pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0103675**
Facility Type	**Non-Municipal**	APS ID	**1048998**
Major / Minor	**Minor**	Authorization ID	**1371690**

Applicant and Facility Information

Applicant Name	**Miracle Mountain Ranch Missions, Inc.**	Facility Name	**Miracle Mountain Ranch**
Applicant Address	101 Rodeo Drive Spring Creek, PA 16436-2829	Facility Address	101 Rodeo Drive Spring Creek, PA 16436-2829
Applicant Contact	Matthew Cox	Facility Contact	Mark Carpenter
Applicant Phone	(814) 664-7673 (mattjennicox@gmail.com)	Facility Phone	(814) 664-0195
Client ID	37557	Site ID	451628
Ch 94 Load Status	Not Overloaded	Municipality	Spring Creek Township
Connection Status		County	Warren
Date Application Received	October 1, 2021	EPA Waived?	Yes
Date Application Accepted	October 26, 2021	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit for an existing discharge of treated sewage.

Summary of Review

Sewage treatment plant serves a 640-acre property with numerous buildings and horse ranch.

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

There are currently two open violations listed in EFACTS for this permittee, both under the Safe Drinking Water Program (12/27/2023). *Permittee will be notified of the open violations in the Draft Permit cover letter and given an opportunity to address the violations prior to final permit issuance. CWY 12/27/2023*

Sludge use and disposal description and location(s): Sludge from the septic tanks are pumped out and hauled to another WWTP for further processing.

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		Adam J. Pesek Adam J. Pesek, E.I.T. / Project Manager	December 27, 2023
X		Chad W. Yurisic Chad W. Yurisic, P.E. / Environmental Engineer Manager	12/27/2023

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.0183
Latitude	41º 52' 29.3"	Longitude	-79º 30' 26"
Quad Name	Spring Creek	Quad Code	0409
Wastewater Description:	Treated domestic sewage		
Receiving Waters	Unnamed Tributary to Brokenstraw Creek (CWF)	Stream Code	---
NHD Com ID	112375871	RMI	0.33
Drainage Area	0.02	Yield (cfs/mi^2)	0
Q_{7-10} Flow (cfs)	0	Q_{7-10} Basis	Dry Stream
Elevation (ft)	1745	Slope (ft/ft)	
Watershed No.	16-B	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	MERCURY		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)	7.0	Default
Temperature (°F)	20	Default
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake		Aqua Pennsylvania, Inc. – Emlenton	
PWS Waters	Allegheny River	Flow at Intake (cfs)	1547.2
PWS RMI	90.0	Distance from Outfall (mi)	112

Changes Since Last Permit Issuance:

Other Comments:

Treatment Facility Summary

Treatment Facility Name: Miracle Mountain Ranch

WQM Permit No.	Issuance Date
6299401 A-1	1/16/2014

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with Ammonia Reduction	Septic Tank Sand Filter	Hypochlorite	0.0183

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0183	36.4	Not Overloaded	Anaerobic Digestion	

Changes Since Last Permit Issuance:

Other Comments: : Treatment consists of(6) 1,000 gallon, (1) 2,000 gallon, (2) 10,000 gallon and (1) 500 gallon septic tanks (that serve various buildings on the grounds), (4) 500 gallon lift tanks, (1) 300 gallon grease interceptor tank, (1) 3,500 gallon dosing tank, 8,648 square foot subsurface sand filter – (4) sand filter beds, alternately dosed – total dimension: 46 ft. x 188 ft., and a tablet chlorinator with a 700-gallon contact tank.

Compliance History	
Summary of DMRs:	There have been eleven effluent violations reported in eDMR since January 2018. Violations were for fecal coliform (4), ammonia-nitrogen (3), and CBOD5, TSS, D.O and TRC.
Summary of Inspections:	A site inspection was last conducted on 1/05/2021. No violations were noted but the permittee was advised to have septic removal volumes reported on invoice and where septage is hauled to, the need to submit supplemental reports with the monthly DMRs, and other miscellaneous minor recommendations were made. A Notice of Violation was issued on 1/05/2022 for failure to submit a completed NPDES Permit renewal application on time.

Other Comments:

Compliance History

DMR Data for Outfall 001 (from November 1, 2022 to October 31, 2023)

Parameter	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22
Flow (MGD) Average Monthly	0.003	0.003	0.004	0.006	0.006	0.004	0.004	0.004	0.003	0.004	0.004	0.003
Flow (MGD) Daily Maximum	0.006	0.009	0.010	0.012	0.013	0.009	0.007	0.009	0.006	0.006	0.008	0.004
pH (S.U.) Minimum	6.0	6.0	6.2	6.0	6.1	6.1	6.3	6.2	6.2	6.4	6.5	6.4
pH (S.U.) Maximum	6.4	6.6	6.5	6.4	6.4	6.9	6.5	6.5	6.5	6.6	6.7	6.7
DO (mg/L) Minimum	4.2	4.0	4.0	4.0	4.0	4.0	4.0	4.3	6.1	5.1	5.5	5.4
TRC (mg/L) Average Monthly	0.35	0.36	0.3	0.2	0.27	0.38	0.31	0.3	0.23	0.22	0.34	0.31
TRC (mg/L) Instantaneous Maximum	0.95	1.0	1.0	0.71	1.2	1.2	0.74	1.0	0.90	1.0	1.2	1.1
CBOD5 (mg/L) Average Monthly	4.0	4.0	10.6	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
TSS (mg/L) Average Monthly	5.0	5.0	6.0	5.0	6.0	5.0	5.5	5.0	5.0	5.0	< 5.0	5.5
Fecal Coliform (CFU/100 ml) Geometric Mean	10	8	32	44	22	15	25	31	44	16	72	6
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	12	15	1011	129	26	22	31	50	58	61	187	42
Total Nitrogen (mg/L) Annual Average											26.85	
Ammonia (mg/L) Average Monthly	0.73	4.59	10.95	5.1	3.66	4.84	4.95	4.94	5.51	4.71	4.98	5.28
Total Phosphorus (mg/L) Annual Average											3.54	

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0183
Latitude 41º 52' 29.3" **Longitude** -79º 30' 26"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
E. Coli	Report (No./100 ml)	IMAX	-	92a.61

Comments: Monitoring for E. Coli is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Water Quality-Based Limitations

The following limitations were determined through water quality modeling:

Parameter	Limit (mg/l)	SBC	Model
Ammonia Nitrogen (5/1 – 10/31)	8.0	Average Monthly	WQAM 6.3 (previous modeling)
Ammonia Nitrogen (5/1 – 10/31)	24.0	Average Monthly	WQAM 6.3 (previous modeling)

Comments: Current WQM modeling (attached) calculated less stringent effluent limits. Therefore, previous WQBELs will remain in the permit due to anti-backsliding provisions.

Best Professional Judgment (BPJ) Limitations

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

Monitoring frequency for TRC, pH, and D.O. were increased to 1/day in the previous permit renewal to be consistent with Table 6.3 of the Department's document entitled "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

Anti-Backsliding

The TRC IMAX limit was changed from 1.2 mg/l to 1.6 mg/l to reflect a daily sampling frequency as opposed to 1/week.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30.0	XXX	60	2/month	8-Hr Composite
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (CFU/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	8-Hr Composite
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	24.0	XXX	48	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	8.0	XXX	16	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite

Compliance Sampling Location: Outfall 001 (after disinfection)

Dry 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
16B	56109	Trib 56109 to Brokenstraw Creek	**3.120**	1745.00	0.02	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	0.001	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.30	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
Miracle Mtn Ran	PA0103675	0.0183	0.0000	0.0000	0.000	20.00	6.30

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	0.00	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
16B	56109	Trib 56109 to Brokenstraw Creek	2.230	1443.00	1.10	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	0.001	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.30	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
16B	56109	Trib 56109 to Brokenstraw 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												
3.120	0.00	0.00	0.00	.0283	0.06427	.359	.95	2.64	0.08	0.651	20.00	6.30
Q1-10 Flow												
3.120	0.00	0.00	0.00	.0283	0.06427	NA	NA	NA	0.00	0.000	0.00	0.00
Q30-10 Flow												
3.120	0.00	0.00	0.00	.0283	0.06427	NA	NA	NA	0.00	0.000	0.00	0.00

WQM 7.0 Modeling Specifications

Parameters	D.O.	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	2		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
16B	56109	Trib 56109 to Brokenstraw Creek

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)		
3.12	Miracle Mtn Ran	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16B	56109	Trib 56109 to Brokenstraw Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.120	0.018	20.000	6.300
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
0.947	0.359	2.639	0.084
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
24.91	1.500	24.91	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
4.015	27.393	Owens	2
Reach Travel Time (days)			
0.651			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.065	22.60	23.80	4.34
0.130	20.49	22.74	4.65
0.195	18.59	21.73	4.94
0.260	16.86	20.76	5.21
0.325	15.29	19.84	5.45
0.390	13.87	18.96	5.68
0.455	12.58	18.11	5.90
0.520	11.41	17.31	6.09
0.586	10.35	16.53	6.28
0.651	9.39	15.80	6.45

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16B	56109	Trib 56109 to Brokenstraw 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)
3.120	Miracle Mtn Ran	PA0103675	0.018	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

Perennial 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
16B	56109	Trib 56109 to Brokenstraw Creek	**2.230**	1443.00	1.10	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	0.100	0.11	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
Miracle Mtn Ran	PA0103875	0.0183	0.0000	0.0000	0.000	20.00	6.30

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	9.39	2.00	0.00	1.50
Dissolved Oxygen	6.45	8.24	0.00	0.00
NH3-N	15.80	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
16B	56109	Trib 56109 to Brokenstraw Creek	**0.010**	1350.00	1.49	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	0.100	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
16B	56109	Trib 56109 to Brokenstraw 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												
2.230	0.11	0.00	0.11	.0283	0.00793	.368	5.32	14.45	0.07	1.922	20.00	6.74
Q1-10 Flow												
2.230	0.07	0.00	0.07	.0283	0.00793	NA	NA	NA	0.06	2.321	20.00	6.67
Q30-10 Flow												
2.230	0.15	0.00	0.15	.0283	0.00793	NA	NA	NA	0.08	1.669	20.00	6.79

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
16B	56109	Trib 56109 to Brokenstraw 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
2.230	Miracle Mtn Ran	21.05	31.6	21.05	31.6	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.230	Miracle Mtn Ran	2.02	12.15	2.02	12.15	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
2.23	Miracle Mtn Ran	9.39	9.39	12.15	12.15	6.45	6.45	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16B	56109	Trib 56109 to Brokenstraw Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.230	0.018	20.000	6.740
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
5.321	0.368	14.455	0.071
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.51	0.293	2.57	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.876	23.338	Owens	6
Reach Travel Time (days)			
1.922			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.192	3.32	2.24	8.24
0.384	3.14	1.96	8.24
0.576	2.97	1.71	8.24
0.769	2.80	1.50	8.24
0.961	2.65	1.31	8.24
1.153	2.51	1.15	8.24
1.345	2.37	1.00	8.24
1.537	2.24	0.87	8.24
1.729	2.12	0.76	8.24
1.922	2.00	0.67	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16B	56109	Trib 56109 to Brokenstraw 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)
2.230	Miracle Mtn Ran	PA0103875	0.018	CBOD5	9.39		
				NH3-N	12.15	24.3	
				Dissolved Oxygen			6.45

Since NH3,N output is less than input:
Ct=Coe^(-kt)
Co=Cte^(kt)
Co=12.15e^(0.7x0.651)
Co=19.16 mg/l