pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0084638**
Facility Type	**Industrial**	APS ID	**16694**
Major / Minor	**Minor**	Authorization ID	**1401645**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**Boyertown Borough**	Facility Name	**Boyertown Borough Water System**
Applicant Address	100 S. Washington Street	Facility Address	1 Grandview Road
	Boyertown, PA 19512-1521		Boyertown, PA 19512-1599
Applicant Contact	Patricia Loder	Facility Contact	Ralph Schoenly
Applicant Phone	(610) 369-3031	Facility Phone	(610) 369-3041
Client ID	28598	Site ID	866
SIC Code	4952	Municipality	Earl Township
SIC Description	Trans. & Utilities - Water Supply	County	Berks
Date Application Received	June 30, 2022	EPA Waived?	Yes
Date Application Accepted	July 1, 2022	If No, Reason	

Purpose of Application: NPDES permit Renewal.

Summary of Review

Spotts, Stevens and McCoy, on behalf of the Boyertown Borough Water System (Authority/Permittee), applied to the Pennsylvania Department of Environmental Protection (DEP) for issuance of the NPDES permit. The permit was reissued on December 21, 2017 and became effective on January 1, 2018. The permit expired on December 31, 2022 but the terms and conditions of the permit have been extended since that time.

The facility is a minor industrial waste permit without Effluent Limitation Guideline (ELG). The discharge average design flow and hydraulic design capacity is 0.04 MGD, comprised mostly of filter backwash.

No WQM permit is shown in DEP's eFACTs database or reported in the permit application.

Delaware River Basin Commission
As per standard procedure, a copy of the draft permit will also be forwarded to the Delaware River Basin Commission (DRBC). Ironstone Creek is within the DE River watershed. The relevant standard Part C Condition will also be added in the permit: "This discharge may be subject to other DRBC requirements".

Changes from the previous permit: NA

Based on the review outlined in this fact sheet, it is recommended that the permit be drafted. A public notice of the draft permit will be published in the *Pennsylvania Bulletin* for public comments for 30 days.

Approve	Deny	Signatures	Date
X		*Hilaryle* Hilary H. Le / Environmental Engineering Specialist	December 1, 2023
X		*Maria D. Bebenek for Danial W. Martin* Daniel W. Martin, P.E. / Environmental Engineer Manager	December 8, 2023

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.04
Latitude	40º 20' 25.28"	Longitude	-75º 40' 52.74"
Quad Name	Boyertown	Quad Code	
Wastewater Description:	Filter backwash, chlorine analyzer wastewater, floor drains, settling tank and flocculator drains		
Receiving Waters	Unnamed Tributary to Ironstone Creek	Stream Code	01664
NHD Com ID	25964968	RMI	1.5
Drainage Area	0.44 mi.^{2}	Yield (cfs/mi^2)	See comments below
Q_{7-10} Flow (cfs)	See comments below	Q_{7-10} Basis	See comments below
Elevation (ft)	540 (est'd)	Slope (ft/ft)	
Watershed No.	3-D	Chapter 93 Class.	TSF, MF
Existing Use	CWF (Cold Water Fishes)	Existing Use Qualifier	Coldwater Community
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s),		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	None	Name	
Nearest Downstream Public Water Supply Intake	North Coventry Township Water Authority, Chester County		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	Approximate 11.2 miles

Changes Since Last Permit Issuance:

Drainage Area
The discharge is to UNT to Ironstone at RMI 1.50 miles. A drainage area upstream of the discharge is estimated to be 0.44 mi.^{2}, according to USGS PA StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
There is a category B-1 High Hazard Dam at Boyertown Reservoir just upstream of this discharge point, the PA Stream Stats Q_{7-10} could not be relied upon. The nearest USGS Streamgage is 01471980 in Pottstown, PA which is approximately 8.1 miles downstream of the discharge point hence is not representative. Moreover, stream flow data collected from USGS StreamStats indicated some parameters are outside of the recommended range for regression analysis to calculate low flows. The drainage area was found to be 85.5 mi^2 at the gage, Q_{7-10}, and Q_{30-10} values at this gage are 22.9 cfs, and 25.7 cfs. As a result, low flows were estimated using the Low-Flow Yield approach as follows:

$$\text{Yield} = 22.9 \text{ cfs}/85.5 \text{ mi}^2 = 0.27 \text{ cfs/mi}^2$$
$$Q_{7-10} = 0.27 \text{ cfs/mi}^2 * 0.44 \text{ mi}^2 = 0.12 \text{ cfs}$$
$$Q_{30-10} = 0.12 \text{ cfs} * 1.36 = 0.16 \text{ cfs}$$
$$Q_{1-10} = 0.12 \text{ cfs} * 0.64 = 0.08 \text{ cfs}$$

Receiving Water Characteristics
Under 25 Pa Code §93.9f, Trib. 01664 to Ironstone Creek is designated as Trout Stocking Fishes and Migratory Fishes (TSF & MF). The discharge is located within a stream segment listed as attaining uses.

Water Supply Intake
The nearest downstream public water supply intake is North Coventry Township Water Authority located on the Schuylkill River, in Chester County, approximately 11.2 miles from the point of discharge. Based on the dilution and nature of discharge, the discharge is not expected to impact the water supply intake.

Treatment Facility Summary				
Treatment Facility Name: Boyertown Boro/ Iw				
WQM Permit No.	**Issuance Date**			
None in database	-			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Industrial	Physical (Industrial Waste),Physical (Industrial Waste)	Filtration, Flocculation	Chlorine With Dechlorination	0.04
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.04		Not Overloaded	Concentration	Land Application

Changes Since Last Permit Issuance: none

The plant has a rated capacity of 0.79 MGD. The unit processes include aeration basin, rapid mixer and flocculation tanks, sedimentation, multimedia filters, a clear well, and two lagoons. The discharge is filter backwash, chlorine analyzer wastewater, floor drains, settling tank and flocculator drains.

Two sedimentation basins in series have been provided for sludge and filter backwash.

Chemicals:
Powdered activated carbon is used for taste ordo control. DelPAC 2020 is used for coagulation. Soda ash is used for pH adjustment/corrosion control. Chlorine (gaseous) is used for disinfection. Ammonia (gaseous) is used for chloramine formation. Sodium Thiosulfate is used for dechlorination.

Compliance History	
Summary of DMRs:	A summary of past 12-month DMRs is presented on next pages.
Summary of Inspections:	**9/8/2020:** Ms. Tomtishen, DEP's WQS, conducted a compliance evaluation inspection. Recommendations were please update contact information in onsite Emergency Response Plan, including DEP's 24-hour ER Number 1-800-541-2050, and maintain hard copies of laboratory sample results and chain of custody forms with monthly DMRs for minimum of 3 years in accordance with Part A.III.A.2 of your NPDES permit. There were no violations identified during inspection. The field test results were within permit limits.
Other Comments:	There are currently no open violations associated with the permittee or the facility.

Other Comments:
The DEP Inspector's sample on 11/19/2020 results are shown below:

Parameter	Units	10/19/2020
pH	s.u.	6.91
D.O.	mg/L	-
TRC	mg/L	0.15
TSS	mg/L	< 5.0
Temperature	°C	23.0
Total Aluminum	ug/L	370.0
Total Iron	ug/L	< 100.0
Total Manganese	ug/L	138.0

Compliance History

DMR Data for Outfall 001 (from October 1, 2022 to September 30, 2023)

Parameter	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22
Flow (MGD) Average Monthly	0.027	0.051	0.057	0.052	0.046	0.044	0.034	0.031	0.034	0.037	0.035	0.039
Flow (MGD) Daily Maximum	0.070	0.076	0.080	0.096	0.065	0.109	0.041	0.039	0.045	0.058	0.083	0.062
pH (S.U.) Minimum	6.6	6.8	7.0	6.9	6.8	6.9	6.7	6.7	6.9	7.0	6.9	6.7
pH (S.U.) IMAX	7.7	8.6	7.8	7.7	7.8	7.9	7.9	8.0	7.8	7.7	8.4	7.4
TRC (mg/L) Average Monthly	0.15	0.14	0.14	0.12	0.06	0.07	0.09	0.16	0.16	0.13	0.08	0.06
TRC (mg/L) IMAX	0.31	0.37	0.38	0.26	0.20	0.23	0.27	0.35	0.42	0.41	0.29	0.18
TSS (lbs/day) Average Monthly	1.45	0.92	1.63	1.14	1.04	0.41	0.72	0.79	0.45	0.48	0.44	1.09
TSS (lbs/day) Daily Maximum	2.62	1.79	3.85	3.14	2.75	0.61	1.85	1.24	0.85	0.61	0.50	2.13
TSS (mg/L) Average Monthly	4.8	2.0	3.5	2.5	2.4	1.3	2.5	3.0	1.6	1.8	1.6	2.8
TSS (mg/L) Daily Maximum	7.0	4.0	9.0	7.0	6.0	2.0	6.0	5.0	3.0	3.0	2.0	5.0
Total Aluminum (lbs/day) Average Monthly	0.10	0.18	0.22	0.20	0.23	0.11	0.08	0.07	0.10	0.13	0.13	0.15
Total Aluminum (lbs/day) Daily Maximum	0.19	0.22	0.30	0.32	0.31	0.19	0.09	0.09	0.14	0.17	0.37	0.23
Total Aluminum (mg/L) Average Monthly	0.33	0.41	0.44	0.42	0.55	0.34	0.29	0.26	0.37	0.41	0.41	0.40
Total Aluminum (mg/L) Daily Maximum	0.43	0.57	0.53	0.55	0.72	0.49	0.30	0.34	0.54	0.57	1.01	0.51
Total Iron (lbs/day) Average Monthly	0.03	0.02	0.05	0.02	0.07	0.01	0.01	0.01	0.03	0.03	0.01	0.05
Total Iron (lbs/day) Daily Maximum	0.05	0.03	0.07	0.03	0.29	0.02	0.01	0.02	0.03	0.05	0.01	0.09
Total Iron (mg/L) Average Monthly	0.12	0.05	0.09	0.05	0.17	0.04	0.02	0.04	0.09	0.10	0.03	0.12

Total Iron (mg/L) Daily Maximum	0.14	0.07	0.12	0.06	0.67	0.05	0.03	0.07	0.12	0.15	0.04	0.21
Total Manganese (lbs/day) Average Monthly	0.06	0.14	0.21	0.22	0.06	0.02	0.02	0.08	0.02	0.02	0.03	0.03
Total Manganese (lbs/day) Daily Maximum	0.09	0.19	0.33	0.24	0.09	0.02	0.02	0.14	0.02	0.03	0.05	0.03
Total Manganese (mg/L) Average Monthly	0.23	0.32	0.44	0.48	0.14	0.07	0.08	0.29	0.06	0.06	0.08	0.07
Total Manganese (mg/L) Daily Maximum	0.33	0.42	0.77	0.66	0.21	0.08	0.09	0.56	0.08	0.08	0.12	0.08

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.04
Latitude 40º 20' 25.28" **Longitude** -75º 40' 52.74"
Wastewater Description: Water Treatment Effluent

Technology-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation	State Developed TBEL
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)	DEP Technical Guidance Document 362-2183-003
	60	Daily Maximum	133.102(b)(2)	92a.47(a)(2)	
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)	DEP Technical Guidance Document 362-2183-003
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)	DEP Technical Guidance Document 362-2183-003
Total Iron	2	Average Monthly			DEP Technical Guidance Document 362-2183-003
	4	Daily Maximum			
Total Aluminum	4	Average Monthly			DEP Technical Guidance Document 362-2183-003
	8	Daily Maximum			
Total Manganese	1	Average Monthly			DEP Technical Guidance Document 362-2183-003
	2	Daily Maximum			

Water Quality-Based Limitations

pH:
The effluent discharge pH should remain above 6.0 and below 9.0 standard units according to 25 Pa. Code § 95.2(1).

Total Residual Chlorine (TRC):
Based on the attached TRC Excel Spreadsheet calculator, which uses the equations and calculations from the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (ID No. 391-2000-015), the facility's discharge must meet a monthly average limit of 0.29 (0.3) mg/L and an instantaneous maximum limit of 0.96 (0.9) mg/L for a design flow of 0.04 MGD. The existing limit of 0.3 mg/L AML & 0.9 mg/L IMAX will remain in the proposed permit. Minimum monitoring frequency will be 1/day.

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.12	= Q stream (cfs)	0.5	= CV Daily
0.04	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= 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)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.638	1.3.2.iii	WLA cfc = 0.614
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.238	5.1d	LTA_cfc = 0.357

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.292	AFC
		INST MAX LIMIT (mg/l) = 0.956	

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)

Total Suspended Solids (TSS):
The existing limits of 30.0 mg/L average monthly, 60.0 mg/L weekly average, and 75.0 mg/L IMAX will remain in the proposed permit. Recent DMRs and inspection reports show that the facility has been consistently achieving concentrations below these limits. Mass limits are calculated as follows:

Average monthly mass limit: 30.0 mg/L x 0.04 MGD x 8.34 = 10.0 lbs/day
Average weekly mass limit: 60.0 mg/L x 0.04 MGD x 8.34 = 20.0 lbs/day

TDS Baseline:
State regulations have requirements for significant increases from 2010 TDS loads. Fact Sheets are documenting the existing TDS loads at facilities as baselines which can be used to calculate future load 'increases'. Chapter 95.10(a)(1) states that "existing mass loads" will be considered maximum daily discharge loads of TDS…that were authorized by the Department prior to August 21, 2010. This facility's 2022 NPDES permit application indicated a maximum TDS effluent concentration of 134.0 mg/L, based on three effluent samples. The resulting TDS load would be 44.7 (45.0) lbs/day: 134.0 mg/l TDS x 0.04 MGD x 8.34 c.f.

Stormwater:
The renewal application also indicates that there are no stormwater outfalls or outfalls with combined stormwater and industrial wastewater. No stormwater outfall annual inspection or stormwater sampling requirements are applicable.

Nutrients:
Their application did not show nutrient concentrations in their discharge at levels of concern. Based on three effluent samples, the maximum concentrations were as follows: 0.44 mg/L for NO_3-NO_2, <0.5 mg/L for TKN, <0.06 mg/L for Ammonia, and <0.01 mg/L for Total Phosphorus. No monitoring requirement has therefore been added.

Chemical Additives:
The application did not show any "chemical additives" in use, as defined by the application instructions and DEP's Standard Operating Procedure (SOP) for Chemical Additives.

Anti-Backsliding:
No limits in this renewal permit are less stringent than in the previous permit. Federal and State regulations which prohibit back-sliding (with some exceptions) are therefore satisfied.

Antidegradation:
The effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No Exceptional Value (EV) waters are impacted by this discharge. At this time, the downstream water has not been designated a High Quality (HQ) water. If it becomes a HQ water, after appropriate assessment and a public comment period, this facility's existing discharge will be "grandfathered", but it would have to satisfy the requirements at 25 PA Code Chapter 94c for any future proposed increases in flow or pollutant loads. These requirements include evaluating non-discharge alternatives or demonstrating that the discharge will maintain and protect the existing quality of the receiving surface water or obtaining a Social or Economic Justification (SEJ).

The discharge is into Trib. 01664 to Ironstone Creek which Ironstone Creek has been listed by the PA Fish and Boat Commission as under consideration for designation as a Class A Wild Trout Water. If that happens, the downstream receiving water would become a "High-Quality" water. Loads from existing dischargers would be "grandfathered" but any increased loading would be subject to DEP's antidegradation policies and regulations.

Additional Considerations:
Because the downstream receiving water is designated as Natural Trout Reproduction, the Dissolved Oxygen (D.O.) water quality criteria for certain months is higher than for other CWF waters: 8.0 mg/L during October-May. This discharge is not high in organic content and is not expected to interfere with this designation. The renewal 2022 application indicated <2.0 mg/L for BOD_5 and <2.5 mg/L for COD, based on three effluent samples. The DEP inspector sampled for D.O. at least once with a result of 10.6 mg/L. No limit or monitoring requirement has therefore been imposed for D.O.

Flow Monitoring:
Flow monitoring will remain in the proposed permit and is required by 40 CFR § 122.44(i)(1)(ii).

Other:
WQBELs are developed based on the designated and existing use of the particular receiving water, Water Quality Standards including water quality criteria [25 Pa Code Chapter 93 and 96], and an analysis of the reasonable potential to cause an in-stream exceedance of water quality criteria.

DEP uses:

1) The WQM 7.0 model, when applicable.
Because this discharge has very low **Ammonia** concentrations and **$CBOD_5$** concentrations per their application and as would be expected from such operations, the WQM 7.0 model would not normally be run, consistent with DEP Standard Operating Procedures for Individual Industrial NPDES Permits. No permit limit or monitoring requirement is proposed for Ammonia and $CBOD_5$ or BOD_5.

2) The Toxics Management Spreadsheet/model (TMS), when applicable.
The following input data were used for Toxic Management Spreadsheet (TMS) Analysis:

- Discharge pH = 7.38 (6.96 + 7.8 = 7.38) (Renewal Application)
- Stream pH = 7.0 (Default)
- Discharge Hardness = 39.3 mg/L (Renewal Application)
- Stream Hardness = 100 mg/L (Default)

Node 1: Outfall 001 at Trib. 01664 to Ironstone Creek (01664)
Elevation: 540.00 ft (USGS National Map)
Drainage Area: 0.44 mi^2 (USGS StreamStats)
River Mile Index: 1.50 (PA DEP eMapPA)
Low Flow Yield: 0.27 cfs/mi^2
Discharge Flow: 0.04 MGD

Node 2: At the confluence to Ironstone Creek (01658)
Elevation: 380.00 ft (USGS National Map)
Drainage Area: 0.71 mi^2 (USGS StreamStats)
River Mile Index: 0.001 (PA DEP eMapPA)
Low Flow Yield: 0.27 cfs/mi^2
Discharge Flow: 0.00 MGD

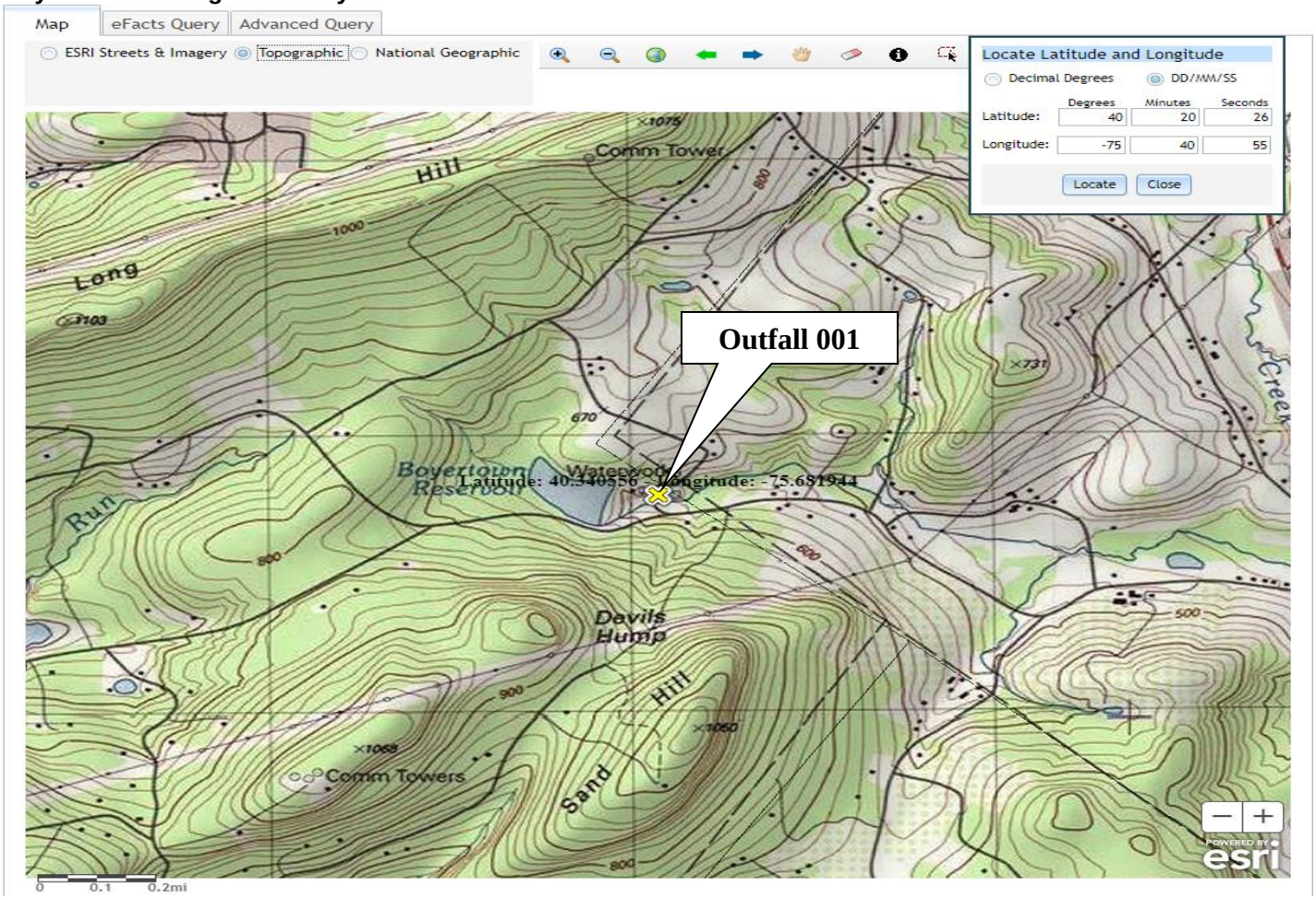
This data was analyzed based on the guidelines found in DEP's Water Quality Toxics Management Strategy (Document No. 361-0100-003) and DEP's SOP No. BPNPSM-PMT-033. Spreadsheet results are attached to this fact sheet. The Toxics Management Spreadsheet uses the following logic:

a. Establish average monthly and IMAX limits in the draft permit where the maximum reported concentration exceeds 50% of the WQBEL.
b. For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25%-50% of the WQBEL.
c. For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10%-50% of the WQBEL.

DEP's Toxics Management spreadsheet was utilized to perform a reasonable potential analysis and develop water quality effluent limits for toxic pollutants. Summarized information are in the Table below.

Parameter	Calculated WQBEL (units)	Model	Comments	Recommended
Total Aluminum	1,404 ug/L (1.404 mg/L)	TMS	Discharge Concentration less than or equal 10% WQBEL	Not needed
Total Iron	4,380 ug/L (4.380 mg/L)	TMS	Discharge Concentration less than Target QL	Not needed
Total Manganese	2,920 ug/L (2.920 mg/L)	TMS	Discharge Concentration less than or equal 10% WQBEL	Not needed

The TMS analysis results limits of Total Aluminum, Total Iron, and Total Manganese shown in the Table above, which are higher than the existing limits requirements; therefore, the existing limits of these pollutants are more stringent and will remain in the proposed permit.


Map
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Advanced Query
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Latitude: 40 20 26
Longitude: -75 40 55
Locate
Close
Outfall 001
Latitude: 40.340556 - Longitude: -75.681944
Boyertown Reservoir
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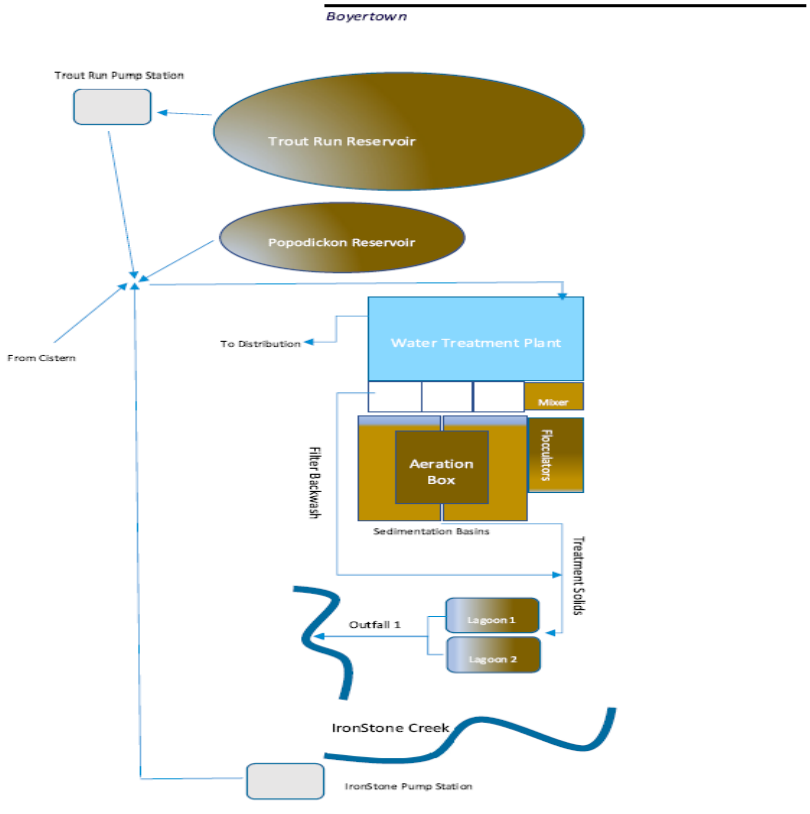
Boyertown
Trout Run Pump Station
Trout Run Reservoir
Popodickon Reservoir
From Cistern
To Distribution
Water Treatment Plant
Mixer
Aeration Box
Flocculators
Filter Backwash
Sedimentation Basins
Treatment Solids
Outfall 1
Lagoon 1
Lagoon 2
IronStone Creek
IronStone Pump Station
Process Control Management Plan
Boyertown WTP
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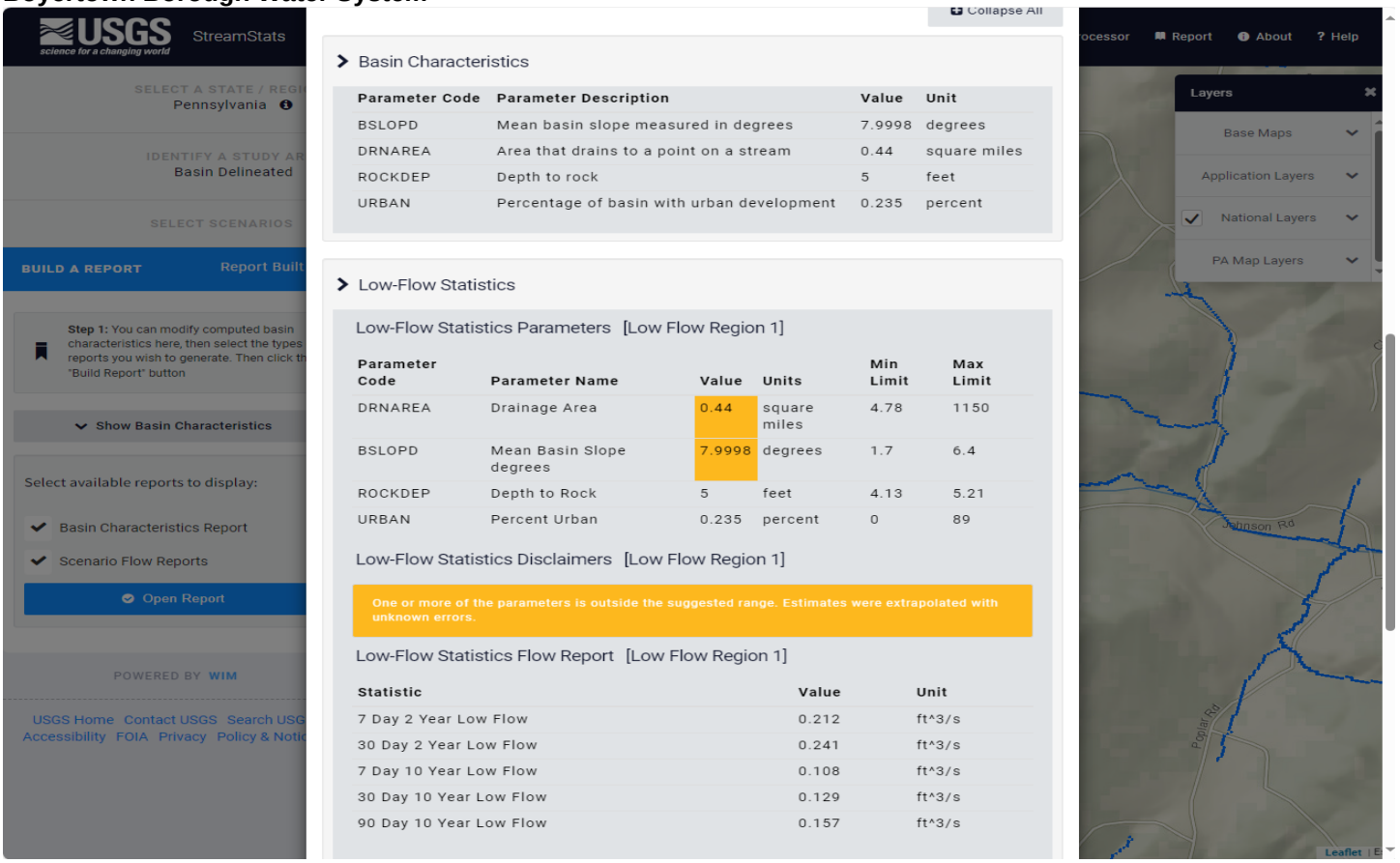
USGS
StreamStats
science for a changing world
Pennsylvania
Basin Delineated
BUILD A REPORT
Report Built
Show Basin Characteristics
Select available reports to display:
Basin Characteristics Report
Scenario Flow Reports
Open Report
POWERED BY WIM
Collapse All
Basin Characteristics
Parameter Code | Parameter Description | Value | Unit
BSLOPD | Mean basin slope measured in degrees | 7.9998 | degrees
DRNAREA | Area that drains to a point on a stream | 0.44 | square miles
ROCKDEP | Depth to rock | 5 | feet
URBAN | Percentage of basin with urban development | 0.235 | percent
Low-Flow Statistics
Low-Flow Statistics Parameters [Low Flow Region 1]
Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit
DRNAREA | Drainage Area | 0.44 | square miles | 4.78 | 1150
BSLOPD | Mean Basin Slope degrees | 7.9998 | degrees | 1.7 | 6.4
ROCKDEP | Depth to Rock | 5 | feet | 4.13 | 5.21
URBAN | Percent Urban | 0.235 | percent | 0 | 89
Low-Flow Statistics Disclaimers [Low Flow Region 1]
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.
Low-Flow Statistics Flow Report [Low Flow Region 1]
Statistic | Value | Unit
7 Day 2 Year Low Flow | 0.212 | ft^3/s
30 Day 2 Year Low Flow | 0.241 | ft^3/s
7 Day 10 Year Low Flow | 0.108 | ft^3/s
30 Day 10 Year Low Flow | 0.129 | ft^3/s
90 Day 10 Year Low Flow | 0.157 | ft^3/s
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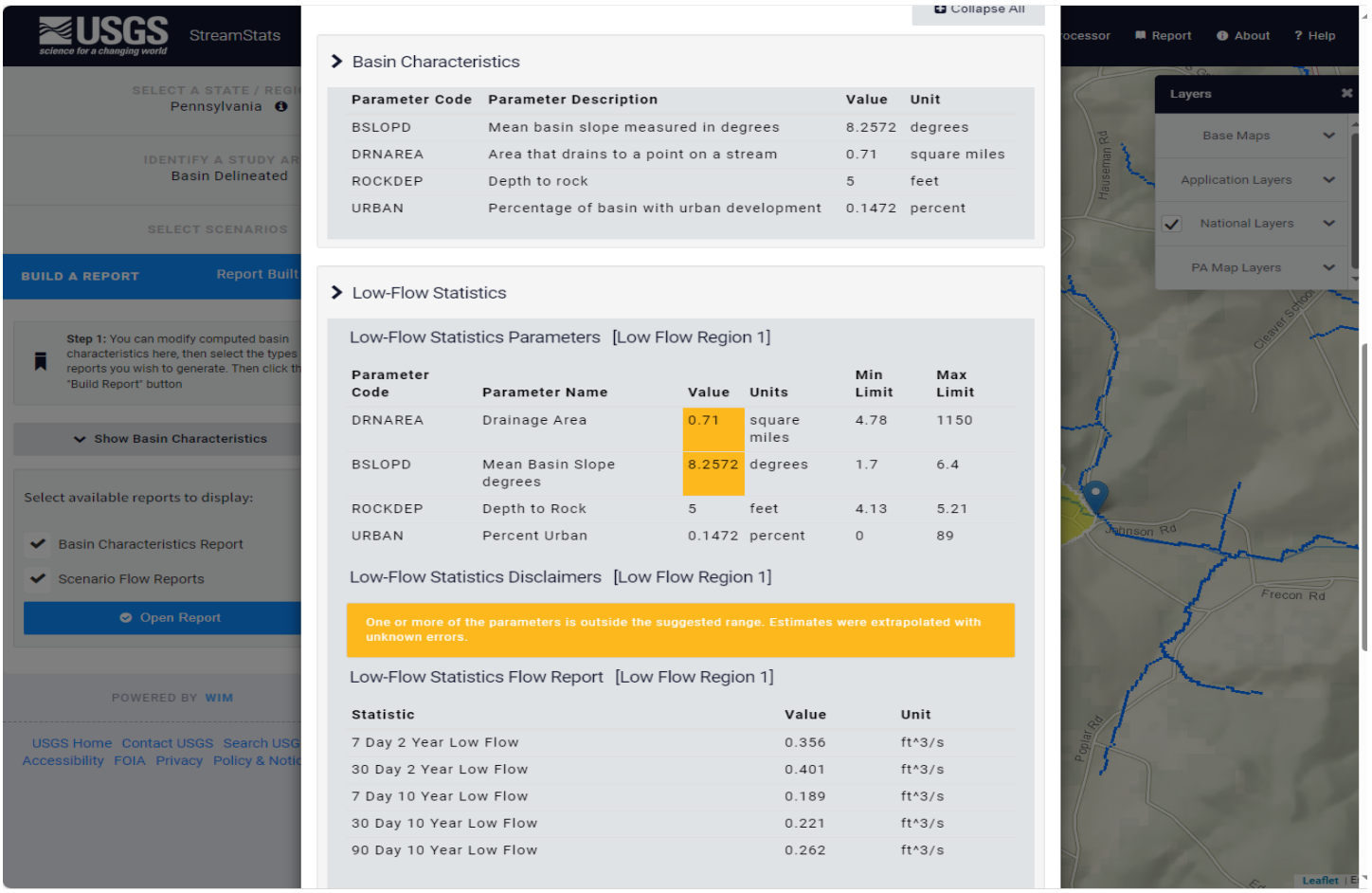
Poplar Rd
Leaflet


USGS
StreamStats
science for a changing world
Pennsylvania
Basin Delineated
BUILD A REPORT
Report Built
Show Basin Characteristics
Select available reports to display:
Basin Characteristics Report
Scenario Flow Reports
Open Report
POWERED BY WIM
Collapse All
Basin Characteristics
Parameter Code | Parameter Description | Value | Unit
BSLOPD | Mean basin slope measured in degrees | 8.2572 | degrees
DRNAREA | Area that drains to a point on a stream | 0.71 | square miles
ROCKDEP | Depth to rock | 5 | feet
URBAN | Percentage of basin with urban development | 0.1472 | percent
Low-Flow Statistics
Low-Flow Statistics Parameters [Low Flow Region 1]
Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit
DRNAREA | Drainage Area | 0.71 | square miles | 4.78 | 1150
BSLOPD | Mean Basin Slope degrees | 8.2572 | degrees | 1.7 | 6.4
ROCKDEP | Depth to Rock | 5 | feet | 4.13 | 5.21
URBAN | Percent Urban | 0.1472 | percent | 0 | 89
Low-Flow Statistics Disclaimers [Low Flow Region 1]
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.
Low-Flow Statistics Flow Report [Low Flow Region 1]
Statistic | Value | Unit
7 Day 2 Year Low Flow | 0.356 | ft^3/s
30 Day 2 Year Low Flow | 0.401 | ft^3/s
7 Day 10 Year Low Flow | 0.189 | ft^3/s
30 Day 10 Year Low Flow | 0.221 | ft^3/s
90 Day 10 Year Low Flow | 0.262 | ft^3/s
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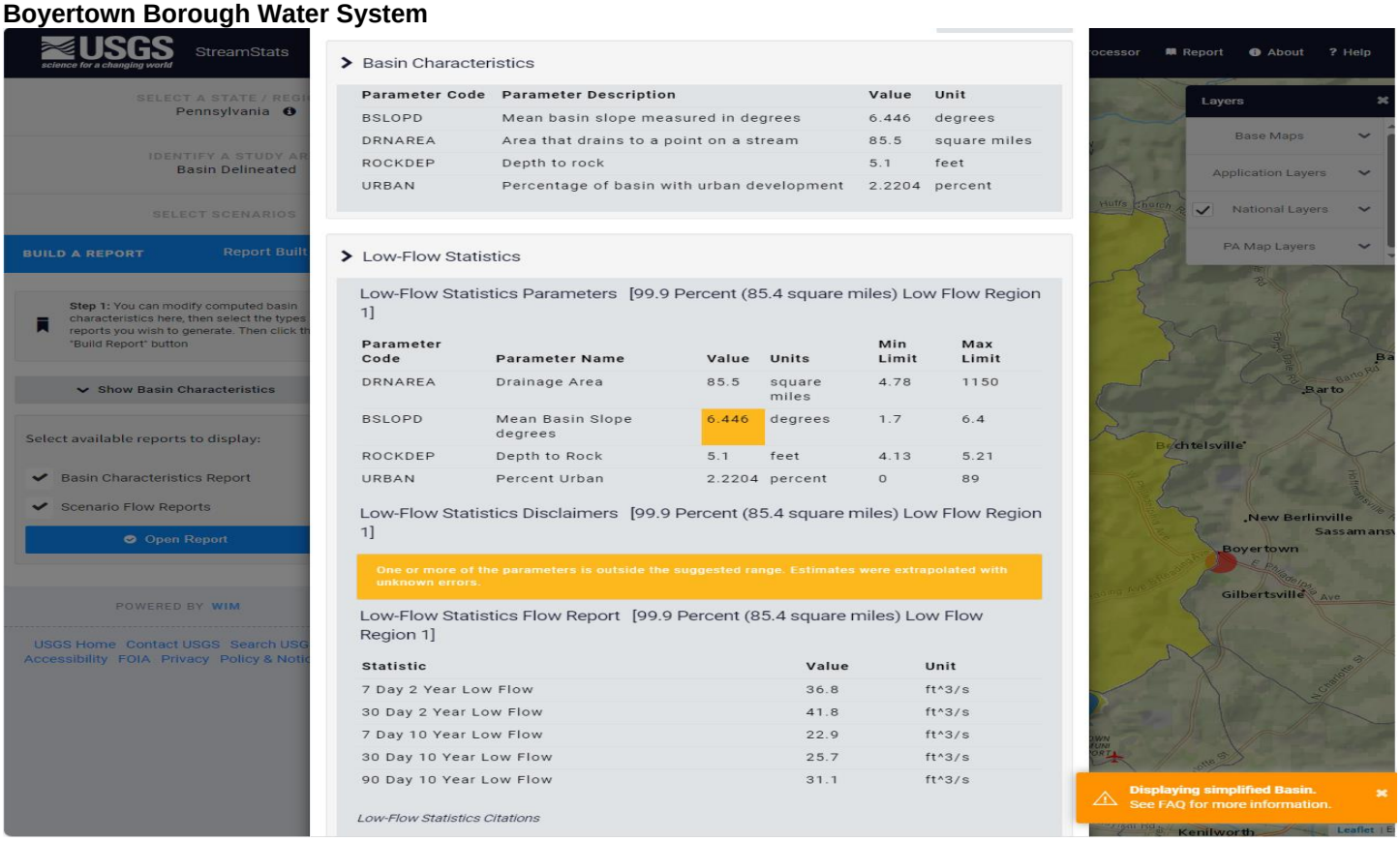
National Layers
PA Map Layers
Hausman Rd
Johnson Rd
Frecon Rd
Poplar Rd
Leaflet


USGS
science for a changing world
StreamStats
Pennsylvania
Basin Delineated
BUILD A REPORT
Report Built
Step 1: You can modify computed basin characteristics here, then select the types reports you wish to generate. Then click th "Build Report" button
Show Basin Characteristics
Select available reports to display:
Basin Characteristics Report
Scenario Flow Reports
Open Report
POWERED BY WIM
USGS Home Contact USGS Search USG
Accessibility FOIA Privacy Policy & Notic
Basin Characteristics
Parameter Code Parameter Description Value Unit
BSLOPD Mean basin slope measured in degrees 6.446 degrees
DRNAREA Area that drains to a point on a stream 85.5 square miles
ROCKDEP Depth to rock 5.1 feet
URBAN Percentage of basin with urban development 2.2204 percent
Low-Flow Statistics
Low-Flow Statistics Parameters [99.9 Percent (85.4 square miles) Low Flow Region 1]
Parameter Code Parameter Name Value Units Min Limit Max Limit
DRNAREA Drainage Area 85.5 square miles 4.78 1150
BSLOPD Mean Basin Slope degrees 6.446 degrees 1.7 6.4
ROCKDEP Depth to Rock 5.1 feet 4.13 5.21
URBAN Percent Urban 2.2204 percent 0 89
Low-Flow Statistics Disclaimers [99.9 Percent (85.4 square miles) Low Flow Region 1]
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.
Low-Flow Statistics Flow Report [99.9 Percent (85.4 square miles) Low Flow Region 1]
Statistic Value Unit
7 Day 2 Year Low Flow 36.8 ft^3/s
30 Day 2 Year Low Flow 41.8 ft^3/s
7 Day 10 Year Low Flow 22.9 ft^3/s
30 Day 10 Year Low Flow 25.7 ft^3/s
90 Day 10 Year Low Flow 31.1 ft^3/s
Low-Flow Statistics Citations
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PA Map Layers
Boyertown
New Berlinville
Gilbertsville
Displaying simplified Basin.
See FAQ for more information.
Leaflet

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2020

Discharge Information

Instructions | Discharge | Stream

Facility: Boyertown Borough | NPDES Permit No.: PA0084883 | Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste | Wastewater Description: Trib 01884 to Ironstone Creek

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.04	39.3	7.38						

	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc (0 if left blank)	Stream Conc (0 if left blank)	Daily CV (0.5 if left blank)	Hourly CV (0.5 if left blank)	Strea m CV (0 if left blank)	Fate Coeff (0 if left blank)	FOS (0 if left blank)	Criteri a Mod (1 if left blank)	Chem Transl (1 if left blank)
Group 1	Total Dissolved Solids (PWS)	mg/L		134									
	Chloride (PWS)	mg/L		28.2									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		15									
	Fluoride (PWS)	mg/L	<	1									
Group 2	Total Aluminum	µg/L		1.27									
	Total Antimony	µg/L	<	0.003									
	Total Arsenic	µg/L	<	0.001									
	Total Barium	µg/L		0.021									
	Total Beryllium	µg/L	<	0.001									
	Total Boron	µg/L	<	0.2									
	Total Cadmium	µg/L	<	0.0001									
	Total Chromium (III)	µg/L	<	0.001									
	Hexavalent Chromium	µg/L	<	0.00025									
	Total Cobalt	µg/L	<	0.005									
	Total Copper	µg/L	<	0.001									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	0.01									
	Dissolved Iron	µg/L	<	0.02									
	Total Iron	µg/L	<	0.33									
	Total Lead	µg/L	<	0.002									
	Total Manganese	µg/L		0.879									
	Total Mercury	µg/L	<	0.0002									
	Total Nickel	µg/L	<	0.001									
	Total Phenols (Phenolics) (PWS)	µg/L	<	0.004									
	Total Selenium	µg/L	<	0.001									
	Total Silver	µg/L	<	0.001									
	Total Thallium	µg/L	<	0.0002									
	Total Zinc	µg/L	<	0.005									
	Total Molybdenum	µg/L	<	0.003									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

Group 3	Carbon Tetrachloride	µg/L	<										
	Chlorobenzene	µg/L	<										
	Chlorodibromomethane	µg/L	<										
	Chloroethane	µg/L	<										
	2-Chloroethyl Vinyl Ether	µg/L	<										
	Chloroform	µg/L	<										
	Dichlorobromomethane	µg/L	<										
	1,1-Dichloroethane	µg/L	<										
	1,2-Dichloroethane	µg/L	<										
	1,1-Dichloroethylene	µg/L	<										
	1,2-Dichloropropane	µg/L	<										
	1,3-Dichloropropylene	µg/L	<										
	1,4-Dioxane	µg/L	<										
	Ethylbenzene	µg/L	<										
	Methyl Bromide	µg/L	<										
	Methyl Chloride	µg/L	<										
	Methylene Chloride	µg/L	<										
	1,1,2,2-Tetrachloroethane	µg/L	<										
	Tetrachloroethylene	µg/L	<										
	Toluene	µg/L	<										
	1,2-trans-Dichloroethylene	µg/L	<										
	1,1,1-Trichloroethane	µg/L	<										
	1,1,2-Trichloroethane	µg/L	<										
	Trichloroethylene	µg/L	<										
	Vinyl Chloride	µg/L	<										
Group 4	2-Chlorophenol	µg/L	<										
	2,4-Dichlorophenol	µg/L	<										
	2,4-Dimethylphenol	µg/L	<										
	4,6-Dinitro-o-Cresol	µg/L	<										
	2,4-Dinitrophenol	µg/L	<										
	2-Nitrophenol	µg/L	<										
	4-Nitrophenol	µg/L	<										
	p-Chloro-m-Cresol	µg/L	<										
	Pentachlorophenol	µg/L	<										
	Phenol	µg/L	<										
	2,4,6-Trichlorophenol	µg/L	<										
Group 5	Acenaphthene	µg/L	<										
	Acenaphthylene	µg/L	<										
	Anthracene	µg/L	<										
	Benzidine	µg/L	<										
	Benzo(a)Anthracene	µg/L	<										
	Benzo(a)Pyrene	µg/L	<										
	3,4-Benzofluoranthene	µg/L	<										
	Benzo(ghi)Perylene	µg/L	<										
	Benzo(k)Fluoranthene	µg/L	<										
	Bis(2-Chloroethoxy)Methane	µg/L	<										
	Bis(2-Chloroethyl)Ether	µg/L	<										
	Bis(2-Chloroisopropyl)Ether	µg/L	<										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<										
	4-Bromophenyl Phenyl Ether	µg/L	<										
	Butyl Benzyl Phthalate	µg/L	<										
	2-Chloronaphthalene	µg/L	<										
	4-Chlorophenyl Phenyl Ether	µg/L	<										
	Chrysene	µg/L	<										
	Dibenzo(a,h)Anthrancene	µg/L	<										
	1,2-Dichlorobenzene	µg/L	<										
	1,3-Dichlorobenzene	µg/L	<										
	1,4-Dichlorobenzene	µg/L	<										
	3,3-Dichlorobenzidine	µg/L	<										
	Diethyl Phthalate	µg/L	<										
	Dimethyl Phthalate	µg/L	<										
	Di-n-Butyl Phthalate	µg/L	<										
	2,4-Dinitrotoluene	µg/L	<										

	2,6-Dinitrotoluene	µg/L	<										
	Di-n-Octyl Phthalate	µg/L	<										
	1,2-Diphenylhydrazine	µg/L	<										
	Fluoranthene	µg/L	<										
	Fluorene	µg/L	<										
	Hexachlorobenzene	µg/L	<										
	Hexachlorobutadiene	µg/L	<										
	Hexachlorocyclopentadiene	µg/L	<										
	Hexachloroethane	µg/L	<										
	Indeno(1,2,3-cd)Pyrene	µg/L	<										
	Isophorone	µg/L	<										
	Naphthalene	µg/L	<										
	Nitrobenzene	µg/L	<										
	n-Nitrosodimethylamine	µg/L	<										
	n-Nitrosodi-n-Propylamine	µg/L	<										
	n-Nitrosodiphenylamine	µg/L	<										
	Phenanthrene	µg/L	<										
	Pyrene	µg/L	<										
	1,2,4-Trichlorobenzene	µg/L	<										
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Boyerstown Borough, NPDES Permit No. PA0084683, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: Trib 01884 to Ironstone Creek

No. Reaches to Model: 1

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	001664	1.5	540	0.44			Yes
End of Reach 1	001664	0.001	380	0.71			Yes

Q_{7-10}

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	1.5	0.27										100	7		
End of Reach 1	0.001	0.27													

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	1.5														
End of Reach 1	0.001														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Boyerstown Borough, NPDES Permit No. PA0084683, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.303 PMF: 1 Analysis Hardness (mg/l): 79.211 Analysis pH: 7.10

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	2,190	
Total Antimony	0	0		0	1,100	1,100	3,212	
Total Arsenic	0	0		0	340	340	993	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	61,317	
Total Boron	0	0		0	8,100	8,100	23,651	
Total Cadmium	0	0		0	1.605	1.68	4.91	Chem Translator of 0.954 applied
Total Chromium (III)	0	0		0	470.761	1,490	4,350	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	47.6	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	277	
Total Copper	0	0		0	10.790	11.2	32.8	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	50.063	60.7	177	Chem Translator of 0.825 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	4.81	Chem Translator of 0.85 applied
Total Nickel	0	0		0	384.448	385	1,125	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	2.154	2.53	7.4	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	190	
Total Zinc	0	0		0	96.183	98.3	287	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 0.303 PMF: 1 Analysis Hardness (mg/l): 79.211 Analysis pH: 7.10

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	642	
Total Arsenic	0	0		0	150	150	438	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	11,971	
Total Boron	0	0		0	1,600	1,600	4,672	
Total Cadmium	0	0		0	0.209	0.23	0.66	Chem Translator of 0.919 applied
Total Chromium (III)	0	0		0	61.236	71.2	208	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	30.4	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	55.5	
Total Copper	0	0		0	7.339	7.64	22.3	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	4,380	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	1.951	2.36	6.9	Chem Translator of 0.825 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	2.65	Chem Translator of 0.85 applied
Total Nickel	0	0		0	42.700	42.8	125	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	14.6	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	38.0	
Total Zinc	0	0		0	96.970	98.3	287	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 0.303 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	16.4	
Total Arsenic	0	0		0	10	10.0	29.2	
Total Barium	0	0		0	2,400	2,400	7,008	
Total Boron	0	0		0	3,100	3,100	9,052	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	

Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	876	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	2,920	
Total Mercury	0	0		0	0.050	0.05	0.15	
Total Nickel	0	0		0	610	610	1,781	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	0.7	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ CRL CCT (min): 0.160 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

Pollutants	Mass Limits AML (lbs/day)	Mass Limits MDL (lbs/day)	Concentration Limits AML	Concentration Limits MDL	Concentration Limits IMAX	Concentration Limits Units	Governing WQBEL	WQBEL Basis	Comments

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	1,404	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	7,008	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	4,672	µg/L	Discharge Conc < TQL
Total Cadmium	0.66	µg/L	Discharge Conc < TQL
Total Chromium (III)	208	µg/L	Discharge Conc < TQL
Hexavalent Chromium	30.4	µg/L	Discharge Conc < TQL
Total Cobalt	55.5	µg/L	Discharge Conc < TQL
Total Copper	21.0	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	876	µg/L	Discharge Conc < TQL
Total Iron	4,380	µg/L	Discharge Conc < TQL
Total Lead	6.9	µg/L	Discharge Conc < TQL
Total Manganese	2,920	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.15	µg/L	Discharge Conc < TQL
Total Nickel	125	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	14.6	µg/L	Discharge Conc < TQL
Total Silver	4.74	µg/L	Discharge Conc < TQL
Total Thallium	0.7	µg/L	Discharge Conc < TQL
Total Zinc	184	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS

Existing Effluent Limitations and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	XXX	9.0	1/day	Grab
TRC	XXX	XXX	XXX	0.3	XXX	0.9	1/day	Grab
TSS	10	20	XXX	30.0	60.0	75	1/week	24-Hr Composite
Total Aluminum	0.4	0.7	XXX	1.3	2.1	3.3	1/week	24-Hr Composite
Total Iron	0.7	1.3	XXX	2.0	4.0	5	1/week	24-Hr Composite
Total Manganese	0.3	0.7	XXX	1.0	2.0	2.5	1/week	24-Hr Composite

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
TRC	XXX	XXX	XXX	0.3	XXX	0.9	1/day	Grab
TSS	10.0	20.0	XXX	30.0	60.0	75.0	1/week	24-Hr Composite
Total Aluminum	0.4	0.7	XXX	1.3	2.1	3.3	1/week	24-Hr Composite
Total Iron	0.7	1.3	XXX	2.0	4.0	5.0	1/week	24-Hr Composite
Total Manganese	0.3	0.7	XXX	1.0	2.0	2.5	1/week	24-Hr Composite

Compliance Sampling Location:

Other Comments:

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☒	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☒	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other: