pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0114111**
Facility Type	**Non-Municipal**	APS ID	**1074797**
Major / Minor	**Minor**	Authorization ID	**1416033**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**US ACOE Baltimore District**	Facility Name	**South Shore Recreation Area, Cowanesque Lake WWTP**
Applicant Address	710 Ives Run Lane Tioga, PA 16946-8643	Facility Address	South Shore Recreation Area Lawrenceville, PA 16929
Applicant Contact	Robert Schnell	Facility Contact	Joshua Dodge
Applicant Phone	(570) 835-5281	Facility Phone	(570) 835-5281
Client ID	43653	Site ID	262250
Ch 94 Load Status	Not Overloaded	Municipality	Lawrence Township
Connection Status	No Limitations	County	Tioga
Date Application Received	October 31, 2022	EPA Waived?	Yes
Date Application Accepted	November 14, 2022	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 / Project Manager	January 2, 2024
X		Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	January 3, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.0105
Latitude	41º 58' 56.80"	Longitude	-77º 10' 24.05"
Quad Name	Tioga	Quad Code	0328
Wastewater Description:	Sewage Effluent		

Receiving Waters	Cowanesque River	Stream Code	30995
NHD Com ID	57349571	RMI	3.77
Drainage Area	292	Yield (cfs/mi^2)	0.032
Q_{7-10} Flow (cfs)	9.45	Q_{7-10} Basis	Streamgage No. 01520000
Elevation (ft)	1085	Slope (ft/ft)	n/a
Watershed No.	4-A	Chapter 93 Class.	WWF
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a
Assessment Status	Not Assessed		
Cause(s) of Impairment	n/a		
Source(s) of Impairment	n/a		
TMDL Status	n/a	Name	n/a

Nearest Downstream Public Water Supply Intake	PA-NY Border		
PWS Waters	Cowanesque River	Flow at Intake (cfs)	9.70
PWS RMI	0.76	Distance from Outfall (mi)	3.01

(1) In 1980 the Cowanesque River was dammed near Lawrenceville, PA to create the Cowanesque Lake. The outfall discharges into the Lake.

(2) Public Water Supply (PWS) criteria were applied at the Pennsylvania/New York border. There are no PWSs between the discharge and the border.

Treatment Facility Summary

The construction and operation of the South Shore Recreation Area, Cowanesque Lake Wastewater Treatment Plant is covered under WQM Permit No. 5989402, issued June 1, 1989. The facility receives sanitary flows from the seasonal recreation area on the Southern side of Cowanesque Lake as well as filter backwash from the recreation area's water treatment plant.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration with Solids Removal	Hypochlorite	0.0045
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.0105	Unknown	Not Overloaded	Aerobic Digestion	Other WWTP

Specifically, the extended aeration package treatment plant consists of:

- One equalization tank
- One aeration tank
- One secondary clarifier
- One flocculation tank (alum addition)
- One tertiary clarifier
- Two sand filters
- One chlorine contact tank with tablet chlorination
- Two aerobic digestion tanks

Compliance History

The facility was most recently inspected by DEP on July 25, 2022. No violations were noted during the inspection.

The following violations occurred during the exiting permit's term:

Submission Date	Noncompliance Description	Parameter	Sample Value	Violation Condition	Permit Value	Units	SBC
5/29/2018	Late DMR Submission						
4/25/2019	Late DMR Submission						
5/30/2019	Late DMR Submission						
11/29/2019	Late DMR Submission						
3/30/2020	Late DMR Submission						
7/6/2020	Late DMR Submission						
8/14/2020	Sample type not in accordance with permit						
8/14/2020	Violation of permit condition	Total Phosphorus	2.6	>	2	mg/L	Average Monthly
8/14/2020	Violation of permit condition	Total Phosphorus	4.3	>	4	mg/L	Instantaneous Maximum
1/12/2021	Late DMR Submission						
4/2/2021	Late DMR Submission						
6/10/2021	Late DMR Submission						
4/15/2022	Late DMR Submission						
1/30/2023	Late DMR Submission						

The permittee has two open violations with the Safe Drinking Water program associated with the Ives Run Recreation Area.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0105
Latitude 41º 58' 50.00" **Longitude** -77º 10' 23.00"
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

DEP models in-stream conditions to determine if WQBELs are appropriate. DEP is not aware of any significant changes to the receiving water, the influent, or the treatment plant's treatment process that would impact the effluent's quality. Accordingly, the modeling performed for the previous renewal is still applicable and has been attached to this fact sheet.

Dating back to the permits first issuance in 1994, total phosphorus limits of 2.0 mg/l average monthly and 4.0 mg/l IMAX have been in place due to the effluent being discharged into Cowanesque Lake. There have been no documented changes to the lake that would require modifying the existing total phosphorus limits.

Historically, ammonia-n limits have only been applied to warm-weather months based on seasonal operation of the facility. DEP recommends continuing this practice.

Best Professional Judgment (BPJ) Limitations

DEP recommends that the existing dissolved oxygen reporting requirement remains in the permit to continue to characterize the effluent.

Annual E. Coli reporting requirements have been proposed per the 2017 Triennial Review of Water Quality Standards, published in the PA Bulletin on July 11, 2020.

Chesapeake Bay

The facility is classified as a Phase 5 discharger in the Wastewater Supplement to Pennsylvania's Chesapeake Bay Watershed Implementation Plan. The facility has completed sufficient nutrient monitoring to satisfy the Phase 5 requirements outlined in the Plan. The previous renewal's fact sheet summarized the TN and TP concentrations at 14.95 and 0.82 mg/L, respectively.

Anti-Backsliding

No limits or monitoring requirements are proposed to be made less stringent.

Existing Effluent Limitations and Monitoring Requirements

The existing effluent limitations and monitoring requirements are as follows:

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	Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
Total Suspended Solids	XXX	XXX	XXX	30.0	XXX	60.0	2/month	Grab
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
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	15.0	XXX	30.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4.0	2/month	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" (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)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	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	Report Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
TSS	XXX	XXX	XXX	30.0	XXX	60.0	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
Ammonia May 1 - Oct 31	XXX	XXX	XXX	15.0	XXX	30.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4.0	2/month	Grab

Compliance Sampling Location: Outfall 001

StreamStats Output Report

Study Area South Shore Recreation Area, Cowanesque Reservoir Wastewater Treatment Plant
latitude 41.98242
longitude -77.17996

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	8.4	degrees
BSLOPDRAW	Unadjusted basin slope, In degrees	8.64	
CARBON	Percentage of area of carbonate rock	0	percent
CENTROXAB3	X coordinate of the centroid, In NAO 1983_Albers, meters	42352.6	
CENTROYA83	Basin centroid horizontal (y) location in NAO 1983 Albers	329585	
ORN	Drainage quallty Index from STATSGO	3.B	
DRNAREA	Area that drains to a noint on a stream	292	square mlles
ELEV	Mean Basin Elevation	1789.2	feet
FOREST	Percentage of area covered by forest	62	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	100	percent
IMPNLCD01	Percentage of Impervious area determined from NLCD 2001impervious dataset	D	oercent
LC01DEV	Percentage of land-use from NLCD 2001classes 21-24	3	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011classes 21-24	3.36	percent
LC111MP	Average percentage of imnervious area determined from NLCD 2011impervious dataset	0.31	percent
LONG OUT	Longitude of Basin Outlet	-77.1B	degrees
MAXTEMP	Mean annual maximum air temperature over basin area from PRISM 1971-2000 800-m grid	55	degrees F
OUTLETXA83	X coordinate of the outlet, in NAD 1983 Albers,meters	67955	
OUTLETYA83	Y coordinate of the outlet, in NAD 1983 Albers, meters	331495	
PRECIP	Mean Annual Precipitation	**34**	Inches
ROCKDEP	Depth to rock	**4.5**	feet
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	**0**	percent
STRDEN	Stream Density-- total length of streams divided by drainage area	1.43	miles per square mile
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	418.4	miles
URBAN	Percentage of basin with urban development	1	percent

USGS
science for a changing world

Prepared in cooperation with the Pennsylvania Department of Environmental Protection

Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania

Open-File Report 2011-1070

U.S. Department of the Interior
U.S. Geological Survey

Table 1, List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.-Continued

[Latitude and Longitude in decimal degrees; mi², square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area !mi')	Regulated[1]
01508803	West BI'ai1Ch Tfoughni_ogii'-Rtvedl(I{Onier;:'N:¥}	i}-.Z:P:J8. •	;7f,V1.f\:.:'	7\··?	N <
01509000	Tiou ogalliv.e;atCorll"11\ii ,)'t 12.f!,	1%-§£?{	··.•• -7flS9.	292	}l>.,"
0.1510000	Otselic River alCineinnatus;N··Y'.: .tf	'42,541	•75,900	'i47	N..
01512500	chet1 -gdJ --V. r:- i}{_Chf g-Q\Fb:r· s,{_; ::y:F·"·" ;)t	_4 il8-f:(-·•	- ?f&-48	\';-Ui83	,-<}
0151S000	Susquehanria'RivernearWaveriy;Mt;:}i·•··	•••.'.,ii,985•··	··-76.501·	4;77i•	N •
01516350	Tioga River near Mansfield, Pa.	41.797	-77.080	153	N
01516500	Corey Creek near Mainesburg, Pa.	41.791	-77.015	12.2	N
01518000	Tioga River at Tioga, Pa.	41.908	-77.129	282	Y
01518700	Tioga River at Tioga Junction, Pa.	41.953	-77.115	446	Y
01518862	Cowe..i1clilqllo River at Westfield, Pa.	41.923	-77.S32	90.6	N
01520000	c· - nb : -6. lti:r01":: 10,lf,•La: :iliiihi P,I ;I{;,:	.. f\,§91.{	:hi <i	Y298	V:.•
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01521S00	Coni to9 R.lvorotMlcpor1, N,Y•. •	Ji;i96c·,	[illegible]	••..3.0.6.·.·.·	'{
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0152450D	.c i.iltco)li O :· l())V;Ca1_1 .:d -J;ro : i·J! iti. 1.1:)ii	"•\"Y'<i42;3(,t•·.	,7'/,651	158	Y •
01526500	Tioga River near Envins, N.Y.	42.121	-77.129	1,377	y
01527000	Cohocton River at Cohocton, N.Y.	.S00	-77.S00	52.2	N
01527500	Cohocton River at Avoca, N.Y.	42.398	-77.417	152	N
01528000	Fivcmile Creek near Kanona, N.Y	42.3U	-77.358	66.8	N
01529000	Mud Creek near Savona, N.Y.	42.308	-77.197	76.6	
.01529500	Cohocton River near Campbell, N.Y.	42.253	-77.217	470	N
015299S0	Chemung River at Corning, N.Y.	42.146	-77.057	2,006	Y
. 01530332	Chemung River at Elmira, N.Y.	42.086	-76.801	2,162	Y
01S30500	Newtown Creek at Elmira, N.Y.	42.105	-76.798	77.5	Y
.ot53l000	Chemung River at Chemung, N.Y.	42.002	-76.635	2,506	Y
01531500	Susquehanna River at Towanda, Pa.	41.765	-76.441	7,797	y
01532000	Towanda Creek near Monroeton, Pa,	41.707	-76.485	215	N
01532850	MB Wyalusing Creek near Birchardvillc, Pa.	41.863	-76.007	5.67	N
01533400	Susquehanna River at Meshoppen, Pa.	41.607	-76.050	8,720	y
01533500	North Branch Mehoopany Creek near Lovelton, Pa.	41.531	-76.1S6	35.2	N
01533950	s_:l'unkl,i:.r:(): }ie· - 1fi : i! tr;i:Jii<·-:··-	J1:,1 •	.:;s:6◄2 .•	. 12.6	N
01534000	T r .• o-f - r,op_ n.-111•1-_.kfliii i :t ,.:;7;	'41.658 ·	•15 895 •	·31,	N
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01536000	Lag a amii_,R{ybi:--_at OJfrQra_ :;P;,, :'-. '	.f1:359 • •	:1S:1 ◄.•i •	• . 392 •	Y
01536500	Susquehanna River at Wilkes-Barre, Pa.	41.25 I	-75.881	9,960	y
01537000	Toby Creek at Luzerne, Pa.	41.28]	-7S.896	32.4	y
01537S00	Solomon Creek at Wilkes-Barre, Pa.	41.228	-7S.904	15.7	N
01538000	Wapwallopen Creek near Wapwallopen, Pa.	41.059	-76.094	43,8	N
01539000	Fishing Creek near Bloomsburg, Pa.	41.078	-76.431	274	N
.01539S00	Li.ttl_0-.Fi ii fCf'bb1c/,t' oj;j;Qt' : /:e:.:,:-/.-·	.{1.080	-16.Sil	[illegible]	N
0l.S4020.0	Tr"oil_ r-- u-- -:'.ri _•(JD_&t0:\\1). :·-r >	◄0:8S.3.'.:	-76,280	1.77	N
01540500	Su qu h-?M:J,l y -- t-p ill if;> - -:'-:)_/.:-.;. ':-:;,,.·/(,--B'f::	4Q,958 •	-76.619	11,220	Y
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01S41200	:-West;'Bfatl 1fi;u UC11aQ11··,,:_llitYi·oi-\:¢ F j_t1_"fii"i:PfPlYff;:,:, •	0.961		367	y

Table 2. Selected low-flow statistics for streamgage locations in and near Pennsylvania.-Continued

[11-'/s; cubic feet per second;-, statistic not computed; <, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	1-day, 10-year (ft'/s)	7-day, 10-year (ft'/s)	7-day, 2-year (11^3/s)	30-day, 10-year (ft'/s)	30-day, 2-year (ft'/s)	90-day, 10-year (fWs)
01481500	[3]1948–1973	26	64.5	70.5	115	83.5	138	111
01482500	1941–2008	47	0	.7	2.6	1.5	4.8	3.4
01483200	1958–2008	51	<.1	.1	.3	.1	.6	.3
01483700.	1959–2008	50	.3	.7	2.2	1.2	4.3	3.6
01484000	1933–2008	27	1.4	1.7	2.7	2.0	3.3	2.7
01484100	1960-2008	49	.2	.3	.9	.4	1.0	.5
01484270	1973-2005	II	4.0	4.3	7.2	4.6	7.6	5.4
'01493000	1949-2008	56	.7			5.1	8.4	6.3
'01493500	1953-2008	54	1.5	1.7	3.4	2.1	4.1	2.9
'01495000	1933-2008	76	7.7	8.7	19.4	II.I	23.2	16.3
[4]01496000	1950–1984	35	2.3	2.7	5.5	3.4	6.8	5.0
'0.1496200	1969–1992	24	1.2	1.3	2.5	1.7	3.0	2.6
01496500	1931–1995	59	3.3	3.7	9.4	4.9	13.6	7.8
01500000	[2]1951–2008	58	2.7	4.1	9.3	5.6	13.6	9.1
01500500	1940–2008	57	71.1	82.9	139	101	179	138
01502000	1940-1995	56	2.4	4.4	7.8	5.3	9.9	7.1
01502500	1931-2008	68	43.6	46.6	78.6	56.1	100	72.8
01503000	1914-2008	95	170	188	327	223	418	311
01505000	1940-2008	60	21.5	23.7	41.0	28.3	51.6	37.8
01508803	1968-1986	14	12.2	13.8	21.7	17.5	27.4	21.9
01509000	1940–2008	67	31.0	33.9	59.4	39.8	70.8	49.4
015l0000	1940–2008	63	7.9	8.9	17.4	11.8	23.6	17.1
0151250()	1914–2008	95	127	137	235	169	297	225
01515000	1938–2008	65	374	396	660	478	840	654
01516350	1978–2008	31	8.7	9.4	16.2	11.4	21.1	15.9
01516500	1956-2008	53	0	<.!	.3	.I	.5	.3
01518000	'1979-2008	30	21.4	24.2	39.1	26.0	43.9	29.6
01518000	'1940-1977	38	7.5	8.8	17.7	10.9	23.6	16.5
01518700	'1981-2008	28	26.3	28.8	47.8	31.8	53.6	36.5
01518862	1985-2008	24	.9	1.2	3.4	2.0	5.2	4.1
01520000	[2]1981–2008	28	7.6	8.1	16.0	10.0	20.2	12.4
015200.00	[3]1953–1978	26	1.7	2.2	7.0	3.4	11.3	6.2
01520500	[2]1981–1995	15	37.4	41.5	72.7	44.5	80.5	53.6
01520500·	[3]1931–1979	49	14.3	16.2	37.3	20.8	51.8	32.5
01521500	[2]1941–2008	68	.6	.7	1.4	.8	1.8	1.2
01523500	'1950-2008	59	2.0	3.4	7.4	5.8	9.2	7.0
01524500	1944-2008	65	11.3	12.9	20.1	15.2	24.4	17.8
01526500	'1980-2008	29	69.5	73.7	116	87.4	145	103
01526500	[3]1920-1978	59	34.8	38.5	72.6	48.6	99.4	70.3
01527000	1952-1981	30	2.7	3.1	6.2	4.3	7.5	5.9
01527500	1940–2008	12	12.2	13.2	25.9	14.8	33.9	18.5 ,
01528000	1938–1995	58	.6	.7	2.2	1.0	2.9	1'.6,' -1
01529000	1938–1982	45	.6	.7	2.1	1.1	2.5	1.7 i
01529500	1920–2008	89	20.3	23.5	42.7	28.4	52.5	38.4<
01529950	[2]1980–2008	29	116	121	185	142	235	168

DFLOW Results

All available data from Apr 1, 1984 through Mar 31, 2D14 are included in analysis.

Ga1e	Period	Days in Record	zero/Missing	1B3j Pen::entile	Excur per 3 yr	7QlOI Percentile	Ex.cur per 3 yr	7QyType	xQy	Percentile	Hannonic	Pen::enti\e
01520000 • Cowanes g ue River near Lawrenceville PA	1983/04/01 - 2013/04/01	10.9ss	*010*	s.11 0.14%	1	9.64 o.31%	1.3	ZO. 11	3.s2 J	0.00% J	53.3	32.62%

Low-Flow ($0_{7\text{-}10}$) Calculation

Facility: **South Shore Recreation Area WWTP**
NPDES Permit No. **PA0114111**

Gage Information		Outfall Information	
Drainage Area:	**298** mi^2	Drainage Area:	**292** mi'
01.,o:	**9.64** cfs	01.,o:	**9.45** cfs
LFY:	**0.032** cfsm		

Downstream Locations

RMI:	**0.76**	RMI:	_____
Drainage Area:	**300** mi2	Drainage Area:	_____ mi^2
01.10:	**9.70** cfs	*01.,o:*	__ cfs
RMI:		RMI:	
Drainage Area:	_____mi^2	Drainage Area:	_____mi2
01.,o:	___ cfs	*01.,o:*	___ cfs
RMI:		RMI:	
Drainage Area:	_____mi^2	Drainage Area:	_____mi^2
01.10:	___ cfs	01.10:	cfs
RMI:		RMI:	
Drainage Area:	_____mi^2	Drainage Area:	_____mi^2
01.,o:	___ cfs	01.10:	___ cfs

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (fl/ft)	PWS Withdrawal (mgd)	Apply FC
04A	30995	COWANESQUE RIVER	**3.770**	1085.00	292.00	0.00000	0.00	

Stream Data

Design Cond.	LFY (efsm)	Trib Flow (els)	Stream Flow (els)	Reh Trav Time (days)	Reh Velocity (fps)	WD Ratio	Reh Width (ft)	Reh Depth (ft)	Tributa[Y Temp ("C)	Tributa[Y pH	Stream Temp ("C)	Stream pH
Q?-10	0.032	0.00	0.00	0.000	0.000	a.a	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	Per'mit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp ("C)	Disc pH
ACOE SSRA	PA0114111	0.0105	0.0105	0.0105	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Cone (mg/L)	Trib Cone (mg/L)	Stream Cone (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	15.00	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
04A	30995	COWANESQUE RIVER	**0.760**	990.00	300.00	0.00000	0.00	

Stream Data

Design Cond.	LFY (elsm)	Trib Flow (els)	Stream Flow (els)	Reh Trav Time (days)	Reh Velocity (fps)	WO Ratio	Reh Width (ft)	Reh Depth (ft)	Tributary Temp ('C)	Tributary pH	Stream Temp ('C)	Stream pH
Q7-10	0.032	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 H drod namic Out12uts

SWP Basin	Stream Code	Stream Name
04A	30995	COWANESQUE RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (fl/ft)	Depth (ft)	Width (ft)	WID Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp ('C)	Analysis pH
Q7-10 Flow												
3.770	9.34	0.00	9.34	.0162	0.00598	.828	52.82	63.79	0.21	0.860	25.00	7.00
Q1-10 Flow												
3.770	8.78	0.00	8.78	.0162	0.00598	NA	NA	NA	0.21	0.890	25.00	7.00
Q30-10 Flow												
3.770	11.49	0.00	11.49	.0162	0.00598	NA	NA	NA	0.24	0.766	25.00	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted 01-10 and 030-10 Flows	☐
WLA Method	EMPR	Use Inputted W/D Ratio	☐
01-10/07-10 Ratio	0.94	**Use Inputted Reach Travel Times**	☐
030-10/07-10 Ratio	1.23	**Temperature Adjust Kr**	
D.O. Saturation	**90.00%**	**Use Balanced Technology**	
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
04A	30995	COWANESQUE RIVER

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
3.770	ACOE SSRA	6.76	30	6.76	30	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
3.770	ACOE SSRA	1.34	15	1.34	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)		
3.77	ACOE SSRA	25	25	15	15	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
04A	30995	COWANESQUE RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.770	0.011	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
52.824	0.828	63.792	0.214
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.04	0.016	0.03	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.234	13.684	Tsivoglou	5
Reach Travel Time (days)			
0.860			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.086	2.04	0.02	7.54
0.172	2.03	0.02	7.54
0.258	2.03	0.02	7.54
0.344	2.03	0.02	7.54
0.430	2.02	0.02	7.54
0.516	2.02	0.02	7.54
0.602	2.02	0.01	7.54
0.688	2.01	0.01	7.54
0.774	2.01	0.01	7.54
0.860	2.01	0.01	7.54

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
04A	30995	COWANESQUE RIVER

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)
3.770	ACOESSRA	PA0114111	0.010	CBOD5	25		
				NH3-N	15	30	
				Dissolved Oxygen			3

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

9.45	= Q stream (cfs)	0.5	= CV Dally
0.0105	= Q discharge (MGD)	0.5	=CV Hourly
30	= no. samples	0.478	= AFC Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Crlteria Compliance Time (min)
0.5	= **BAT/BPJ** Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient **(K)**

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	**1.3.2.lil**	WLA afc = 88.729	**1.3.2.lll**	WLA cfc = 180.942
PENTOXSD TRG	**5.1a**	LTAMULT afc = 0.373	**5.1c**	LTAMULT cfc = 0.581
PENTOXSD TRG	**5.1b**	LTA_afc= 33.062	**5.1d**	LTA_cfc = 105.191

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	

WLAafc	(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))•••
	... + **Xd** + (AFC_Yc*Qs*Xs/Qd)l*(1-FOS/100)
LTAMULT afc	EXP((0.5*LN(cvhA2+1))-2.326*LN(cvhA2+1)AQ.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)l*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvdA2/no_samples+1))-2.326*LN(cvdA2/no_samples+1)AO,5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AMLMULT	EXP(2.326*LN((cvdA2/no_samples+1)AO.5)-0.5*LN(cvdA2/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)**