pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0252492**
Facility Type	**Municipal**	APS ID	**820187**
Major / Minor	**Minor**	Authorization ID	**1389414**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Shippingport Borough**	Facility Name	**Shippingport Borough**
Applicant Address	PO Box 76	Facility Address	Sr 3016 Cotter Road
	Shippingport, PA 15077-0076		Shippingport, PA 15077
Applicant Contact	Laura Korcan	Facility Contact	Same as applicant
Applicant Phone	(724) 643-4333	Facility Phone	Same as applicant
Client ID	5371	Site ID	545936
Ch 94 Load Status	Not Overloaded	Municipality	Shippingport Borough
Connection Status	No Limitations	County	Beaver
Date Application Received	March 3, 2022	EPA Waived?	Yes
Date Application Accepted	March 24, 2022	If No, Reason	

Purpose of Application: Application for NPDES renewal for the discharge of treated sewage.

Summary of Review

The applicant has applied for the renewal of NPDES Permit No. PA0252492. The previous permit was issued on August 14, 2017 and will expire on August 31, 2022.

Sewage from this plant is treated with sequencing batch reactors, a chlorine contact tank, and dechlorination.

The applicant is currently enrolled in and will continue to use eDMR.

The Act 14-PL 834 Municipal Notification was provided by the February 18, 2022 letters and no comments were received.

Below is a summary of changes made to this permit:

- Average weekly mass-loading limitations were added for $CBOD_5$ and TSS
- Addition of weekly average limits for $CBOD_5$ and TSS
- *E. Coli* monitoring was imposed

Sludge use and disposal description and location(s): Liquid Assets Disposal Co., Ohio, WV

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-

Approve	Deny	Signatures	Date
X		Grace Polakoski	
		Grace Polakoski, E.I.T. / Environmental Engineering Specialist	April 20, 2022
X		Mahbuba Iasmin	
		Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	May 5, 2022

Summary of Review
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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.0985
Latitude	40º 37' 39"	Longitude	-80º 25' 42"
Quad Name	Midland	Quad Code	40080F4
Wastewater Description:	Sewage Effluent		

Receiving Waters	Ohio River (WWF)	Stream Code	32317
NHD Com ID	99681600	RMI	946.46
Drainage Area	23,000 sq. mi.	Yield (cfs/mi^2)	0.256
Q_{7-10} Flow (cfs)	5,880	Q_{7-10} Basis	US Army Corp of Engineers
Elevation (ft)	667	Slope (ft/ft)	
Watershed No.	20-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	DIOXIN, DIOXIN, DIOXIN, PATHOGENS, PATHOGENS, PATHOGENS, POLYCHLORINATED BIPHENYLS (PCBS), POLYCHLORINATED BIPHENYLS (PCBS), POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN, SOURCE UNKNOWN, SOURCE UNKNOWN, SOURCE UNKNOWN, SOURCE UNKNOWN, SOURCE UNKNOWN, SOURCE UNKNOWN, SOURCE UNKNOWN, SOURCE UNKNOWN		
TMDL Status	Final	Name	Ohio River

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	Duquesne Light Co – BVPS #1		
PWS Waters	Ohio River	Flow at Intake (cfs)	
PWS RMI	946.03	Distance from Outfall (mi)	0.43

Changes Since Last Permit Issuance: N/A

Other Comments: USGS StreamStats (Attachment A) was used to find the drainage area of the discharge point. Because the Ohio River is controlled by a series of locks and dams, data from the US Army Corps of Engineers (Attachment B) was used for the Q_{7-10} flow.

Ohio River TMDL

A TMDL for the Ohio River was approved by the EPA on April 9, 2001 for the control of PCBs and chlordane. This TMDL applies to RMI 981 – 940.74 on the Ohio River. In accordance with 40 CFR § 122.44(d)(1)(vii)(B), when developing WQBELs, the permitting authority shall ensure that effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation (WLA) for the discharge prepared by the State and approved by the EPA pursuant to 40 CFR § 130.7. The TMDL document states that the production and use of PCBs were banned in the US in July 1979 and the use of chlordane in the US has been banned since April 1988. Therefore, there are no new point sources for either of these

pollutants. Known, existing point sources of PCBs and/or chlordane have obtained NPDES permits with WQBELs for those pollutants. PCBs and chlordane in the Ohio River are expected to be present primarily in the sediment due to historic use and improper disposal practices. Natural attenuation is expected to reduce PCB and chlordane contamination in the Ohio River over time. The TMDL is monitoring the concentrations of PCBs and chlordane in fish therefore Shippingport Borough STP will not be assigned wasteload allocations or monitoring for PCBs and chlordane.

Treatment Facility Summary				
Treatment Facility Name: Shippingport Borough STP				
WQM Permit No.	**Issuance Date**			
0404402	9/27/2004			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	SBR	Sodium Hypochlorite	0.0985
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.15	250	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: N/A

Other Comments: N/A

Compliance History

Facility: Shippingport Boro STP

NPDES Permit No.: PA0252942

Compliance Review Period: 4/2017 – 4/2022

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
2860285	03/28/2019	Routine/Partial Inspection	PA Dept of Environmental Protection	No Violations Noted
2761805	08/07/2018	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted

Violation Summary: No violations

Open Violations by Client ID: No open violations for Client ID 5371

Enforcement Summary: No enforcements

DMR Violation Summary:

MONITORING END DATE	OUTFALL	PARAMETER	STATISTICAL BASE CODE	PERMIT VALUE	SAMPLE VALUE	UNIT OF MEASURE
3/31/2020	1	Dissolved Oxygen	Minimum	4	0.001	mg/L
6/30/2020	1	Fecal Coliform	Instantaneous Maximum	400	730	No./100 ml

Compliance Status: Permittee in compliance.

Completed by: John Murphy

Completed date: 4/15//2022

Compliance History

DMR Data for Outfall 001 (from March 1, 2021 to February 28, 2022)

Parameter	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21
Flow (MGD) Average Monthly	0.027	0.021	0.019	0.019	0.025	0.024	0.025	0.021	0.022	0.022	0.026	0.021
pH (S.U.) Minimum	6.5	6.1	6.4	6.7	6.6	6.5	6.7	6.7	6.6	6.6	6.6	6.2
pH (S.U.) Maximum	7.1	7.5	7.3	7.2	7.2	7.1	7.4	7.2	7.4	7.6	7.4	7.2
DO (mg/L) Minimum	7.4	7.0	7.10	6.7	6.5	6.3	6.3	6.20	6.0	6.4	6.2	6.8
TRC (mg/L) Average Monthly	0.04	0.02	0.02	0.03	0.01	0.02	0.03	0.01	0.01	0.02	0.02	0.02
TRC (mg/L) Instantaneous Maximum	0.18	0.09	0.11	0.14	0.06	0.06	0.41	0.03	0.06	0.14	0.07	0.23
CBOD5 (lbs/day) Average Monthly	< 0.8	< 0.9	< 0.9	< 0.8	< 4.4	< 0.9	< 1.3	< 0.8	< 0.9	2.0	< 1.0	< 1.4
CBOD5 (mg/L) Average Monthly	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 6.0	< 4.0	< 4.0	13.0	< 4.0	< 7.0
CBOD5 (mg/L) Instantaneous Maximum	< 4.0	< 4.0	< 4.0	4.0	< 4.0	< 4.0	7.0	4.0	< 4.0	22.0	< 4.0	9.0
BOD5 (mg/L) Raw Sewage Influent Average Monthly	129	170.0	260.5	165.5	212.5	103.0	190.5	99.5	211.0	201	240	209.5
TSS (lbs/day) Average Monthly	< 1.0	< 1.1	< 1.1	< 1.0	< 5.5	< 1.3	< 1.1	< 1.0	< 1.1	< 0.8	< 1.2	< 1.1
TSS (mg/L) Average Monthly	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 6.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
TSS (mg/L) Raw Sewage Influent Average Monthly	84	163.0	178.0	261.5	124.0	95.0	161.5	73.0	117	98	160	84
TSS (mg/L) Instantaneous Maximum	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	6.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	< 1	< 1.0	3	1	< 1	< 1	< 1	< 1	1	< 1
Fecal Coliform (No./100 ml) Instantaneous Maximum	2	1	< 1	< 1.0	4	1	< 1	2	< 1	< 1	1	1
Total Nitrogen (mg/L) Daily Maximum			< 6.85									
Ammonia (mg/L) Average Monthly	3.41	2.08	< 0.30	< 0.30	0.90	< 0.30	< 0.30	< 0.49	< 0.30	< 0.30	9.66	< 0.58
Total Phosphorus (mg/L) Daily Maximum			7.15									

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .0985
Latitude 40º 37' 41.00" **Longitude** -80º 25' 42.00"
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

The discharge was evaluated using WQM7.0 to evaluate the $CBOD_5$, ammonia nitrogen, and dissolved oxygen parameters. The modeling results show technology-based effluent limitations for these parameters are appropriate. Per DEP SOP "Establishing Effluent Limitations for Individual Sewage Permits" (Rev. March 34, 2021, BCW-PMT-033), when WQM7.0 indicates that a summer limit of 25 mg/L for ammonia nitrogen is acceptable, a year-round monitoring requirement for ammonia-nitrogen will be established, at a minimum.

The discharge was evaluated using the Total Residual Chlorine spreadsheet (TRC_CALC). The modeling results confirm that a total residual chlorine limit is necessary to meet the in-stream water quality criterion. The TRC spreadsheet recommended a limit of 0.5 mg/L, which complies with regulatory standards under §§92a.47(a)(8) and 92a.48(b).

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	4	Minimum	WQM7.0
Ammonia Nitrogen (May 1 – Oct 31)	25	Average Monthly	WQM7.0
Total Residual Chlorine	0.5	Average Monthly	TRC_CALC

Typically, per DEP SOP "Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers" (SOP No. BCW-PMT-037), the Toxics Management Spreadsheet (TMS) will be run for all pollutants for which sampling data is available. Per the NPDES Application instructions all sewage facilities with a design flow of less than 0.1 MGD are required to provide effluent samples for: pH, TRC, fecal coliform, $CBOD_5$ or BOD_5, TSS, NH_3-N, Total N, and Total P. The pollutant samples required by the NPDES Application instructions are not applicable in the TMS, therefore, the TMS was not run for Shippingport Borough STP.

Best Professional Judgment (BPJ) Limitations

In accordance with the WQM7.0 modeling results, the standard in 25 PA Code Chapter 93, and best professional judgment, a Dissolved Oxygen minimum limitation of 4.0 mg/L will be implemented.

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 **(l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.**

The facility is not seeking to revise the previously permitted effluent limits.

Mass Loading Limitations

Per Department SOP "Establishing Effluent Limitations for Individual Sewage Permits" (BCW-PMT-033), mass loading limits will be established for POTWs for $CBOD_5$, TSS, and ammonia nitrogen. Average monthly mass loading limits will be established for $CBOD_5$, TSS, and ammonia nitrogen. However, in this case there is no numeric effluent limitation for ammonia-nitrogen so the discharger will be required to report the average monthly mass loading for ammonia-nitrogen. Average weekly mass loading limits will be established for $CBOD_5$ and TSS. Mass loading limits will be calculated according to the formula below:

$$average\ annual\ design\ flow\ (MGD) \times concentration\ limit\ \left(\frac{mg}{L}\right) \times 8.34\ (converstion\ factor)$$
$$= mass\ loading\ limit\ (\frac{lbs}{day})$$

The following mass loading limitations were calculated:

Parameter	Average Monthly (lbs/day)	Average Weekly (lbs/day)
$CBOD_5$	**20.54**	**32.86**
TSS	**24.64**	**36.98**
Ammonia – Nitrogen	**Report**	**---**

However, in the previous permit cycle, the average monthly mass loading limits for $CBOD_5$ were more stringent. The more stringent limits will be applied in this permit cycle to comply with the Department's anti-backsliding policy.

ORSANCO Pollution Control Standards

The Ohio River Valley Water Sanitation Commission (ORSANCO) sets water quality standards for the Ohio River. Since Shippingport Borough STP is a direct discharger to the Ohio River, the DEP will implement ORSANCO's water quality standards pursuant to 25 Pa. Code § 93.2(b).

Water quality standards set by ORSANCO in the 2019 revision of "Pollution Control Standards for Discharges to the Ohio River" can be found in the table below. ORSANCO standards for TSS and $CBOD_5$ are the same as the ones required by

25 Pa. Code § 92a.47(a). ORSANCO standards for E. Coli and Fecal Coliform differ from what is required by the PA Code.

Parameter	Average Monthly	Weekly Average
TSS (mg/L)	30	45
$CBOD_5$ (mg/L)	25	40
Fecal Coliform (No./100 mL)	2,000 (geometric mean)	____
E. Coli (No./100 mL) Apr. 1 – Oct. 31	130 (90-day geometric mean)	240 (in 25% of samples)

According to the 2019 Revision of ORSANCO's "Pollution Control Standards for Discharges to the Ohio River," the maximum allowable level for E. Coli for contact recreation from April – October is a monthly average 130/100 mL (90-day geometric mean) and a weekly average of 240/100 mL. The 90-day geometric mean must be based on not less than 5 samples per month. The weekly average limit also means that 240/100 mL may not be exceeded in more than 25% of the samples taken. The average monthly limit for fecal coliform bacteria is 2,000 CFU/100 mL (geometric mean), based on not less than 5 samples per month.

In a correlation equation developed by the Ohio EPA, concentrations of *E. Coli* and Fecal Coliform bacteria can be interchanged. The equation is as follows:

$$E.Coli = 0.403(Fecal\ Coliform)^{1.028}$$

Using the equation to convert the ORSANCO E. Coli water quality limits to fecal coliform values, it is apparent that DEP fecal coliform standards, imposed as TBELs, are more stringent. The fecal coliform limits previously imposed will remain in effect during this permit cycle. The limits were developed in accordance with DEP SOP "Establishing Effluent Limitations for individual Sewage Permits" (BCW-PMT-033).

Total Dissolved Solids

TDS and its major constituents including sulfate, chloride, and bromide have emerged as pollutants of concern in several major watersheds in the Commonwealth. The conservative nature of these solids allows them to accumulate in surface waters and they may remain a concern even if the immediate downstream public water supply is not directly impacted. Bromide has been linked to formation of disinfection byproducts at increased levels in public water systems. In addition, as a consequence of actions associated with Triennial Review 13, the Environmental Quality Board has directed DEP to collect additional data related to sulfate, chloride, and 1,4-dioxane. Based on these concerns and under the authority of § 92a.61, DEP has determined it should implement increased monitoring in NPDES permits for TDS, sulfate, chloride, bromide, and 1,4-dioxane.

This monitoring initiative applies to all programs within DEP that have been delegated the responsibilities of implementing the NPDES program. The increased monitoring applies to all point source discharges, except that DEP may determine that certain sources are too small to warrant routine monitoring. Where the concentrations of TDS in the discharge exceeds 1,000 mg/L and the discharge flow exceeds 0.1 MGD (1,000 mg/L × 0.1 MGD × 8.34 = 834 lbs/day), monitoring is required for TDS, sulfate, chloride, bromide, and 1,4-dioxane. TDS concentration of domestic wastewater effluent ranges from 250 mg/L to 850 mg/L because the major contribution of wastewater composition is derived from tap water used in daily life (Reference: *Park, M., Snyder S.A., 2020: Attenuation of Contaminants of Emerging Concerns by Nanofiltration Membrane: Rejection Mechanism and Application in Water Reuse; Contaminants of Emerging Concern in Water and Wastewater*). Based on the facility's flow rate (< 0.1 MGD) and typical TDS concentration in domestic wastewater, this source is considered too small to warrant routine monitoring.

Additionally, per Department Document "Policy and Procedure for NPDES Permitting of Discharges of Total Dissolved Solids (TDS) – 25 Pa. Code §95.10" (385-2100-002), discharge loadings of TDS that have been approved by the DEP prior to the effective date of 25 Pa. Code §95.10 are exempt from treatment requirements unless the net loading is increased. 25 Pa. Code §95.10 became effective on August 21, 2010. Shippingport Borough STP was originally permitted on November 1, 2003. Since there has been no change in flow, Shippingport Borough STP may be considered exempt from the TDS treatment requirements of 25 Pa. Code §95.10.

As a result, even though Outfall 001 is 0.43 miles from a potable water supply intake, routine monitoring of TDS and associated parameters is not necessary, and therefore, will not be applied at Outfall 001.

Influent Monitoring

Per Department SOP “New and Reissuance Sewage Individual NPDES Permit Applications” (BCW-PMT-002), POTWs with design flows greater than 2,000 GPD, influent BOD_5 and TSS monitoring will be established in the permit. The influent monitoring will be established with the same frequency and sample type as the effluent sampling.

Additional Considerations

Sewage discharges will include monitoring, at a minimum, for *E. coli*, in new and reissued permits, with a monitoring frequency of 1/quarter for design flows >= 0.05 and < 1 MGD.

The receiving stream is not impaired for nutrients, therefore, annual sampling for nitrogen and phosphorus will be imposed per 25 PA Code §92.61b.

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Department’s Technical Guidance for the Development and Specification of Effluent Limitations.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	2/month	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	20.5	32.86	XXX	25.0	40.0	50	2/month	Grab
BOD5 Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	2/month	Grab
TSS	24.64	36.98	XXX	30.0	45.0	60	2/month	Grab
TSS Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) Nov 1 – Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 – Oct 31	XXX	XXX	XXX	200 Geo Mean	XXX	400	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab

Outfall 001, Continued (from 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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

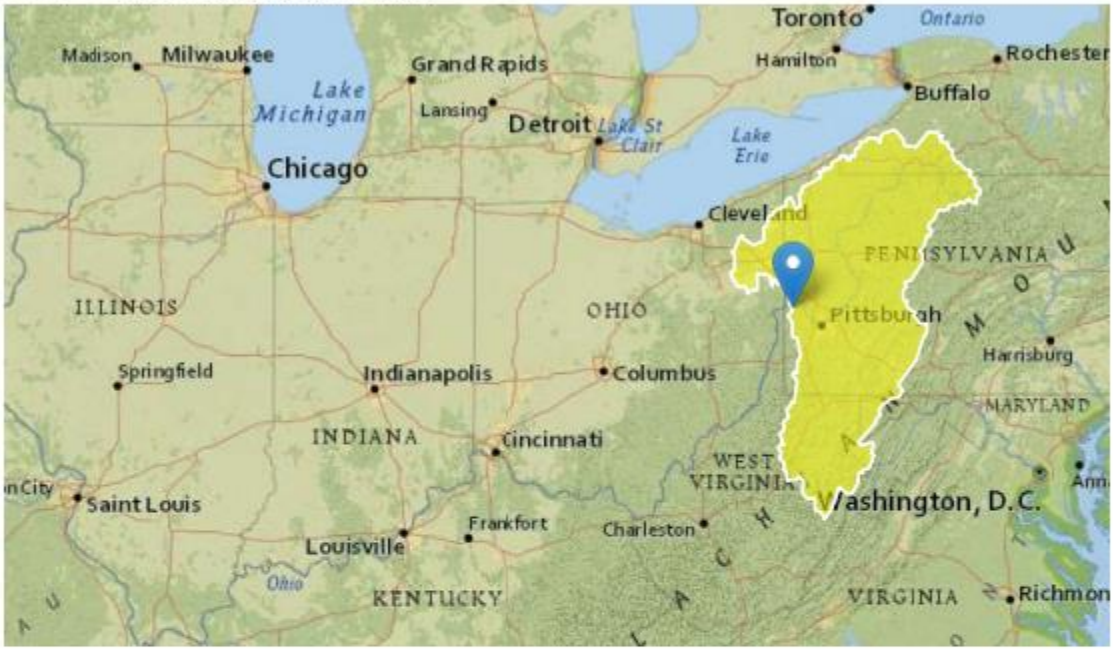
Compliance Sampling Location: Outfall 001

Other Comments: N/A

ATTACHMENT A:
USGS STREAMSTATS

StreamStats Report

Region ID: PA
Workspace ID: PA20220420122834820000
Clicked Point (Latitude, Longitude): 40.62889, -80.43037
Time: 2022-04-20 08:29:08 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	23000	square miles
ELEV	Mean Basin Elevation	1589	feet
PRECIP	Mean Annual Precipitation	44	inches

Low-Flow Statistics Parameters [48.8 Percent (11200 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	23000	square miles	2.33	1720
ELEV	Mean Basin Elevation	1589	feet	898	2700
PRECIP	Mean Annual Precipitation	44	inches	38.7	47.9

Low-Flow Statistics Parameters [50.9 Percent (11700 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	23000	square miles	2.26	1400
ELEV	Mean Basin Elevation	1589	feet	1050	2580

Low-Flow Statistics Disclaimers [48.8 Percent (11200 square miles) Low Flow Region 3]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [48.8 Percent (11200 square miles) Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	3040	ft^3/s
30 Day 2 Year Low Flow	3810	ft^3/s
7 Day 10 Year Low Flow	2110	ft^3/s
30 Day 10 Year Low Flow	2480	ft^3/s
90 Day 10 Year Low Flow	3310	ft^3/s

Low-Flow Statistics Disclaimers [50.9 Percent (11700 square miles) Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [50.9 Percent (11700 square miles) Low Flow Region 4]

Statistic	Value	Unit

Statistic	Value	Unit
7 Day 2 Year Low Flow	3310	ft^3/s
30 Day 2 Year Low Flow	4060	ft^3/s
7 Day 10 Year Low Flow	2310	ft^3/s
30 Day 10 Year Low Flow	2380	ft^3/s
90 Day 10 Year Low Flow	3180	ft^3/s

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	3170	ft^3/s
30 Day 2 Year Low Flow	3930	ft^3/s
7 Day 10 Year Low Flow	2210	ft^3/s
30 Day 10 Year Low Flow	2420	ft^3/s
90 Day 10 Year Low Flow	3230	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

ATTACHMENT B:
US ARMY CORPS OF ENGINEERS RIVER DATA

$Q_{7\text{-}10}$ Flows of Major Rivers

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Pittsburgh District Water Management
December 1, 2017

UPPER OHIO BASIN LOW FLOWS		
Location		Q7, 10 Flow (cfs)
Allegheny River		
Franklin downstream of French Creek (RMI 123.96)		1,450
L&D 9 at Templeton (RMI 62.2; Upper Pool El. 822.2)		2,070
L&D 8 at Templeton (RMI 52.6; Upper Pool El. 800.2)		2,070
L&D 7 at Kittanning (RMI 45.7; Upper Pool El. 782.4)	Crooked Creek enters at RMI 40.11	2,070
L&D 6 at Freeport (RMI 36.3; Upper Pool El. 769.4)		2,070
L&D 5 at Freeport (RMI 30.4; Upper Pool El. 757.0)	Kiskiminetas R. enters at RMI 30.2	2,070
L&D 4 at Natrona (RMI 24.2; Upper Pool El. 745.4)		2,390
C.W. Bill Young L&D at New Kensington (RMI 14.5; Upper Pool El. 734.5)		2,390
L&D 2 at Pittsburgh (RMI 6.7, Pool El. 721.0)		2,390
Monongahela River		
Point Marion L&D (RMI 90.8; Upper Pool El. 797.0)	Cheat River enters at RMI 89.68 Dunkard Creek enters at RMI 87.18	420
Grays Landing L&D (RMI 82.0; Upper Pool El. 778.0)	Tenmile Creek enters at RMI 65.62	530
Maxwell L&D (RMI 61.2; Upper Pool El. 763.0)	Redstone Creek enters at RMI 54.90	530
L&D 4 at Charleroi (RMI 41.5; Upper Pool El. 743.5)		550
L&D 3 at Elizabeth (RMI 23.8; Upper Pool El. 726.9)		550
McKeesport downstream of the Youghiogheny River (RMI 15.53)		1,060
Braddock L&D (RMI 11.2; Upper Pool El. 718.7)		1,230
Youghiogheny River		
Youghiogheny Dam at Confluence (RMI 74.8)		390
Dam at Connellsville (RMI 46.27)		460
Sutersville downstream of Sewickley Creek (~RMI 15.0)		510
Beaver River		
Beaver Falls		640
Ohio River		
Emsworth L&D (RMI 974.8; Pool El. 710.0)	Q7,10 is halved for each side of Neville Island	4,730
Dashields L&D (RMI 967.7; Upper Pool El. 692.0)		4,730
Montgomery L&D (RMI 949.3; Upper Pool El. 682.0)		5,880
New Cumberland L&D (RMI 926.7; Upper Pool El. 664.5)		5,880
Pike Island L&D (RMI 896.8; Upper Pool El. 664.0)		5,880
Hannibal L&D (RMI 854.6; Upper Pool El. 623.0)		5,880

ATTACHMENT C:
WQM7.0 MODELING RESULTS

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
20E	32317	OHIO RIVER	**946.460**	667.00	23000.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.256	5880.00	0.00	0.000	0.000	0.0	1085.00	10.00	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
Shippingport	PA0252492	0.0000	0.0000	0.0985	0.000	20.00	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	4.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
20E	32317	OHIO RIVER	**946.360**	666.00	23050.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.255	5880.00	0.00	0.000	0.000	0.0	1085.00	10.00	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 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO RIVER

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												
946.460	5880.00	0.00	5880.00	.1524	0.00189	10	1085	108.5	0.54	0.011	25.00	7.00
Q1-10 Flow												
946.460	3763.20	0.00	3763.20	.1524	0.00189	NA	NA	NA	0.35	0.018	25.00	7.00
Q30-10 Flow												
946.460	7996.80	0.00	7996.80	.1524	0.00189	NA	NA	NA	0.74	0.008	25.00	7.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
946.460	0.098	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1085.000	10.000	108.500	0.542
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.00	0.000	0.00	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.243	0.338	O'Connor	5
Reach Travel Time (days)			
0.011			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.001	2.00	0.00	7.54
0.002	2.00	0.00	7.54
0.003	2.00	0.00	7.54
0.005	2.00	0.00	7.54
0.006	2.00	0.00	7.54
0.007	2.00	0.00	7.54
0.008	2.00	0.00	7.54
0.009	2.00	0.00	7.54
0.010	2.00	0.00	7.54
0.011	2.00	0.00	7.54

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO 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
946.460	Shippingport	11.07	50	11.07	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
946.460	Shippingport	1.37	25	1.37	25	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)		
946.46	Shippingport	25	25	25	25	4	4	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO 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)
946.460	Shippingport	PA0252492	0.000	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

ATTACHMENT D:
TRC_CALC MODELING RESULTS

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

5880	= Q stream (cfs)	0.5	= CV Daily
0.095	= 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 = 12763.058	1.3.2.iii	WLA cfc = ########
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 4755.820	5.1d	LTA_cfc = 7233.761

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...** **...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...** **...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**