pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0020397**
Facility Type	**Municipal**	APS ID	**847057**
Major / Minor	**Minor**	Authorization ID	**1033167**

Applicant and Facility Information

Applicant Name	**Borough of Bridgeport**	Facility Name	**Borough of Bridgeport WWTP**
Applicant Address	P.O. Box 148	Facility Address	375 River Road
	Bridgeport, PA 19405-0148		Bridgeport, PA 19405
Applicant Contact	Donald Curley	Facility Contact	Christopher Conway
Applicant Phone	(610) 272-1811	Facility Phone	(610) 275-4236
Client ID	86433	Site ID	451902
Ch 94 Load Status	Not Overloaded	Municipality	Bridgeport Borough
Connection Status	No Limitations	County	Montgomery
Date Application Received	July 9, 2014	EPA Waived?	No
Date Application Accepted	July 9, 2014	If No, Reason	CSO facility
Purpose of Application	Permit Renewal.		

Summary of Review

The PA Department of Environmental Protection (PADEP/Department) received an NPDES permit renewal application from Borough of Bridgeport (permittee) on July 9, 2014 for permittee's Bridgeport WWTP located in Bridgeport Borough, Montgomery County. This is a minor facility with CSOs. The treated effluent discharges through Outfall 001 into Schuylkill River, WWF/MF. The existing permit expired on December 31, 2014. The terms and conditions were administratively extended since the renewal application was not received at least 180 days prior to permit expiration date. Renewal NPDES permit applications under Clean Water program are not covered by PADEP's PDG per 021-2100-001.

This fact sheet is developed in accordance with 40 CFR §124.56

Changes in this renewal: DO limit is changed to 5 mg/l daily minimum from monitor/report, seasonal fecal coliform applied, SBC code for TDS is changed to Average Quarterly from Average Monthly, quarterly monitoring for Total Copper, semi-annual sampling requirement for PCBs.

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
√		Reza H. Chowdhury, E.I.T. / Environmental Engineering Specialist	December 2, 2019
		Pravin C. Patel, P.E. / Environmental Engineer Manager	

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.9
Latitude	40º 6' 8"	Longitude	-75º 19' 33"
Quad Name	Norristown	Quad Code	1843
Wastewater Description:	Treated Sewage Effluent		
Receiving Waters	Schuylkill River (WWF)	Stream Code	00833
NHD Com ID	25985560	RMI	22.79
Drainage Area	1,770 mi^2	Yield (cfs/mi^2)	0.125
Q_{7-10} Flow (cfs)	221.25	Q_{7-10} Basis	Please see below
Elevation (ft)	43.73	Slope (ft/ft)	
Watershed No.	3-F	Chapter 93 Class.	WWF/MF
Existing Use	**WWF/MF**	Existing Use Qualifier	Ch. 93
Exceptions to Use	None	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Background/Ambient Data		Data Source
pH (SU)	7.5	Previous protection report
Temperature (°C)	25	Previous protection report
Hardness (mg/L)	200	Previous protection report
Other:		

Nearest Downstream Public Water Supply Intake	Philadelphia Water Department Queen Lane		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	374 cfs
PWS RMI	12.6	Distance from Outfall (mi)	10.19

Streamflow:

Streamflow data was collected from the nearest upstream USGS stream gage 01473500 located in Schuylkill River at Norristown, PA. Q_{7-10}, Q_{1-10}, and Q_{30-10} values at this gage are 220 cfs, 182 cfs, and 247 cfs respectively for the reporting years of 1929-2008. The drainage area was found to be 1,760 mi^2. These values were obtained from the latest USGS streamflow report [(1)]. The drainage area at the discharge point was found to be 1,770 mi^2 from USGS StreamStats Version 3.0 Flow Statistics Ungaged Site Report on November 14, 2019.

Q_{7-10} runoff rate = 220 cfs/1760 mi^2 = 0.125 cfs/mi^2
Q_{7-10} = 0.125 cfs/mi^2 * 1770 mi^2 = 221.25 cfs
Q_{1-10}/Q_{7-10} = 182 cfs/220 cfs = 0.827
Q_{30-10}/Q_{7-10} = 247 cfs/220 cfs = 1.123
Q_{1-10} = 0.827*221.25 = 182.97 cfs
Q_{30-10} = 1.123*221.25 = 248.46 cfs

DEP's SOP[(2)] page 4.II.B.4 states that where a facility is eligible for technology based limits of $CBOD_5$ exceeding 25 mg/l, application managers will evaluate a WQBEL for $CBOD_5$ as follows:

a. Model the discharge using PENTOXSD

(1) Stuckey, M.H., Roland, M.A., 2011, Selected streamflow statistics for streamgage locations in and near Pennsylvania: U.S. Geological Survey Scientific Investigations Report 2011-1070, 10p, 23p.
(2) Establishing Effluent Limitations for Individual Sewage Permits (SOP no.: BPNPSM-PMT-033, revised January 10, 2019, Version 1.6)

b. Multiply the acute partial mix factor by the Q_{7-10} of the receiving waters
c. Run the WQM 7.0 model using the adjusted Q_{7-10} and apply the WQBEL in the permit, if less than the technology-based limits
d. Establish the average monthly concentration limit for TSS at the same concentration as for $CBOD_5$ using BPJ, if the $CBOD_5$ limit is a WQBEL

The attached PENTOXSD model suggested a PMFa of 5.3%. A partial mixing factor, according to DEP's technical guidance (1), is used to describe the factional portion of the stream that mixes with the discharge at the criteria compliance times. The partial mix factor is a value between 0 and 1; 1 presenting complete mixing and less than 1 represents there is incomplete mixing between the discharge and the stream. Therefore, the revised Q_{7-10} will be **221.25 * 0.053 or 11.72 cfs**.

PWS Intake:
The nearest downstream public water supply is Philadelphia Water Department Queen Lane, located in City of Philadelphia on Schuylkill River at RMI 12.6. It is approximately 10 miles downstream of the discharge. Due to the distance, dilution, and effluent limits the discharge is not expected to impact the public water supply.

Wastewater Characteristics:
A median pH of 7.3 during July through September for the reporting years 2018-2019 from eDMR, a default temperature of 20^0C, and discharge hardness of 100 mg/l will be used for modeling.

Background data:
A median pH of 7.5, hardness of 200 mg/l, and temperature of 25ºC was directly taken from previous protection report for the stream.

303d Listed Streams:
The discharge from this facility is to Schuylkill River which has the following designated use impairments:
1. Fish consumption: Impaired due to PCB from unknown source
2. Aquatic Life: Impaired due to Agriculture (unknown cause), Urban Runoff/Storm Sewers (unknown cause), and Municipal Point Source Discharges (unknown cause)

Schuylkill River PCB TMDL was finalized in April 7, 2007. The TMDL is briefly described below.

Schuylkill River PCB TMDL:
On April 7, 2007, The U.S. EPA, Region III, established a Total Maximum Daily Load (TMDL) for Polychlorinated Biphenyl (PCB) for the Schuylkill River, which was listed on Pennsylvania's 1996 303(d) list of impaired streams as impaired due to the presence of elevated PCB concentrations found in fish tissue. PCBs are a group of synthetic chemicals that consist of 209 individual compounds (knowns as Congeners). The Schuylkill River's PCB TMDL was established using a water-quality criterion of 0.044 ng/l for PCBs.

Implementation of the TMDL requires that permitted facilities that discharge directly to the Schuylkill River conduct monitoring for PCBs using analytical method 1668A. The results of PCB monitoring will be evaluated to determine a need to develop and implement a PCB's Waste Minimization and Reduction Program, also known as Pollutant Minimization Plan (PMP). Implementation of the TMDL is planned to be completed in two phases. Phase I implementation of the TMDL requires that this facility collect and analyze two samples for PCBs utilizing method 1668A during the first 12 months of the permit that was effective from January 1, 2010. One sample was directed to be collected during a wet weather flow period and the second sample be collected during a dry weather flow from Outfall 001. However, during the review for this renewal, the permittee was unable to provide the results and the Department didn't have records of receiving the test results within 15 months of the existing permit effective date. This resulted in reinstating the existing requirement of collecting two samples within 12 months of this renewal effective date, one during wet weather flow and another one in dry weather flow, and submitting the results within 15 months of this renewal effective date.

Antidegradation (93.4):
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. The receiving stream is a WWF/MF, not a special protection water.

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(1) Technical Reference Guide (TRG) PENTOXSD for Windows PA Single Discharge Wasteload Allocation Program for Toxics Version 2.0, PA DEP May 2004 (Document ID 391-2000-011)

Class A Wild Trout Fisheries:
No Class A Wild Trout Fisheries are impacted by this discharge.

Combined Sewer Overflows:

There are currently five Combined Sewer Overflows (CSOs) within the system. These CSOs act as relief valves allowing excess untreated sewage and stormwater to overflow the newly constructed Front Street Interceptor (FSI) and discharge directly to the canal or river. CSO outfall 002 is located in the DeKalb sub-basin, adjacent to the DeKalb Street PS. CSOs 003, 004, and 005 were reconstructed as part of the construction of FSI in 2011. Outfalls 003 and 005 have hydrodynamic treatment devices that prevents mostly settleable from discharging to surface water. CSO Outfall 006 is located adjacent to the River Road PS. CSO Outfalls 002, 005, and 006 discharge directly to the Schuylkill River while CSO outfalls 003 and 004 discharge to the Schuylkill Canal. The below table summarizes the existing CSO outfalls in the Borough of Bridgeport:

CSO #	Former CSO #	Discharge Point	Location			Treatment Device?
			Latitude	Longitude	Location	
002	1	Schuylkill River	40º 6' 3.33"	-75º 19' 21.83"	DeKalb St. Br	No
003	New	Canal	40º 6' 3.33"	-75º 19' 21.83"	Foot of Hurst St.	Yes
004	5	Canal	40º 6' 3.33"	-75º 19' 21.83"	Near 003	No
005	New	Schuylkill River	40º 6' 3.33"	-75º 19' 21.83"	Foot of Coates St.	Yes
006	6	Schuylkill River	40º 6' 3.33"	-75º 19' 21.83"	River Rd. PS	No

In 2007, some sewers within the DeKalb Basin was rerouted as a result of the PENNDOT DeKalb Street bridge re-construction. These changes resulted in the elimination of the Green Basin. The bridge construction also included the addition of some PENNDOT separate storm sewers along DeKalb Street. At this time these separate storm sewers recombine prior to CSO 002.

In 2011, a new FSI and the associated CSO outfalls (003 and 005) between Mill Street and the River Road PS were constructed under WQM permit number 4610401. The original 20-inch interceptor was replaced with a 24-inch dry weather sewer, a combination of 54-inch and 60-inch wet weather interceptor was installed parallel to the 24-inch and one of the CSO outfalls was eliminated. The wet weather interceptor provides approximately 0.5 MG of storage.

An updated Long Term Control Plan (LTCP) was submitted to the Department in 2019 (2018 LTCP) which is currently under review. A brief description of the LTCP and Nine Minimum Controls (NMCs) are discussed below:

The 2019 LTCPU includes projects that would represent substantial further progress. They include:

- Interior pipe inspections by video to cover the entire collection system, followed by pipe repair or rehabilitation as necessary.
- Optimization of the Front Street Interceptor based on metering data and modeling.
- Separation of the Hurst Street basin, which represents approximately 10% of the total area served by the system.
- Separation of the Ford Street basin in phases, which represents approximately 10% of the total area served by the system.
- Modifying the Dekalb Street basin sewers for partial separation and greater efficiency.

In addition, the LTCP indicates that the Borough will evaluate the feasibility of modifying the River Road Pumping Station and constructing a large equalization tank at the treatment plant to enhance the capture of wet weather flow. The borough conducts daily inspections of each CSO to determine if an overflow event has occurred. Each of the CSO outfalls are now equipped with flow meters to measure the outfall flows. A third-party contractor has been retained to maintain the equipment and provide finalized data reports monthly. The reports will include hydrographs of depth, velocity, and flow using the hourly average of the measurements taken including daily minimum, average, and peak flow rate. A flow meter was installed on the discharge force main in River Road PS to record instantaneous and totalized flows at this PS. This will provide instantaneous flows to better correlate CSS flows to overflows.

The impact of the FSI can be noted due to the lesser number of overflows from CSOs 003, 004, 005 when compared to 002. There were no dry weather overflows during 2017. Below table summarizes the record of CSO events between January-December 2017:

Month/Year	Outfall 002	Outfall 003	Outfall 004	Outfall 005	Outfall 006
January	2	0	0	0	0
February	1	1	1	1	1
March	2	2	2	2	2
April	0	0	0	0	0
May	4	4	4	4	4
June	5	5	5	5	5
July	6	6	6	6	6
August	3	3	3	3	3
September	1	1	1	1	1
October	4	1	1	1	4
November	2	0	0	0	2
December	0	0	0	0	0
Total	30	23	23	23	28

The following table summarizes the short and long term LTCP implementation schedule as depicted in 2018 LTCP:

IMPLEMENTATION SCHEDULE

Control Measure	Study/Design Start Date	Estimated Completion Date
Short Term Goals of this LTCP Supplement		
Collection System Inspection Program	2019	Ongoing
Modify the Front Street Interceptor based on flow and modeling data	2020	2021
Feasibility Studies	2022	2023
Financial Capability and Funding Assessment	2024	2025
Hurst Basin Sewer Separation	2026	2028
Long Term Goals of this LTCP Supplement		
Funding Assessment	2029	2029
Ford Basin Sewer Separation Phase I	2030	2032
Funding Assessment	2033	2033
Ford Basin Sewer Separation Phase II	2034	2036
Funding Assessment	2037	2037
Dekalb Basin Modifications	2038	2040
Upgrade River Road Pumping Station and Construct EQ Tank	TBD	TBD

The following CSO conditions will be included in Part C of the permit, related to NMCs:

Continued Implementation of Technology-Based Nine Minimum Controls

1. Upon issuance of this permit, the permittee shall continue the implementation of the Nine Minimum Controls (NMCs), demonstrate system-wide compliance with the NMCs, and submit discharge monitoring reports and annual reports to the Department with appropriate documentation. The NMCs and associated tasks are listed as follows:

NMC 1 - Proper operation and maintenance

- The permittee shall continue to maintain staff and equipment sufficient to carry out normal collection system maintenance activities, including sewer line cleaning, resolving blockages and backups, sewer inspections, and occasional smoke testing and dye testing.
- The permittee shall implement a program of investigations of sewer conditions for inflow and infiltration assessment. The permittee shall implement necessary corrective actions as indicated by these investigations.

NMC2 - Maximum use of the collection system for storage

- The permittee has constructed a facility known as the Front Street Interceptor (FSI) system, which consists of a pair of parallel pipes approximately 4,400 feet in length. The larger of these two pipes serves as temporary storage volume, to be used in wet weather periods when flow in the system exceeds the conveyance capacity of the River Road Pump Station, and/or the treatment capacity of the treatment plant.
- The system operators shall follow established procedures for setting the positions of control gates on the FSI system, to optimize pollutant capture and to prevent the overflow of combined sewage from any unpermitted portion of the system. The procedure for operating the gates shall be described in the O&M Plan.
- The permittee shall perform an annual review of the operating procedures for the control gates, as described in the O&M Plan, and revise the procedures as necessary.

NMC3 - Review and modification of pretreatment program to minimize CSO impact

- The permittee shall perform an annual review of its industrial waste ordinance and procedures, to determine if changes are required.

NMC4 - Maximization of flow to the POTW for treatment

- The River Road Pump Station shall be operated in such a manner that the pumping rate at all times shall be maximized to the extent possible while preventing damage to the equipment or the treatment process at the treatment plant.

NMC5 - Elimination of CSOs during dry weather

- The permittee shall perform daily inspections of the DeKalb Street Pump Station and of all CSO outfalls, and shall keep a written record of the results of inspections.
- The permittee shall respond as necessary to evidence of any ongoing dry weather discharge, by determining the cause of the discharge and taking corrective action to restore normal operation of the system.
- The permittee shall report all evidence of dry weather discharges to DEP by telephone on the day such evidence is discovered. The dry weather discharge shall also be reported as required with the monthly Discharge Monitoring Report.

NMC6 - Control of solids and floatables

- The permittee shall perform inspection and clean out of the hydrodynamic treatment devices at CSO3 and CSO5 twice annually. Records shall be kept of each inspection and cleaning event.
- The permittee shall inspect and clean all catch basins and debris traps in the stormwater inlets connected to the combined sewer system at least once per year, or as necessary to maintain proper function.
- The permittee shall prepare a report describing how and where the Borough's stormwater inlets may be retrofitted with catch basins and/or debris traps where such do not already exist. The report shall be submitted to DEP 24 months after the effective date of this permit.

NMC7 - Pollution prevention programs

- The permittee will continue to provide weekly trash and recycling collection to its residents.

- The permittee will provide information to its residents at least once per year, in a mailing or a bill insert, explaining that the Borough is served by a combined sewer system and reminding residents about the proper use of stormwater inlets.

NMC8 - Public Notification

- The permittee shall inspect, maintain, and replace as necessary the informational signs that are placed at the CSO outfalls.

NMC9 - Monitoring to characterize CSO impacts and efficacy of controls

- The permittee shall ensure the maintenance and continued proper operation of the monitoring equipment that detects and measures the volume of discharges from the CSO outfalls.
- The permittee shall report wet weather CSO discharges each month with the DMR.

Treatment Facility Summary

Treatment Facility Name: Bridgeport Borough STP

WQM Permit No.	Issuance Date
4610401	04/06/2011
4696401	05/29/1996

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary w/ Ammonia and Phosphorus	Trickling filter	Gas Chlorine	0.9

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.9	3363	Not Overloaded	Belt Filtration	Landfill

Changes Since Last Permit Issuance: Construction of FSI in 2011.

Other Comments:

Borough of Bridgeport WWTP is a minor STP with a design flow of 0.9 MGD with CSOs which serves mostly the Borough of Bridgeport (99% flow contribution with 95% combined) and Upper Merion Township (1% flow contribution with 100% separate). The WWTP is located in Bridgeport Borough, Montgomery County in state watershed 3-F. The renewal application (received in July 9, 2014) indicated annual average flows of 0.538 MGD, 0.503 MGD, and 0.48 MGD for years 2011, 2012, 2013, respectively with highest monthly flow of 0.7 MGD. There is one non significant industrial facility named Tube Methods contributing to the treatment plant. There is no EPA approved pretreatment program in place.

Per the most recent CEI report (11/09/2015), the facility consists of the following treatment units:

1. One Sludge Hauler Pit
2. One distribution box
3. Two primary clarifiers
4. One primary recirculation pit
5. Two primary trickling filters
6. One secondary recirculation pit
7. Two secondary trickling filters
8. Two secondary clarifiers
9. One sludge pit
10. Two chlorine contact tanks

A process flow diagram is attached in the Appendix. Sodium Hypochlorite is used for disinfection and Sodium Bisulfite is used for dechlorination of the effluent. Soda ash/lime is added to the liquid sludge prior to the belt filter press. Zeta Beta 19 and Zeta Lyte are also added to the liquid sludge before it is processed into filter cake.

Compliance History	
Summary of eDMR:	Please see table at pages 9-10 of this report
Summary of Inspections:	**11/05/2018:** RTPT conducted. No violation was noted during the inspection. The final effluent looked clear. **05/17/2017:** RTPT conducted. No violation was noted during the inspection. The final effluent looked clear. **04/18/2017:** FUI was conducted on April 5, 2017 sludge release incident. The incident was the result of overflow from sludge holding tanks due to field valve #27 being open. Vacuum truck was utilized to clean up the spills. The inspector recommended making an SOP with a list of necessary steps and procedures for wasting/transferring sludge and operating the sludge press that can be easily understood by uncertified operators. An NOV was issued on 04/27/2017 to address the sludge release. **04/05/2017:** Incidental inspection conducted due to sludge release from sludge holding tank. The open valve in the primary clarifier caused the main sludge holding tank to fill and overflow into the recirculation pit. The recirculation pit pumps were not able to keep up with the sludge flow. The sludge wasting valve from the primary clarifier remained open and sludge overflowed the sludge recirculation pit and middle sludge holding tank onto the grass and into the roadway. Liquid sludge flowed downgradient into a stormwater culvert and was discharged to a stormwater swale and the Schuylkill River via the culvert. The site was cleaned up by using vacuum trucks. **09/29/2016:** CSO inspection was conducted. The inspector recommended sampling the CSO discharge from outfalls 005 and 006 as part of CSO LTCP. The inspector observed that flow was not maximized through the STP as evident by CSO discharges while the STP didn't reach its maximum hydraulic capacity at 1.48 MGD. **11/09/2015:** CEI conducted. The inspector observed some solids floating on the surface of chlorine contact tank. It was recommended to reduce the amount of sludge haulers allowed to discharge into the plant and increasing the use of sludge press to process more sludge and keep it from bulking in the clarifier or CCT. It was also recommended that sludge haulers should not be accepted at all during rain events that cause SSOs in the collection system.

No samples were collected during the inspections.

Compliance History

DMR Data for Outfall 001 (from September 1, 2018 to August 31, 2019)

Parameter	AUG-19	JUL-19	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18	SEP-18
Flow (MGD) Average Monthly	0.34	0.46	0.54	0.52	0.42	0.58	0.6	0.61	0.61	0.72	0.48	0.71
Flow (MGD) Daily Maximum	0.91	1.04	1.27	1.51	0.74	1.69	1.68	1.56	1.36	1.44	1.06	1.6
pH (S.U.) Instantaneous Minimum	7.0	6.6	6.5	6.2	6.6	6.9	7.3	6.9	6.5	6.6	6.3	6.3
pH (S.U.) IMAX	7.5	7.5	7.4	7.7	7.3	7.8	7.9	7.8	8.3	7.7	7.3	7.6
DO (mg/L) Instantaneous Minimum	7.0	6.5	6.3	7.1	9.3	6.8	8.9	10.1	10.3	9.9	8.9	7.0
TRC (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TRC (mg/L) IMAX	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
CBOD5 (lbs/day) Average Monthly	31	44	54	61	24	36	68	55	29	70	46	67
CBOD5 (lbs/day) Weekly Average	36	113	99	113	25	71	154	99	41	100	74	120
CBOD5 (mg/L) Average Monthly	14	10	13	12	10	10	12	11	9	10	11	9
CBOD5 (mg/L) Weekly Average	17	13	20	16	10	15	13	15	13	12	13	10
TSS (lbs/day) Average Monthly	14	37	31	42	27	< 16	< 30	< 38	49	55	41	< 27
TSS (lbs/day) Weekly Average	20	121	50	88	29	29	70	72	108	103	< 16	93
TSS (mg/L) Average Monthly	6	8	8	7	11	< 5	< 5	< 8	16	8	< 5	< 3
TSS (mg/L) Weekly Average	9	14	14	9	12	7	13	16	37	11	13	7
TDS (mg/L) Average Monthly	A	326	E	E	486	E	E	495	E	E	460	E
Fecal Coliform (CFU/100 ml) Geometric Mean	< 1	< 1	< 3	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1

Fecal Coliform (CFU/100 ml) IMAX	< 1	< 1	< 80	< 2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Ammonia (lbs/day) Average Monthly	2	6	5	6	< 1	16	33	34	14	12	4	8
Ammonia (mg/L) Average Monthly	1	1	1	1	< 2	4	6	7	5	2	1	1

Existing Effluent Limitations and Monitoring Requirements

The table below summarizes effluent limitations and monitoring requirements specified in the existing NPDES permit for Outfall 001.

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [3] Measurement Frequency	Required Sample Type
	Monthly Average	Weekly Average	Instantaneous Minimum	Monthly Average	Weekly Average	Instantaneous Maximum [2]		
Flow (MGD)	Monitor/Report	Monitor/Report Max. Daily					Continuous	Recorded
CBOD5	187	300		25	40	50	1/Week	24 Hour Comp
Total Suspended Solids	225	338		30	45	60	1/Week	24 Hour Comp
Ammonia as N	150			20		40	1/Week	24 Hour Comp
Fecal Coliform (Col/100 ml)				Geo. Mean 200		1,000*	1/Week	Grab
Dissolved Oxygen			Monitor/Report				Daily	Grab
pH (Std. Units)			6.0			9.0	Daily	Grab
Total Residual Chlorine				0.5		1.2	Daily	Grab
Total Dissolved Solids				1,000		2,500	1/Quarter	24 Hour Comp

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.9
Latitude 40º 6' 8.00" **Longitude** -75º 19' 33.00"
Wastewater Description: Treated 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)
Fecal Coliform (10/1 – 4/30)	1,000 / 100 ml	10% rule	-	DRBC
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
Total Dissolved Solids	1000 mg/l	Average Monthly	-	DRBC

Comments: These standards apply, subject to Water Quality Analysis and BPJ where applicable.

Water Quality-Based Limitations

WQM 7.0:

WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate effluent limits for $CBOD_5$, NH_3-N and DO. The model simulates two basic processes. In the NH_3-N module, the model simulates the mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria. Since WQM 7.0 assumes immediate and complete mix between the discharge and stream flow, Q_{7-10} was adjusted, as shown on page 3, to examine allowable wasteload allocations under appropriate mixing conditions. The model was utilized for this permit renewal by using adjusted Q_{7-10} and historic background water quality levels of the river. In addition, due to proximity, several other upstream and downstream dischargers are included in the multiple discharge scenario. The following data were used in the attached computer model of the stream:

- Discharge pH 7.3 (median Jul-Sep, 2018-2019, DMR data)
- Discharge Temperature 20°C (Default)
- Discharge Hardness 100 mg/l (Default)
- Stream pH 7.5 (Previous protection report)
- Stream Temperature 25°C (Default for WWF)
- Stream Hardness 200 mg/l (Previous protection report)

The following nodes were considered in modeling:

Node 1: Norristown STP (PA0027421) Outfall 001 at Schuylkill River (00833)
Elevation: 49 ft (USGS National Map viewer, 11/13/2019)
Drainage Area: 1766 mi^2 (StreamStat Version 3.0, 11/13/2019)
River Mile Index: 23.4 (PA DEP eMapPA)

	Low Flow Yield:	0.125 cfs/mi^2
	Discharge Flow:	9.75 MGD
Node 2:	ENPWJSA STP (PA0026816) Outfall 001 at Schuylkill River (00833)	
	Elevation:	48 ft (USGS National Map viewer, 11/13/2019)
	Drainage Area:	1766.1 mi^2 (StreamStat Version 3.0, 11/13/2019)
	River Mile Index:	22.94 (PA DEP eMapPA)
	Low Flow Yield:	0.125 cfs/mi^2
	Discharge Flow:	8.1 MGD
Node 3:	Bridgeport WWTP Outfall 001 at Schuylkill River (00833)	
	Elevation:	43.73 ft (USGS National Map viewer, 11/13/2019)
	Drainage Area:	1770 mi^2 (StreamStat Version 3.0, 11/13/2019)
	River Mile Index:	22.79 (PA DEP eMapPA)
	Low Flow Yield:	0.125 cfs/mi^2
	Discharge Flow:	0.9 MGD
Node 4:	Matsunk STP Outfall 001 at Schuylkill River (00833)	
	Elevation:	42.88 ft (USGS National Map viewer, 11/13/2019)
	Drainage Area:	1770.1 mi^2 (StreamStat Version 3.0, 11/13/2019)
	River Mile Index:	22.0 (PA DEP eMapPA)
	Low Flow Yield:	0.125 cfs/mi^2
	Discharge Flow:	5.5 MGD
Node 5:	At the Plymouth Dam on Schuylkill River (00833)	
	Elevation:	39.59 ft (USGS National Map viewer, 11/13/2019)
	Drainage Area:	1770.2 mi^2 (StreamStat Version 3.0, 11/13/2019)
	River Mile Index:	21.22 (PA DEP eMapPA)
	Low Flow Yield:	0.125 cfs/mi^2
	Discharge Flow:	0.0 MGD

NH_3-N:
WQM 7.0 suggested NH_3-N limit of 20.0 mg/l as monthly average and 40.0 mg/l as instantaneous maximum limit to protect water quality standards. The current permit has year round average monthly limit of 20 mg/l and IMAX of 40 mg/l. The Recent DMR data show that the plant is discharging NH_3-N below 2.7 mg/l year round. The model recommended limits are the same as are in the existing permit and will be carried over. The mass based limits of 150 lbs./day will also be carried over. The monitoring frequency will remain the same as 1/week.

$CBOD_5$:
The attached WQM 7.0 modeling results show that secondary treatment is adequate to protect the water quality of the stream. Recent DMRs and inspection reports show that the facility has been consistently achieving concentrations below this existing limit. The WQM 7.0 model suggests a monthly average $CBOD_5$ limit may be 25 mg/l. The average monthly and average weekly mass loadings were calculated as 187 lbs./day and 300 lbs./day respectively. The minimum monitoring frequency will remain the same as 1/week.

Dissolved Oxygen (DO):
A minimum of 5.0 mg/L for D.O. is an existing effluent limit and will remain unchanged in the draft permit. 5.0 mg/L is taken directly from 25 Pa. Code § 93.7(a) (i.e., water quality criteria for WWF waters) and it is also determined to be appropriate according to water quality modeling.

Toxics:
Based on the monitoring data (maximum concentrations) reported on the application, DEP utilizes Toxics Screening Analysis and PENTOXSD to (1) evaluate reasonable potential for toxic pollutants to cause or contribute to an excursion above the water quality standards and (2) develop WQBELs for those such toxic pollutants (i.e., 40 CFR § 122.44(d)(1)(i)). The maximum reported values for Total Copper and Total Zinc were entered into Toxic Screening Analysis that suggested modeling requirement for Total Copper. The PENTOXSD model was utilized that resulted in monitoring requirement for Total Copper. The spreadsheet and modeling data are attached to the Appendix of this fact

sheet. Based on the modeling recommendation, it is recommended that a quarterly monitoring for Total Copper will be added for this renewal.

Additional Considerations

Total Suspended Solids (TSS):
There is no water quality criterion for TSS. The existing limits of 30 mg/L average monthly, 45 mg/l average weekly, and 60 mg/L instantaneous maximum will remain in the permit based on the minimum level of effluent quality attainable by secondary treatment, 25 Pa. Code § 92a.47 and 40CFR 133.102(b.) The existing limit for average monthly and average weekly mass loading of 225 lbs./day and 338 lbs./day, respectively will be carried over in this renewal.

pH:
The effluent discharge pH should remain above 6 and below 9 standard units according to 25 Pa. Code § 95.2(1) which is consistent with previous permit renewal.

Fecal Coliform:
The recent coliform guidance in 25 Pa. code § 92a.47.(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean and an instantaneous maximum not greater than 1,000/100ml and § 92a.47.(a)(5) requires a winter limit of 2,000/100ml as a geometric mean and an instantaneous maximum not greater than 10,000/100ml. Delaware River Basin Commission's (DRBC's) Water Quality Regulations at Section 4.30.4.A requires that during winter season from October through April, the instantaneous maximum concentration of fecal coliform organisms shall not be greater than 1,000 per 100 milliliters in more than 10 percent of the samples tested. Therefore, the summer limit is governed by DEP's regulation while winter limit is governed by DRBC's regulation.

Total Dissolved Solids:
The maximum reported TDS concentration in the application is 560 mg/l which is less than 1,000 mg/l (for discharge flow > 0.1 MGD) doesn't trigger monitoring for TDS. However, DRBC issued a docket for Bridgeport on September 12, 2013 that included/continued a numeric limitation of 1,000 mg/l as average and 2,500 mg/l as IMAX. These limitations will be carried over in this renewal with a minimum monitoring frequency of 1/quarter.

Total Residual Chlorine (TRC):
The attached computer printout utilizes the equation and calculations as presented in the Department's 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID#391-2000-015) for developing chlorine limitations. The attached printout indicates that a water quality limit of 0.5 mg/l would be needed to prevent toxicity concerns at the Outfall 001. The Instantaneous Maximum (IMAX) limit is 1.6 mg/l. The existing permit has IMAX limits of 1.2 mg/l which is a more stringent and will be carried over due to anti-backsliding policy. DMR data from September 2018 to August 2019 indicates that the permittee is meeting the limit with an average discharge concentration of <0.1 mg/l and IMAX of 0.1 mg/l year round. The minimum monitoring frequency is 1/day.

Flow and Influent Monitoring Requirement:
The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii). Influent BOD_5 and TSS monitoring requirements are established in the permit per the requirements set in Pa Code 25 Chapter 94.

Best Professional Judgment (BPJ) Limitations

Monitoring Frequency and Sample Types:
Unless otherwise specified above, the monitoring frequency and sample type of compliance monitoring for existing parameters are recommended by DEP's SOP and Permit Writers Manual and/or on a case-by-case basis using best professional judgment (BPJ).

Anti-Backsliding

The proposed limits are at least as stringent as are in existing permit; therefore, anti-backsliding is not applicable.

Appendix

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	Average Monthly	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.2	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5)	187	300	25.0	40.0 Wkly Avg	XXX	50	1/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids	225	338	30.0	45.0 Wkly Avg	XXX	60	1/week	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	1000.0 Avg Qrtly	XXX	2500	1/quarter	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	200 Geo Mean	1000 90%SAMPLES	XXX	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ammonia-Nitrogen	150.0	XXX	XXX	20.0	XXX	40	1/week	24-Hr Composite

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	Average Monthly	Average Monthly	Maximum	Instant. Maximum		
Copper, Total	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
PCBs Dry Weather Analysis (Interim)	XXX	XXX	XXX	Report Annual Avg	Report Daily Max	XXX	1/year	24-Hr Composite
PCBs Wet Weather Analysis (Interim)	XXX	XXX	XXX	Report Annual Avg	Report Daily Max	XXX	1/year	24-Hr Composite

Compliance Sampling Location: At Outfall 001

Other Comments: None

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Toxics Screening Analysis Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☒	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 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, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 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, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other: