pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0032247**
Facility Type	**Non-Municipal**	APS ID	**824688**
Major / Minor	**Minor**	Authorization ID	**1332347**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**PA DCNR**	Facility Name	**Laurel Hill State Park STP**
Applicant Address	1454 Laurel Hill Park Road	Facility Address	1454 Laurel Hill Park Road
	Somerset, PA 15501-5629		Somerset, PA 15501-5629
Applicant Contact	Michael Mumau	Facility Contact	Michael Mumau
Applicant Phone	(814) 445-7725	Facility Phone	(814) 445-7725
Client ID	52524	Site ID	3858
Ch 94 Load Status	Not Overloaded	Municipality	Middlecreek Township
Connection Status	No Limitations	County	Somerset
Date Application Received	October 30, 2020	EPA Waived?	Yes
Date Application Accepted	November 3, 2020	If No, Reason	
Purpose of Application	Renewal of an existing NPDES permit for the discharge of treated sewage.		

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		*Derek S. Garner* Derek S. Garner / Project Manager	March 29, 2021
X		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	March 30, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.19
Latitude	39º 59' 9.15"	Longitude	-79º 15' 26.19"
Quad Name	Kingwood	Quad Code	1911
Wastewater Description:	Sewage Effluent		

Receiving Waters	Laurel Hill Creek	Stream Code	38580
NHD Com ID	69917563	RMI	20.9
Drainage Area	48.1	Yield (cfs/mi^2)	0.05
Q_{7-10} Flow (cfs)	2.41	Q_{7-10} Basis	Streamgage No. 03079600
Elevation (ft)	1911	Slope (ft/ft)	n/a
Watershed No.	19-E	Chapter 93 Class.	HQ-CWF
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	n/a		
Source(s) of Impairment	n/a		
TMDL Status	Tentative	Name	Laurel Hill Creek TMDL

Nearest Downstream Public Water Supply Intake	Ohiopyle Borough Municipal Waterworks		
PWS Waters	Youghiogheny River	Flow at Intake (cfs)	64.7
PWS RMI	61.6	Distance from Outfall (mi)	31.4

Treatment Facility Summary

The Laurel Hill State Park Sewage Treatment Plant ("STP") serves the Laurel Hill State Park. The facility also receives trucked in waste from the park's camps, Kooser Park, and Pioneer Park. The STP has an annual average design flow and hydraulic capacity of 0.19 MGD. Treatment consists of:

- Two (2) aeration tanks, in parallel
- Two (2) clarifiers, in parallel
- Two (2) polishing ponds, in series
- One (1) chlorine contact tank
- One (1) sludge holding tank

After disinfection, the treated wastewater is discharged via Outfall 001 to Laurel Hill Creek.

Wasted sludge is hauled to the Hidden Valley Wastewater Treatment Plant.

Compliance History

The facility was most recently inspected by DEP on July 10, 2019. No violations were noted during the inspection. All necessary treatment units were online. No impact to the receiving stream was noted.

A query of eDMR submissions resulted in the following violations that occurred during the existing permit's term:

Monitoring Period Begin Date	Monitoring Period End Date	Noncompliance Category	Parameter	Sample Value	Violation Condition	Permit Value	Units	SBC
5/1/2017	5/31/2017	Concentration 3 Effluent Violation	Fecal Coliform	2400	>	1000	CFU/100 ml	Instantaneous Maximum
7/1/2017	7/31/2017	Concentration 2 Effluent Violation	Fecal Coliform	215	>	200	CFU/100 ml	Geometric Mean
7/1/2017	7/31/2017	Concentration 3 Effluent Violation	Fecal Coliform	3000	>	1000	CFU/100 ml	Instantaneous Maximum
8/1/2017	8/31/2017	Concentration 2 Effluent Violation	Fecal Coliform	921	>	200	CFU/100 ml	Geometric Mean
8/1/2017	8/31/2017	Concentration 3 Effluent Violation	Fecal Coliform	2200	>	1000	CFU/100 ml	Instantaneous Maximum
9/1/2018	9/30/2018	Load 1 Effluent Violation	Flow	0.239	>	0.19	MGD	Average Monthly
9/1/2019	9/30/2019	Concentration 2 Effluent Violation	Fecal Coliform	230	>	200	CFU/100 ml	Geometric Mean
9/1/2019	9/30/2019	Concentration 3 Effluent Violation	Fecal Coliform	2364	>	1000	CFU/100 ml	Instantaneous Maximum
7/1/2020	7/31/2020	Concentration 1 Effluent Violation	Dissolved Oxygen	4.3	<	5	mg/L	Minimum
8/1/2020	8/31/2020	Concentration 1 Effluent Violation	Dissolved Oxygen	4.6	<	5	mg/L	Minimum

Operations staff was contacted in NCRO and NERO regarding open violations. In each case it was confirmed that DEP is working with the permittee towards achieving compliance. The open violations should not impact renewal of this permit.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.19
Latitude 39º 59' 18.00" **Longitude** -79º 15' 50.00"
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)

Water Quality-Based Limitations

A "Reasonable Potential Analysis" (attached) was completed to assess the applicability of water quality-based effluent limits.

The parameters CBOD5, ammonia-n, and dissolved oxygen were assessed in WQM 7.0 v1.1b. The results are as follows:

Parameter	Monthly Avg	Maximum	Minimum
CBOD5	15	--	--
NH3-N	3	6	--
Dissolved Oxygen	--	--	5

As demonstrated by the above table, the existing effluent limitations for CBOD5, dissolved oxygen, and ammonia-n are protective of the receiving water.

The existing total residual chlorine limits were evaluated using the TRC_CALC spreadsheet. The spreadsheet indicates that the existing technology-based limits are protective of the Laurel Hill Creek.

Best Professional Judgment (BPJ) Limitations

The existing permit requires annual monitoring for total nitrogen and total phosphorus. DEP recommends that these requirements remain in the permit to continue to characterize the wastewater and impacts on the receiving water.

An annual reporting requirement for E. Coli is proposed per the 2017 Triennial Review of Water Quality Standards, published in the PA Bulletin on July 11, 2020.

Seasonal Effluent Limits and Monitoring Requirements

The seasonal effluent limits and monitoring requirements for pH, dissolved oxygen, and TRC are established per an agreement between DEP and DCNR. The spreadsheet that dictates the requirements for all state parks has been attached for reference.

The permit has historically included seasonal limits for ammonia-n, based on the treatability of wastewater being significantly impacted by temperature and seasonal variance in stream flow. DEP recommends that the existing use of seasonal limits for ammonia-n remains in the permit.

Anti-Backsliding

No limits or monitoring requirements are less stringent than what is established in the existing permit. Anti-backsliding is not applicable.

Existing Effluent Limitations and Monitoring Requirements

The existing effluent limitations and monitoring requirements are as follows:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	0.19	Report	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.) May 1 - Sep 30	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
pH (S.U.) Oct 1 - Apr 30	XXX	XXX	6.0	XXX	XXX	9.0	3/week	Grab
Dissolved Oxygen May 1 - Sep 30	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Dissolved Oxygen Oct 1 - Apr 30	XXX	XXX	5.0	XXX	XXX	XXX	3/week	Grab
Total Residual Chlorine May 1 - Sep 30	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Total Residual Chlorine Oct 1 - Apr 30	XXX	XXX	XXX	0.5	XXX	1.6	3/week	Grab
CBOD5	XXX	XXX	XXX	15	24	30	1/week	8-Hr Composite
Total Suspended Solids	XXX	XXX	XXX	30	45	60	1/week	8-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	3.0	XXX	6.0	1/week	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	9.0	XXX	18.0	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001

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)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	0.19	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.) Oct 1 - Apr 30	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	3/week	Grab
pH (S.U.) May 1 - Sep 30	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO Oct 1 - Apr 30	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	3/week	Grab
DO May 1 - Sep 30	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC Oct 1 - Apr 30	XXX	XXX	XXX	0.5	XXX	1.6	3/week	Grab
TRC May 1 - Sep 30	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	15.0	24.0	30	1/week	8-Hr Composite
TSS	XXX	XXX	XXX	30.0	45.0	60	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/year	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	9.0	XXX	18	1/week	8-Hr Composite

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia May 1 - Oct 31	XXX	XXX	XXX	3.0	XXX	6	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001

DEP/DCNR SAMPLING AGREEMENT

DCNR Region	Park	Design Flow (MGD)	NPDES Permit Number	Permit Expiration Date	Op Cert Class	Municipal Contributors	Weekend Sampling Currently?	pH, DO and TRC Requirement for Renewed Permit
1	Black Moshannon	0.05 / 0.2	PA0032441	10/31/2014	D-1	Rush Twp.*	No (not a permit requirement; samples pulled when staffing permits)	1/day year round
	Bald Eagle	0.45 / 0.562	PA0032492	8/31/2016	C-1	Howard Bo. & Liberty Twp.	Yes	1/day year round
	Denton Hill	0.013	PA0032514	12/31/2015	D-1	None	Yes	1/day (May - Sep), 3/week (Oct - Apr)
	Hills Creek	0.02 / 0.07	PA0044547	6/30/2014	D-1	Charleston Twp.	Yes	1/day year round
	Kettle Creek - Lower Campground	0.0022	PA0228869	10/31/2015	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Mount Pisgah	0.02 / 0.06	PA0044652	1/31/2012	D-1	None	Permit requires 5 samples per week. Samples pulled on days STOP is working.	1/day (May - Sep), 3/week (Oct - Apr)
	Parker Dam	0.09	PA0044245	12/31/2014	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Reeds Gap	0.037	PA0032506	4/30/2016	D-1	None	Required by permit - done on weekends while seasonal staff on board.	1/day (May - Sep), 3/week (Oct - Apr)
2	Clear Creek (sub sand filter)	0.00535	PA0240001	12/06/12- renewal submitted	D-2	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Cook Forest	0.079	PA0032468	7/31/2016	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Keystone	0.075	PA0032271	7/31/2014		None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Laurel Hill	0.019	PA0032247	3/31/2014	C-1,3	None	No (not a permit requirement)	1/day (May - Sep), 3/week (Oct - Apr)

DCNR Region	Park	Design Flow (MGD)	NPDES Permit Number	Permit Expiration Date	Op Cert Class	Municipal Contributors	Weekend Sampling Currently?	pH, DO and TRC Requirement for Renewed Permit
2	Moraine	0.225 / 0.45	PA0032531	12/16/2006	C-1	Prospect Bo.	No	1/day year round
	Ohiopyle - Boater's Change House	0.008	PA0096521	11/30/2014	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Ohiopyle - Campground	0.04	PA0032425	11/30/2014	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Ohiopyle - Presley Ridge	0.0045	PA0046116	8/31/2015	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Oil Creek (sub sand filter)	0.002	PA0045039	6/30/2015	Not Required	None	No	1/week year round
	Presque Isle	0.0175	PA0032549	7/22/2013	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Raccoon Creek	0.1	PA0031984	7/31/2014	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Ryerson Station	0.007	PA0217841	11/30/2013	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Yellow Creek	0.313	PA0032263	11/31/16	C-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
3	Canoe Creek	0.12	PA0044261	2/28/2017	C-1	Frankstown Twp.	No (not a permit requirement)	1/day year round
	Cowans Gap	0.03	PA0032964	12/31/2012	D-1,2	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Gifford Pinchot	0.216	PA0032000	2011 (in draft)	C-1	Wellsville Bo.*	Yes (DEP permits us to read sensors for weekend sampling)	1/day year round
	Greenwood Furnace	0.015	PA0031992	10/31/2013	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Little Buffalo	0.076	PA0031950	4/30/2013	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Prince Gallitzin	0.12	PA0032085	9/30/2014	C-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Shawnee	0.1	PA0032093	10/3/2016	D-1	Schellsburg Bo.	Required by permit - done Memorial Day through Labor Day weekends.	1/day year round

DCNR Region	Park	Design Flow (MGD)	NPDES Permit Number	Permit Expiration Date	Op Cert Class	Municipal Contributors	Weekend Sampling Currently?	pH, DO and TRC Requirement for Renewed Permit
4	Beltzville	0.035	PA0032107	3/31/2017	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Frances Slocum	0.08	PA0032433	10/31/2015	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Hickory Run	0.066	PA0032999	11/30/2015	D-1,2	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Lackawanna	0.108	PA0032140	4/30/12 (in draft)	C-1	None	No (not a permit requirement)	1/day (May - Sep), 3/week (Oct - Apr)
	Locust Lake	0.047	PA0032131	1/31/2013	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Nockamixon	0.02	PA0042641	8/31/2014	D-1	Vo-Tech	No	1/day year round
	Promised Land	0.2	PA0032123	9/30/2013	C-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Rickets Glen	0.105	PA0032115	6/30/2015	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)
	Tuscarora	0.026	PA0032077	10/31/2013	D-1	None	No	1/day (May - Sep), 3/week (Oct - Apr)

* Industrial contribution to plant from outside source(s).

Input Data WQM 7.0

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
38580	LAUREL HILL CREEK	**21.300**	1911.00	48.10	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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.050	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.50	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 (ºC)	Disc pH
LHSP STP	PA0032247	0.1900	0.1900	0.1900	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	15.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	3.00	0.00	0.00	0.70

Input Data WQM 7.0

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
38580	LAUREL HILL CREEK	**21.080**	1908.00	53.40	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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.050	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.50	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 (ºC)	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

Input Data WQM 7.0

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
38580	LAUREL HILL CREEK	**19.600**	1864.00	55.50	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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.050	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.50	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 (ºC)	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
19E	38580	LAUREL HILL 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 (ºC)	Analysis pH
Q7-10 Flow												
21.300	2.40	0.00	2.40	.2939	0.00258	.639	28.57	44.72	0.15	0.091	20.54	6.53
21.080	2.67	0.00	2.67	.2939	0.00563	.644	28.34	44.04	0.16	0.557	20.50	6.53
Q1-10 Flow												
21.300	1.83	0.00	1.83	.2939	0.00258	NA	NA	NA	0.13	0.104	20.69	6.54
21.080	2.03	0.00	2.03	.2939	0.00563	NA	NA	NA	0.14	0.638	20.63	6.54
Q30-10 Flow												
21.300	3.97	0.00	3.97	.2939	0.00258	NA	NA	NA	0.19	0.070	20.34	6.52
21.080	4.41	0.00	4.41	.2939	0.00563	NA	NA	NA	0.21	0.430	20.31	6.52

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	0.76	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.65	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
19E	38580	LAUREL HILL 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
21.300	LHSP STP	21.05	6	21.05	6	0	0
21.080		NA	NA	21.19	NA	NA	NA

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
21.300	LHSP STP	2.08	3	2.08	3	0	0
21.080		NA	NA	2.08	NA	NA	NA

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)		
21.30	LHSP STP	15	15	3	3	5	5	0	0
21.08		NA	NA	NA	NA	NA	NA	NA	NA

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19E	38580	LAUREL HILL CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
21.300	0.190	20.545	6.534
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
28.565	0.639	44.717	0.148
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.42	0.691	0.33	0.730
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.890	3.677	Tsivoglou	6
Reach Travel Time (days)			
0.091			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.009	3.39	0.32	7.89
0.018	3.37	0.32	7.88
0.027	3.35	0.32	7.88
0.036	3.33	0.32	7.88
0.045	3.31	0.32	7.88
0.055	3.29	0.31	7.87
0.064	3.27	0.31	7.87
0.073	3.24	0.31	7.87
0.082	3.22	0.31	7.87
0.091	3.20	0.31	7.87

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
21.080	0.190	20.496	6.530
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
28.341	0.644	44.041	0.163
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.10	0.482	0.28	0.727
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.905	8.797	Tsivoglou	6
Reach Travel Time (days)			
0.557			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.056	3.01	0.27	8.17
0.111	2.93	0.26	8.17
0.167	2.85	0.25	8.17
0.223	2.77	0.24	8.17
0.278	2.70	0.23	8.17
0.334	2.63	0.22	8.17
0.390	2.55	0.21	8.17
0.445	2.49	0.20	8.17
0.501	2.42	0.19	8.17
0.557	2.35	0.19	8.17

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19E	38580	LAUREL HILL 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)
21.300	LHSP STP	PA0032247	0.190	CBOD5	15		
				NH3-N	3	6	
				Dissolved Oxygen			5

TRC EVALUATION

Input appropriate values in B4:B8 and E4:E7

2.41	= Q stream (cfs)	0.5	= CV Daily
0.19	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.662	= 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)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 1.750	1.3.2.iii	WLA cfc = 2.561
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.652	5.1d	LTA_cfc = 1.489

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)