pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0115207**
Facility Type	**Municipal**	APS ID	**1080242**
Major / Minor	**Minor**	Authorization ID	**1425757**

Applicant and Facility Information

Applicant Name	**Orangeville Borough**	Facility Name	**Orangeville Borough WWTP**
Applicant Address	PO Box 176	Facility Address	End of Pine Street
	Orangeville, PA 17859-0176		Orangeville, PA 17859
Applicant Contact	Alec Engleman	Facility Contact	Alec Engleman
Applicant Phone	(570) 238-2465	Facility Phone	(570) 238-2465
Client ID	112690	Site ID	246435
Ch 94 Load Status	Not Overloaded	Municipality	Orangeville Borough
Connection Status	No Limitations	County	Columbia
Date Application Received	January 31, 2023	EPA Waived?	Yes
Date Application Accepted	July 3, 2023	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	July 20, 2023
X		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	July 21, 2023

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.07
Latitude	41º 4' 50.89"	Longitude	-76º 25' 8.90"
Quad Name	Bloomsburg	Quad Code	1034
Wastewater Description:	Sewage Effluent		

Receiving Waters	Fishing Creek	Stream Code	27623
NHD Com ID	65639187	RMI	11.28
Drainage Area (mi^2)	234	Yield (cfs/mi^2)	0.061
Q_{7-10} Flow (cfs)	14.3	Q_{7-10} Basis	Streamgage No. 01539000
Elevation (ft)	557	Slope (ft/ft)	0.0038
Watershed No.	5-C	Chapter 93 Class.	TSF, MF
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	n/a	Name	n/a

Nearest Downstream Public Water Supply Intake	SUEZ Water Pennsylvania		
PWS Waters	Fishing Creek	Flow at Intake (cfs)	22.08
PWS RMI	2.52	Distance from Outfall (mi)	8.52

Treatment Facility Summary

Construction and operation of the Orangeville Borough Wastewater Treatment Plant was approved under WQM Permit No. 1995401, issued February 28, 1995. The permit approves a 0.07 MGD extended aeration package treatment plant, consisting of:

- Screening
  - One (1) comminutor
- Equalization
  - One (1) distribution box
- Biological treatment
  - Two (2) 36,540-gallon aeration tanks
- Clarification
  - Two (2) 8,640-gallon clarifiers
- Disinfection
  - One (1) 3,920-gallon chlorine contact tank w/ erosion chlorinator
- Sludge Processing
  - One (1) 24,360-gallon aerated sludge digester

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Hypochlorite	0.07
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.07	170	Not Overloaded	Aerobic Digestion	Other WWTP

Compliance History

The facility was last inspected by DEP on April 19, 2023. The inspection report notes that all treatment units were online at the time of the inspection, effluent was clear, and no problems were noted in Fishing Creek at or downstream of Outfall 001.

Submission Date	Violation Description	Parameter	Sample Value	Violation Condition	Permit Value	Units	SBC
7/28/2022 (1)	Violation of permit condition	Fecal Coliform	2419.6	>	1000	No./100 ml	IMAX
6/28/2023 (2)	Violation of permit condition	Fecal Coliform	1119.9	>	1000	No./100 ml	IMAX
6/28/2023 (2)	Violation of permit condition	Fecal Coliform	314	>	200	No./100 ml	Geo Mean

Inspector Comments:

(1) Reminded operators to make sure chemical feed rate is raised either the day prior to or the day samples are being taken, depending on flow and to make sure the effluent water has enough contact time to kill fecal bacteria in effluent.

(2) Operators were notified to NOT take a fecal sample until chlorine residual is at least 0.50 with 20-minute contact time.

There are no open violations associated with the permittee.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.07
Latitude 41º 4' 49.00" **Longitude** -76º 25' 9.00"
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. The previous permit renewal included water quality modeling performed in WQM 7.0 v1.0b to determine if WQBELs for dissolved oxygen, CBOD5, and ammonia-n were necessary to protect the receiving surface water. To DEP's knowledge, there hasn't been any significant changes to the watershed or discharge that would warrant remodeling the discharge. Accordingly, the previous model's output is still appropriate. The results are as follows:

Parameter	Discharge Conc. (mg/L)	Effluent Limits (mg/L)		
		Monthly Average	Maximum	Minimum
CBOD5	25	25		
Ammonia-N	25	25	50	
Dissolved Oxygen	3			3

As with the above parameters, DEP performed an analysis of the total residual chlorine limits with the previous permit. The analysis concluded the existing technology-based limits were protective of Fishing Creek. Since there have been no significant changes to the watershed or the discharge, the existing technology-based limits are still appropriate.

All modeling input/output data is attached.

Best Professional Judgment (BPJ) Limitations

Existing influent monitoring requirements for BOD5 and TSS should remain in the permit to continue to characterize the influent.

Existing reporting requirements for ammonia-n and dissolved oxygen should remain to continue to characterize the effluent.

A quarterly 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.

Chesapeake Bay

The previous renewal removed nutrient monitoring from the permit since the facility had previously completed five years' worth of monitoring. The sample results were summarized in the previous renewal's fact sheet and have been copied below:

Monitoring Period	Parameter (mg/l)	
	Total Nitrogen	Total Phosphorus
2014	31.70	5.45
2015	25.81	2.73
2016	37.95	4.06
2017	30.53	3.17
2018	43.10	5.53
AVG =	***33.82***	***4.19***

Since the facility has previously performed five years of sampling, per Pennsylvania's Chesapeake Bay Watershed Implementation Plan, further monitoring requirements are not required.

Anti-Backsliding

No effluent limits are proposed to be made less stringent.

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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	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)	14	23	XXX	25.0	40.0	50	2/month	8-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
Total Suspended Solids	17	26	XXX	30.0	45.0	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
Ammonia-Nitrogen	Report	Report	XXX	Report	Report	XXX	2/month	8-Hr Composite

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.

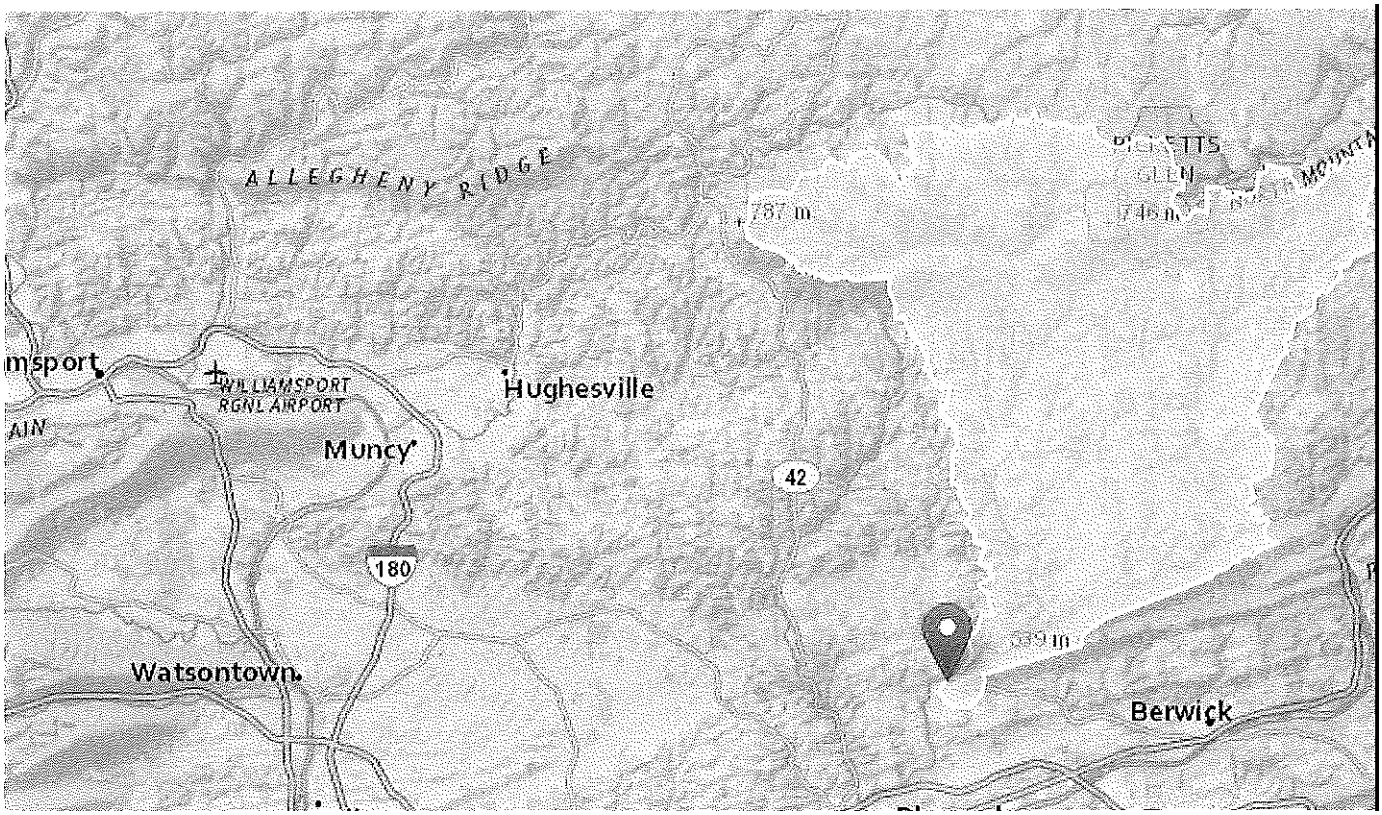
Outfall 001 , Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
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	14	23	XXX	25.0	40.0	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
TSS	17	26	XXX	30.0	45.0	60	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	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/quarter	Grab
Ammonia	Report	Report	XXX	Report	Report	XXX	2/month	8-Hr Composite

Compliance Sampling Location: Outfall 001

Orangeville Borough Wastewater Treatment Plant

Region ID: PA
Workspace ID: PA20180605165152620000
Clicked Point {Latitude, Longitude): 41.08073, -76.41899
Time: 2018-06-05 12:52:08 -0400



Outfall 001 upstream drainage area

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	8.7	degrees
BSLOPDRAW	Unadjusted basin slope, in degrees	8.91	
CARBON	Percentage of area of carbonate rock	0	percent
CENTROXA83	X coordinate of the centroid, in NAO_1983_Albers, meters	140332.2	

Parameter Code	Parameter Description	Value	Unit
CENTROYA83	Basin centroid horizontal (y) location in NAD 1983 Albers	251360.3	
DRN	Drainage quality index from STATSGO	3.9	
DRNAREA	Area that drains to a point on a stream	234	square miles
ELEV	Mean Basin Elevation	1385.6	feet
FOREST	Percentage of area covered by forest	76	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	90	percent
IMPNLCD01	Percentage of impervious area determined from NLCD 2001 impervious dataset	0	percent
LC01DEV	Percentage of land-use from NLCD 2001 classes 21-24	4	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	4.14	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.41	percent
LONG_OUT	Longitude of Basin Outlet	-76.41904	degrees
MAXTEMP	Mean annual maximum air temperature over basin area from PRISM 1971-2000 800-m grid	56	degrees F
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	132825	
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	232225	
PRECIP	Mean Annual Precipitation	42	inches
ROCKDEP	Depth to rock	4.6	feet
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	1	percent
STRDEN	Stream Density -- total length of streams divided by drainage area	1.69	miles per square mile
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	394.43	miles
URBAN	Percentage of basin with urban development	0	percent

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Application Version: 4.2.1

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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 J,ongitude in decimal degrees; miz, square miles]

Streamgage number	Streamgage name	latitude	longitude	Drainage area (mi')	Regulated[1]
01508803	West Branch Tioughnioga River at Homer, N.Y.	42.638	-76.176	71.5	N
01509000	Tioughnioga River at Cortland, N.Y.	42.603	-76.159	292	N
01510000	Olselic River at Cincinnatus, N.Y.	42.541	-75.900	147	N
01512500	Chenango-River near Chenango Forks, N,Y,	42.218	-75.848	1,483	N
01515000	Susquehanna River near Waverly; N.Y.	41.985	-76.501	4,773	N
01516350	Tioga River near Mansfield, Pa.	41.797	-77.080	153	N
01516500	Corey Creek near Maincsburg, 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	Cowancsque River at Westfield, Pa.	41.923	-77.532	90.6	N
01520000	Cowanesque River near Lawrenceville, Pa.	41.997	-77.140	298	y
01520500	Tioga River at Lindley, N.Y.	42.029	-77.132	771	y
01521500	Cmlisteo River at Arkport, N_.Y.	42.396	-77.711	30.6	**y**
01523500	Canaeadea Creek near Hornell, N.Y.	42.335	-77.683	57,9	**y**
01524500	Canisteo River.below Canacadca Creek at Homcll, N.Y.	42.314	-77.651	**158**	y
01526500	Tioga River near Erwins, N.Y.	42.121	-77.129	1,377	y
01527000	Cohocton River at Cohocton, N.Y.	42.500	-77.500	52.2	**N**
01527500	Cohocton River at Avoca, N,Y.	42.398	-77.417	152	N
01528000	Fivcmile Creek near Kanona, N.Y.	42.388	-77.358	66.8	N
01529000	Mud Creek near Savona, N.Y.	42.308	-77.197	76.6	y
01529500	Cohocton River near Campbell,N;Y.	42.253	-77.217	470	**N**
01529950	Chemung River at Coming, N.Y.	42.146	-77.057	2,006	**y**
01530332	Chemung River at Elmira, N.Y.	42,086	-76.801	2,162	**y**
01530500	Newtown Creek at Elmira, N.Y.	42.105	-76.798	77.5	**y**
01531000	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 Monrocton, Pa.	41.707	-76.485	215	N
01532850	MB Wyalusing Creek near Birchardville, 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	-76.156	35.2	N
01533950	SB Tunkhannock Creek ne,tr Montdale, Pa.	41.575	-75:642	12.6	N
01534000	Tunkhannock Creek near T nlk.hanm>ck,' Pf!.,	41..558	-75,895	383	**N**
01534300	Lackawanna RivCr near forest City, I_>a.	41.680	-75.472	**38,8**	y
01534500	Lackawanna RiVer at Archbald, Pa.	41,505	-75.542	**108**	**y**
01536000	Lackawanna River at Old Forge, Pa,	41.359	-75.744	332	**y**
01536500	Susquehanna River at Wilkes-Barre, Pa.	41.251	-75.881	9,960	y
01537000	Toby Creek at Luzerne, Pa.	41.281	-75.896	32.4	y
01537500	Solomon Creek at Wilkes-Barre, Pa.	41.228	-75.904	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**
01539500	Little Fishing Creek at Eyers _Grove, Pa.	41.080	-76.511	56,5	N
01540200	Trcixler Run near Ringtown, Pa.	40.853	-76.280	1.77	**N**
01540500	Sllsquehruum River at Danville, Pa.	40.958	-76.619	11,220	**y**
01541000	West BranC.h Susquehanna'Riv9r at Bower, Pa,	40.897	-78.677	315	N
01541200	West BranCh Susquehruma River-neru· Curwensville, Pa.	40.961	-78.519	367	**y**

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

[n.1/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 (ft'/s)	30-day, 10-year (ft'/s)	30-day, 2-year (lt'/s)	90-day, 10-year (ft'/s)
01530500	1940-2008	69	5.0	6.1	11.0	7.6	13	9.0
01531000	'1981-2008	28	138	147	237	169	296	203
01531000	'1905-1979	68	86.3	97.0	175	116	219	161
01531500	'1981-2008	28	550	592	1,030	733	1,340	952
01531500	'1915-1979	65	539	571	990	675	1,230	928
01532000	**1915-2008**	**94**	2.2	**2.8**	9.7	**4.6**	14.4	9.4
01532850	**1967-1979**	13	.J	.2	**.4**	.3	**.8**	.7
01533400	**'1981-2008**	**28**	602	**648**	**l,UO**	790	1,430	1,060
01533500	**1942-1958**	**17**	.4	.6	**1.5**	**.8**	2.0	**1.7**
01533950	**1962-1978**	17	.2	,3	1.0	.6	**1.4**	**1.0**
01534000	1915-2008	94	15.2	17.3	35.9	24.2	51.0	38.7
01534300	1960-2008	**49**	I.I	1.7	5.1	2.8	7.6	**4.8**
01534500	'1961-2008	48	16.7	18.8	29.2	21.9	35.8	27.6
01534500	'1941-1959	19	18.8	23,0	33.3	25.6	39.2	34.9
01536000	'1961-2008	48	28.7	32.7	51.7	40.8	68.1	54.3
01536000	**'1940-1959**	20	**77.8**	**93.9**	**119**	**105**	**138**	124
01536500	**'1981-2008**	**28**	**828**	**872**	**1,450**	**1,030**	**1,830**	**1,350**
01536500	**'1901-1979**	79	**778**	**811**	**1,350**	927	**1,640**	1,260
01537000	**1943-1993**	**51**	**1.3**	**2.0**	**4.9**	.3.J	6.4	4.7
01537500	**1941-1990**	**50**	.2	,3	**1.9**	**.5**	**3.1**	**1.6**
01538000	1921-2008	88	3.1	3.6	7.1	5.0	9.3	7.5
01539000	1940-2008	69	15.4	16.8	36.8	21.1	51.1	36.8
0!;39500	1942-1958	17	.I	.3	1.4	1.0	3.3	2.3
01540200	1965-1981	17	0	0	.3	.I	.3	.I
01540500	**'1981-2008**	28	1,080	**1,120**	1,870	1.320	2,330	**1,690**
01540500	**'1906-1979**	**74**	927	978	**1,660**	**1,160**	**2,050**	**1,590**
01541000	**1915-2008**	**94**	25.3	27.9	50,7.	**35.3**	**66.6**	49.6
01541200	**'1967 2008**	40	34.6	45.2	66.0	63.1	**100**	92.4
01541200	**'1957-1965**	**9**	· 22,9	24.7	**.44.7**	**27.7**	**58.2**	36.4
01541303	**1980-2008**	29	**53.4**	**58.5**	**94,0**	74.4	**123**	**102**
01541308	1969-1979	**11**	1.3	1.3	**1.9**	1.6	2.4	2.1
01541500	'1962-2008	47	39.0	**41.9**	66.5	51.9	86.3	70.6
01541500	'1915-1960	46	14.9	21.3	41.9	28.5	55.0	42.9
01542000	1942-1993	52	8.1	9.1	14.8	11.3	17.8	14.6
01542500	'1967-2008	33	216	235	326	285	435	402
01542500	**'1941-1965**	20		131	**189**	**152**	243	221
01542810.	1966-2008	**43**	**.1**	**.1**	,3	.2	.5	.3
01543000	**]915-2008**	**94**	**2.9**	**4,2**	16.0	**9.6**	27,4	**19.2**
01543500	1940-2008	69	**10.7**	**14.5**	44.9	26.6	**74.9**	**50.5**
01544000	**'1957-2008**	52	3.3	**6,9**	**19.0**	**11.2**	**31.1**	19.0
01544500	1942-2008	67	4.2	4.9	12.5	7.5	17.4	11.7
01545000	'1964--2008	45	**6.8**	**8.2**	21.2	12.0	32.7	211.7
01545500	'1963-2008	46	217	238	446	306	629	428
01545500	'1909-1961	53	125	141	278	190	387	296
01545600	1966-2008	43	1.2	1.5	4.4	2.4	6,7	4.2

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

Facility: **Orangeville Borough WWTP**
NPDES Permit No. **PA0115207**

Gage Information

Drainage Area: **274** mi^2
01.10: **16.8** cfs
LFY: **0.061** cfsm

Outfall Information

Drainage Area: **234** mi^2
07.10: **14.3** cfs

Downstream Locations

RMI: **10.84**
Drainage Area: **271** mi2
01.10: **16.62** cfs

RMI: _____
Drainage Area: _____ mi^2
cfs
07.10: __

RMI:
Drainage Area: _____ mi^2
01.10: ___ cfs

RMI: _____
Drainage Area: _____ mi^2
07.10: __ cfs

RMI:
Drainage Area: _____ mi^2
01.10: ___ cfs

RMI: _____
Drainage Area: _____ mi^2
cfs
07.10: __

RMI:
Drainage Area: _____ mi2
01.10: ___ cfs

RMI: _____
Drainage Area: _____ mi^2
01.10: _____ cfs

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
05C	27623	FISHING CREEK	**11.040**	557.00	234.00	0.00000	0.00	

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (els)	Stream Flow (els)	Reh Trav Time (days)	Reh Velocity (fps)	WD Ratio	Reh Width (ft)	Reh Depth (ft)	Tributary Temp ('C)	Tributary pH	Stream Temp ('C)	Stream pH
Q7-10	0.061	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
OrangevilleBoro	PA0115207	0.0700	0.0700	0.0700	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

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
05C	27623	FISHING CREEK	**10.840**	553.00	271.00	0.00000	0.00	[yi]

Stream Data

Design Cond.	LFY (efsm)	Trib Flow (cfs)	Stream Flow (efs)	Reh Trav Time (days)	Reh Velocity (fps)	WD Ratio	Reh Width (ft)	Reh Depth (ft)	Tributai:y Temp ('C)	Tributai:y pH	Stream Temp ('C)	Stream pH
Q7-10	0.061	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00		
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

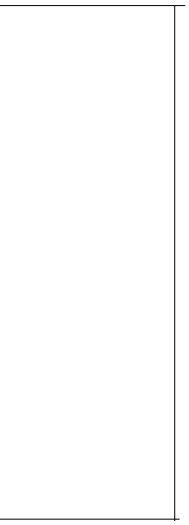
Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp ('C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc 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	25.00	0.00	0.00	0.70

0.00 0.00

Input Data WQM 7.0



WQM 7.0 Hy:drody:namic OutQuts

SWP Basin	Stream Code	Stream Name
05C	27623	FISHING 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												
11.040	14.27	0.00	14.27	.1083	0.00379	.846	61.8	73.07	0.28	0.044	25.00	7.00
Q1-10 Flow												
11.040	13.13	0.00	13.13	.1083	0.00379	NA	.NA	NA	0.26	0.Q47	25.00	7.00
Q30-10 Flow												
11.040	17.99	0.00	17.99	.1083	0.00379	NA	NA	NA	0.31	0.039	25.00	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	D
WLA Method	EMPR	**Use Inputted W/D Ratio**	D
Q1-10/Q7-10 Ratio	0.92	**Use Inputted Reach Travel Times**	D
Q30-10/Q7-10 Ratio	1.26	**Temperature Adjust Kr**	
0.0. Saturation	90.00%	**Use Balanced Technology**	
D.0. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
05C	27623	FISHING CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Mulliple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
11.040	OrangevilleBoro	6.76	50	6.76	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
11.040	OrangevilleBoro	1.34	25	1.34	25	0	0

Dissolved Oxygen Allocations

		CBOD5		NH3 N		Dissolved Oxygen		Critical	Percent
RMI	Discharge Name	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Reach	Reduction
11.04	OrangevilleBoro	25	25	25	25	3	3	0	0

WQM 7.0 0.0.Simulation

SWP Basin	Stream Code	Stream Name
OSC	27623	FISHING CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
11.040	0.070	25.000	7.000
Reach Width *(ft)*	**Reach Depth *(ft)***	**Reach WDRatio**	**Reach Velocity (fps)**
61.803	0.846	73.074	0.275
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.17	0.125	0.19	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.204	8.008	Tsivoglou	6
Reach Travel Time (days)			
0.044			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.004	2.17	0.19	7.54
0.009	2.17	0.19	7.54
0.013	2.17	0.19	7.54
0.018	2.17	0.18	7.54
0.022	2.17	0.18	7.54
0.027	2.16	0.18	7.54
0.031	2.16	0.18	7.54
0.036	2.16	0.18	7.54
0.040	2.16	0.18	7.54
0.044	2.16	0.18	7.54

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
OSC	27623	FISHING 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)
11.040	**OrangevilleSoro**	PA0115207	0.070	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

14.3	= **Q** stream (cfs)	0.5	=CV Dally
0.07	= Q discharge **(MGD)**	0.5	=CV Hourly
30	= no. samples	0.373	= AFC_Partlal Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partlal Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Crlteria Compliance Time (min)
0.5	= **BAT/BPJ** Value	**720**	= CFC_Crlterla Compliance Time (min)
0	= % Factor of Safety (FOS)		**=Decay Coefficient (K)**

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.111	WLA ate= 15.732	1.3.2.111	WLA etc= 41.079
PENTOXSD TRG	**5.1a**	LTAMULT ate= 0.373	**5.1c**	LTAMULT etc= 0.581
PENTOXSD TRG	5.1b	LTA_afc= 5.862	5,1d	LTA_cfc = 23.882

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)]*(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
AML MULT	EXP(2.326*LN((cvd A2/no_samples+1)A0.5)-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_limiUAML_MULT)/LTAMULT_ate)