acres D	PA0103608D	0.0088	0.0088	0.0088	0.000	20.00	7.30

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	0.10	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
16D	52187	Trib 52187 of Little Sugar Creek	**0.010**	1235.00	0.04	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	0.075	0.00	0.00	0.000	0.000	0.0	3.50	0.00	20.00	7.30	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
16D	52187	Trib 52187 of Little Sugar 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												
0.520	0.00	0.00	0.00	.0136	0.01523	.101	3.5	34.77	0.05	0.661	20.00	7.30
Q1-10 Flow												
0.520	0.00	0.00	0.00	.0136	0.01523	NA	NA	NA	0.05	0.686	20.00	7.30
Q30-10 Flow												
0.520	0.00	0.00	0.00	.0136	0.01523	NA	NA	NA	0.05	0.638	20.00	7.30

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
16D	52187	Trib 52187 of Little Sugar 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
0.520	Country Acres D	NA	50	12.17	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
0.520	Country Acres D	NA	25	1.62	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)		
0.52	Country Acres D	25	25	25	25	6	6	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16D	52187	Trib 52187 of Little Sugar Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.520	0.009	20.000	7.300
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
3.500	0.101	34.772	0.047
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
20.85	1.456	20.50	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.405	196.111	Owens	NA
Reach Travel Time (days)			
0.661			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.066	18.93	19.58	8.24
0.132	17.20	18.69	8.24
0.198	15.62	17.85	8.24
0.264	14.19	17.04	8.24
0.330	12.88	16.27	8.24
0.397	11.70	15.53	8.24
0.463	10.63	14.83	8.24
0.529	9.65	14.16	8.24
0.595	8.77	13.52	8.24
0.661	7.96	12.91	8.24

INPUT INTO PERENNIAL MODEL

TRAVEL TIME TO ENTER INTO NH3-N DECAY CALCULATION

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16D	52187	Trib 52187 of Little Sugar 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)
0.520	Country Acres D	PA0103608D	0.009	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			6

PERENNIAL REACH

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		

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
16D	52077	LITTLE SUGAR CREEK	**14.000**	1235.00	6.43	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	0.075	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
Country Acres P	PA0103608P	0.0088	0.0088	0.0088	0.000	20.00	7.30

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	7.96	2.00	0.00	1.50
Dissolved Oxygen	8.24	8.24	0.00	0.00
NH3-N	12.91	0.10	0.00	0.70

FROM DRY REACH MODEL

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
16D	52077	LITTLE SUGAR CREEK	**12.900**	1228.00	13.96	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	0.075	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
16D	52077	LITTLE SUGAR 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												
14.000	0.48	0.00	0.48	.0136	0.00121	.479	12.37	25.83	0.08	0.803	20.00	7.01
Q1-10 Flow												
14.000	0.31	0.00	0.31	.0136	0.00121	NA	NA	NA	0.07	1.022	20.00	7.01
Q30-10 Flow												
14.000	0.66	0.00	0.66	.0136	0.00121	NA	NA	NA	0.10	0.679	20.00	7.00

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
16D	52077	LITTLE SUGAR 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
14.000	Country Acres P	16.62	25.82	16.62	25.82	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
14.000	Country Acres P	1.88	12.91	1.88	12.91	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)		
14.00	Country Acres P	7.96	7.96	12.91	12.91	8.24	8.24	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16D	52077	LITTLE SUGAR CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
14.000	0.009	20.000	7.006
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
12.369	0.479	25.826	0.084
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.16	0.091	0.45	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.243	16.075	Owens	6
Reach Travel Time (days)			
0.803			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.080	2.15	0.43	8.24
0.161	2.13	0.40	8.24
0.241	2.12	0.38	8.24
0.321	2.10	0.36	8.24
0.402	2.09	0.34	8.24
0.482	2.07	0.32	8.24
0.562	2.06	0.30	8.24
0.643	2.04	0.29	8.24
0.723	2.03	0.27	8.24
0.803	2.01	0.26	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16D	52077	LITTLE SUGAR 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)
14.000	Country Acres P	PA0103608P	0.009	CBOD5	7.96		
				NH3-N	12.91	25.82	
				Dissolved Oxygen			8.24

CBOD5, NH_3-N and DO limits are the same as the inputs from the dry reach model. Therefore, 25 mg/L CBOD5, 25 mg/L NH_3-N, and 4.0 mg/L DO are acceptable limits.

TRC Evaluation at Perennial Conditions (~ 0.52 miles downstream of discharge)

TRC_CALC

	B	C	D	E	F	G
1A						
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	0.48225	= Q stream (cfs)		0.5	= CV Daily	
5	0.00875	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)			=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 11.384		1.3.2.iii	WLA cfc = 11.091
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 4.242		5.1d	LTA_cfc = 6.448
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
18			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)**