pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0221783**
Facility Type	**Non-Municipal**	APS ID	**1040549**
Major / Minor	**Minor**	Authorization ID	**1357343**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**SMG Development LLC**	Facility Name	**Crystal Springs MHP**
Applicant Address	120 State Route 908 Ext	Facility Address	201 Crystal Lane
	Tarentum, PA 15084-2911		Slippery Rock, PA 16057-1805
Applicant Contact	Stephan Beacom	Facility Contact	Samuel Tosto
Applicant Phone	(412) 951-6414	Facility Phone	(724) 234-0092
Client ID	243573	Site ID	451553
Ch 94 Load Status	Not Overloaded	Municipality	Mercer Township
Connection Status	No Limitations	County	Butler
Date Application Received	June 3, 2021	EPA Waived?	Yes
Date Application Accepted	June 15, 2021	If No, Reason	

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

Summary of Review

This facility serves a mobile home park. They do not accept hauled in waste.

The permit is being transferred from Tomcats, LLC to SMG Development LLC as part of this permit renewal. The WQM Permits associated with this facility were transferred on February 16, 2022.

There is currently one open violation listed in EFACTS for this permittee, under the SDW Program (3/23/2022). *4/18/2023 CWY OK to issue draft per SDW 4/19/2023.*

Sludge use and disposal description and location(s): Sludge is hauled offsite and disposed of at a landfill.

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	March 23, 2023
X		Chad W. Yurisic, P.E. / Environmental Engineer Manager	

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.0195
Latitude	41º 6' 1.7"	Longitude	-80º 0' 47.2"
Quad Name	Slippery Rock	Quad Code	1005
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to McDonald Run	Stream Code	34578
NHD Com ID	126222152	RMI	1.04
Drainage Area	0 (dry); 0.5 (perennial)	Yield (cfs/mi^2)	0; 0.00746
Q_{7-10} Flow (cfs)	0 (dry); 0.00373 (perennial)	Q_{7-10} Basis	Dry Stream, USGS Streamstats (Perennial)
Elevation (ft)	1322	Slope (ft/ft)	
Watershed No.	20-C	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)	6.6	'95 sample taken upstream
Temperature (°C)	20	Default (CWF)
Hardness (mg/L)		
Other: NH3-N (mg/l)	0.02	'95 sample taken upstream

Nearest Downstream Public Water Supply Intake		PA American Water Company – Ellwood District	
PWS Waters	Connoqenessing Creek	Flow at Intake (cfs)	67
PWS RMI	0.2	Distance from Outfall (mi)	32.8

Changes Since Last Permit Issuance: N/A

Other Comments:

Treatment Facility Summary

Treatment Facility Name: Crystal Springs MHP

WQM Permit No.	Issuance Date
1095406 T-2	9/16/2022
1073406 T-2	9/16/2022

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with Ammonia Reduction	Septic Tank Sand Filter	Hypochlorite	0.0195

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0195		Not Overloaded	Anaerobic Digestion	Landfill

Changes Since Last Permit Issuance: Permits were transferred

Other Comments: WQM Permit No. 1073406 – (3) Septic tanks (primary and intermediate settling), an alum feeder, (2) dosing tanks, (2) intermittent sand filters, sludge holding tank, tablet chlorination and contact tank.

WQM Permit No. 1095406 - (1) 5220-gallon primary holding tank, (1) 2460-gallon dosing tank, (2) 30’x30’ intermittent sand filters, (1) 3400-gallon chlorine contact tank, (1) 10,522 gallon pre-aeration tank, and (1) V-notch weir.

Compliance History	
Summary of Inspections:	An inspection was conducted on 9/28/2021. One violation was noted for failure to install pre-aeration blowers. It was recommended that the blowers be installed, remove vegetation from the sand filters and reinstallation of dosing laterals be completed. The last inspection was conducted on 4/12/2022. It was verified that the blowers had been installed, sand beds were free of vegetation.

Other Comments:

Compliance History

DMR Data for Outfall 001 (from February 1, 2022 to January 31, 2023)

Parameter	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22
Flow (MGD) Average Monthly	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Flow (MGD) Daily Maximum	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
pH (S.U.) Minimum	7.0	7.0	7.3	7.0	6.9	7.0	6.7	6.7	6.7	6.6	6.6	6.6
pH (S.U.) Maximum	7.3	7.3	7.5	7.3	7.2	7.2	8.0	7.3	7.1	7.1	7.0	6.8
DO (mg/L) Minimum	5.0	4.6	5.3	4.5	4.4	4.9	5.0	4.7	5.0	5.0	5.0	5.0
TRC (mg/L) Average Monthly	0.5	0.5	0.5	0.4	0.4	0.4	0.49	0.5	0.47	0.5	0.43	0.39
TRC (mg/L) Instantaneous Maximum	0.6	0.6	0.5	0.6	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6
CBOD5 (mg/L) Average Monthly	3.42	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 13.0	< 2.0	< 2.0	< 2.0	6.42
TSS (mg/L) Average Monthly	5.0	< 6.0	< 6.0	< 5.0	< 7.0	< 5.0	< 5.0	< 6.0	< 5.0	< 6.0	< 5.0	8.0
Fecal Coliform (CFU/100 ml) Geometric Mean	39	< 4	< 17	< 49	< 10.0	< 2.0	< 2.0	< 5.0	< 1.0	< 2.0	< 34	2420
Total Nitrogen (lbs/day) Annual Average		< 10.0										
Total Nitrogen (mg/L) Annual Average		10.9										
Ammonia (mg/L) Average Monthly	1.5	< 0.92	< 1.5	< 0.8	< 0.8	< 0.8	< 0.8	0.815	< 0.8	< 0.8	< 0.8	< 1.53
Total Phosphorus (lbs/day) Annual Average		< 1.0										
Total Phosphorus (mg/L) Annual Average		0.84										

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .0195
Latitude 41º 6' 1.70" **Longitude** -80º 0' 47.20"
Wastewater Description: Treated domestic sewage

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 (output files attached):

Parameter	Limit (mg/l)	SBC	Model
Ammonia Nitrogen (May 1 – Oct 31)	3.5	Average Monthly	WQM 7.0 1.0b (previous modeling)
Ammonia Nitrogen (Nov 1 – April 30)	11.5	Average Monthly	WQM 7.0 1.0b (previous modeling)

Comments: TRC modeling was not done due the discharge to a ditch/intermittent stream and the residual is expected to decay prior to reaching perennial conditions.

Best Professional Judgment (BPJ) Limitations

Comments: The dissolved oxygen limit of a minimum of 4 mg/l and monitoring for total nitrogen and total phosphorus is in accordance with the department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits." The TRC IMAX limit of 1.2 mg/l is being retained from the previous permit due to anti-backsliding provisions.

Anti-Backsliding

N/A

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 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	1.2	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 (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	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	11.5	XXX	23	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	3.5	XXX	7	2/month	8-Hr Composite
Total Phosphorus	Report Annl Avg	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
20C	34578	Trib 34578 to McDonald Run	**1.040**	1327.00	0.15	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	7.40	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
Crystal Springs	PA0221783	0.0195	0.0000	0.0000	0.000	20.00	7.40

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
20C	34578	Trib 34578 to McDonald Run	**0.379**	1256.00	0.50	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	7.40	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
20C	34578	Trib 34578 to McDonald Run

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												
1.040	0.00	0.00	0.00	.0302	0.02034	.301	1.99	6.62	0.05	0.799	20.00	7.40
Q1-10 Flow												
1.040	0.00	0.00	0.00	.0302	0.02034	NA	NA	NA	0.00	0.000	0.00	0.00
Q30-10 Flow												
1.040	0.00	0.00	0.00	.0302	0.02034	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
20C	34578	Trib 34578 to McDonald Run

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)		
1.04	Crystal Springs	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34578	Trib 34578 to McDonald Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.040	0.020	20.000	7.400
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1.992	0.301	6.622	0.051
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
24.88	1.500	24.88	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
4.021	27.113	Owens	2
Reach Travel Time (days)			
0.799			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.080	22.07	23.52	4.38
0.160	19.58	22.24	4.75
0.240	17.37	21.04	5.09
0.319	15.41	19.89	5.40
0.399	13.67	18.81	5.68
0.479	12.12	17.79	5.94
0.559	10.76	16.82	6.18
0.639	9.54	15.91	6.39
0.719	8.46	15.04	6.59
0.799	7.51	14.22	6.78

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34578	Trib 34578 to McDonald Run

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)
1.040	Crystal Springs	PA0221783	0.020	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
20C	34578	Trib 34578 to McDonald Run	**0.379**	1256.00	0.50	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	0.007	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.60	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
Crystal Springs	PA0221783	0.0195	0.0000	0.0000	0.000	20.00	7.40

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	7.51	2.00	0.00	1.50
Dissolved Oxygen	6.78	8.24	0.00	0.00
NH3-N	14.22	0.02	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
20C	34578	Trib 34578 to McDonald Run	**0.001**	1237.00	0.64	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	0.007	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.60	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
20C	34578	Trib 34578 to McDonald Run

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												
0.379	0.00	0.00	0.00	.0302	0.00952	.294	2.97	10.09	0.04	0.595	20.00	7.20
Q1-10 Flow												
0.379	0.00	0.00	0.00	.0302	0.00952	NA	NA	NA	0.04	0.609	20.00	7.26
Q30-10 Flow												
0.379	0.01	0.00	0.01	.0302	0.00952	NA	NA	NA	0.04	0.583	20.00	7.15

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
20C	34578	Trib 34578 to McDonald Run

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
0.379	Crystal Springs	12.83	13.85	12.83	13.85	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
0.379	Crystal Springs	1.76	2.06	1.76	2.06	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)		
0.38	Crystal Springs	7.51	7.51	2.06	2.06	6.78	6.78	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34578	Trib 34578 to McDonald Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.379	0.020	20.000	7.200
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
2.969	0.294	10.088	0.039
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
6.90	1.424	1.83	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.941	23.639	Owens	6
Reach Travel Time (days)			
0.595			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.060	6.34	1.76	7.99
0.119	5.83	1.69	8.24
0.179	5.35	1.62	8.24
0.238	4.92	1.55	8.24
0.298	4.52	1.49	8.24
0.357	4.15	1.43	8.24
0.417	3.81	1.37	8.24
0.476	3.50	1.31	8.24
0.536	3.22	1.26	8.24
0.595	2.96	1.21	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34578	Trib 34578 to McDonald Run

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)
0.379	Crystal Springs	PA0221783	0.020	CBOD5	7.51		
				NH3-N	2.06	4.12	
				Dissolved Oxygen			6.78

Doesn't match input so:

$C_o = C_t e^{(k)(t)}$

$C_o = 2.06\, e^{(.7 \times .799)}$

$C_o = 3.6$ mg/l