

Application Type Renewal  
Facility Type Municipal  
Major / Minor Major

**NPDES PERMIT FACT SHEET  
INDIVIDUAL SEWAGE**

Application No. PA0026972  
APS ID 3957  
Authorization ID 941501

**Applicant and Facility Information**

Applicant Name	<u>PA American Water (currently owned by Exeter Township)</u>	Facility Name	<u>Exeter Township WWTP</u>
Applicant Address	<u>852 Wesley Drive Mechanicsburg, PA 17055</u>	Facility Address	<u>Hanover Street Exeter Municipality</u>
Applicant Contact	<u>Jennifer Milakeve, PA American Water /John Granger, Exeter Twp Mgr.</u>	Facility Contact	<u>Chris Abruzzo, PA American Water Currently Paul Herb, Exeter Twp</u>
Applicant Phone	<u>610-292-3578 (Milakeve) # TBD -PA American/</u>	Facility Phone	<u>610-779-5660 John Granger/ (610) 582-8300 (Paul Herb)</u>
Client ID	<u>#51184(Exeter Twp)</u>	Site ID	<u>454828</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>Exeter Township</u>
Connection Status	<u>No Limitations</u>	County	<u>Berks</u>
Date Application Received	<u>September 5, 2012</u>	EPA Waived?	<u>No</u>
Date Application Accepted	<u>January 2, 2013</u>	If No, Reason	<u>Major Facility (and, if operated by Exeter Twp vs PA Amer., EPA-Pretreat.program applies)</u>
Purpose of Application	<u>Renewal of existing sewage treatment plant discharge and transfer to non-municipal owner</u>		

**Summary of Review**

The previous NPDES permit for this Publicly Owned Treatment Works (POTW) was issued February 21, 2008. A renewal application was received on September 5, 2012 with addendums received on January 2, 2013, February 20, 2014, July 3, 2018, July 11, 2018, and August 7, 2018. The Sewage Treatment Plant (STP) serves Exeter Township, the Borough of St. Lawrence, and small portions of Lower Alsace Township and Alsace Township. The collection system consists of approximately 87 miles of sewers and 6 pumping stations. Ownership of the STP and the collection system is anticipated to be transferred to PA American Water in October 2019. A transfer application was received June 5, 2019. The draft permit has been written in PA American Water's name and will be sent to them for comment although a copy will also be sent to Exeter Township. The final permit is expected to be issued to PA American Water following the legal transfer date. The permit number is not changing.

PA American Water has represented to the DEP that they will operate the treatment plant in the same manner and that no change in the design flow is expected during the 5-year term of the permit. They will continue to receive hauled-in waste, to use the East Plant for equalization of residual waste and high-strength septage, to forward the flow from the East Plant to the West Plant for discharge via outfall 002, and desire to keep outfall 001 in place and in the NPDES permit in the event they wish to discharge from that outfall in the future.

According to the 2007 Protection Report, the East Plant was built in 1967, but discharges ceased in 1994. The West Plant was built in 1978 and expanded in 1994. Also in 1994, the East Plant's aeration tanks were covered and scrubbers added in order that the facilities could be used for the storage and equalization of hauled waste, which is gradually blended with wastewater from the collection system and pumped to the West plant for treatment and discharge via outfall 002. The IR&R

Approve	Deny	Signatures	Date
X		Bonnie J. Boylan / Environmental Engineering Specialist	July 3, 2019
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E. / Clean Water Program Manager	

of the WQM permit issued in 1992 for the expansion identified “monthly average flow” of 1.2 MGD for the east plant and “monthly average flow” of 5.9 MGD for the west plant, and two outfalls, 001 and 002. There is only one Primary Facility in DEP’s eFacts.

There are five significant industrial users (SIU’s) identified by Exeter Township that contribute to the STP presently, two of which are identified as Categorical Industrial Users (CIU’s) subject to federal Effluent Limitation Guidelines. An Industrial Pretreatment Program will be a requirement of the renewal permit as well, although EPA will not be approving it and reviewing headworks analysis, local limits, and annual pretreatment reports including sampling results since the facility will now be owned/operated by a private entity. PADEP will instead review the Pretreatment Program.

Combined Sewer Outfalls:

None - Not applicable.

Hauled-in Wastes:

The facility accepts the following hauled-in wastes: sludge from other facilities, holding tank wastewater, portable toilets and residential septage, and leachate from landfills. In 2017, the facility reported accepting 39.5 million gallons of hauled-in wastes. Landfill leachate comprised 51% of the total amount. In 2018, the facility reported accepting 17.2 million gallons of hauled-in wastes. Landfill leachate comprised 54 % of the total amount. The permit writer specifically asked the applicant whether the influent samples reported in the renewal application were collected such that they included the hauled-in wastewater: the response was yes. The NPDES renewal application asks: “Where is the hauled-in waste introduced into the treatment facility?” The answer given was “Raw Influent Pumping Station Wet Well”.

Design flow:

The renewal application does not indicate a change in the design flow. The renewal application indicates 5.9 MGD as the design annual average flow for outfall 002.

The previous permit (Part A. Supplemental Information) stated the design flow for the facility as 7.1 MGD, without a break-out between 001 and 002. The mass load limits, however, for outfall 001 were based on a design flow of 1.2 MGD and the mass load limits for outfall 002 were based on a design flow of 5.9 MGD. According to the previous permit (Part A. Supplemental Information), the hydraulic capacity of the east plant with potential discharge to outfall 001 is 1.2 MGD and the hydraulic capacity of the west plant with discharge to outfall 002 is 8.43 MGD.

More than two years’ worth of reviewed Discharge Monitoring Reports (DMRs) (from January 1, 2017 through April 30, 2019) indicated the facility’s flow as 4.4 MGD on average. All of the discharge was from outfall 002; no flows were reported for outfall 001. 4.5 MGD represents the 90<sup>th</sup> percentile of reported monthly average flows at outfall 002. There were four out of the 28 reviewed months where the facility’s monthly average flow exceeded 5.9 MGD, all of which occurred after August 1, 2018. There were no months where the monthly average flow exceeded 8.43 MGD, the hydraulic capacity of the West Plant.

The 2018 Chapter 94 Municipal Wasteload Report indicated that the facility was operating under its hydraulic capacity and under its organic load capacity. Similarly, the 2018 Chapter 94 Report indicated that projected flows for the next five years would not cause any hydraulic or organic overloads.

Sludge Disposal:

The facility has produced Class A and Class B biosolids and has held coverage under two general permits for sludge: PAG07-3518 (Beneficial Use of Exceptional Quality Sewage Sludge by Land Application) and PAG08-3610 (Beneficial Use of Non-Exceptional Quality Sewage Sludge by Land Application). The facility’s sludge, however, was found to be no longer eligible for “Beneficial Use of Exceptional Quality Sewage Sludge”. Since November 2018, their sludge has primarily been disposed at a landfill in Berks County with smaller amounts sometimes disposed off-site at another POTW according to their Supplemental DMRs.

Unresolved Violations:

This renewal NPDES permit is necessary in order to allow continued operation of the facility and to transfer responsibility to new owners despite the fact that there are unresolved violations for the facility still showing in the DEP eFacts database. DEP compliance staff have been informed of the pending draft renewal/transferred permit. Any enforcement action against Exeter Township will still be carried out separately from the transfer of the NPDES permit to the new owners. The new owners have been informed by DEP's Clean Water Program Manager of the outstanding violations and pending enforcement action.

Delaware River Basin Commission (DRBC):

In accordance with State regulations and an interagency agreement, a copy of the Fact Sheet and draft permit will also be sent to the DRBC. Permit limits in DRBC dockets are generally incorporated in the NPDES permits and have been in this case, with the exception that a) the DEP has chosen to require influent sampling for BOD5 whereas the DRBC docket requires influent sampling for CBOD5, and b) the DEP has not included a monitoring requirement for Color whereas the DRBC docket does. The DEP requires all sewage treatment plants subject to Chapter 94 annual reporting to report BOD5 and wishes to continue to be able to compare all treatment plants' loading in a consistent manner. As for Color, all NPDES permits, in Part A-Additional Requirements, have "narrative criteria" including a requirement to not produce observable change of color in the receiving water which is deemed sufficient for this facility:

Part A - Additional Requirements

1. The permittee may not discharge:
  - d. Foam or substances that produce an observed change in the color, taste, odor or turbidity of the receiving water, unless those conditions are otherwise controlled through effluent limitations or other requirements in this permit. For the purpose of determining compliance with this condition, DEP will compare conditions in the receiving water upstream of the discharge to conditions in the receiving water approximately 100 feet downstream of the discharge to determine if there is an observable change in the receiving water. (25 Pa Code § 92a.41(c)).

The DRBC docket for this facility is D-1992-003 CP2 which was approved June 14, 2016 and expires on June 14, 2021. The docket did not include outfall 001 based on the facility's intent to not use it and on historical zero flow data for outfall 001. The applicant represented to DEP, however, that they wanted to retain outfall 001 in their NPDES permit for flexibility.

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.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	1.2
Latitude	40° 16' 33" per eMapPa/NHD	Longitude	75° 50' 13" per,eMapPA/NHD
Quad Name		Quad Code	
Wastewater Description: Sewage Effluent			
Receiving Waters	Schuylkill River	Stream Code	00833
	25964098/		
NHD Com ID	Reach 02040203000130	RMI	65.6
Drainage Area	971 mi <sup>2</sup> per USGS PA StreamStats	Yield (cfs/mi <sup>2</sup> )	0.28
Q <sub>7-10</sub> Flow (cfs)	269	Q <sub>7-10</sub> Basis	USGS gage correlation*
Elevation (ft)	155	Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired for Fish Consumption		
Cause(s) of Impairment	PCB		
Source(s) of Impairment	Source Unknown		
TMDL Status	Final (4/7/2007 per eMapPA)	Name	Schuylkill River PCB TMDL
Background/Ambient Data		Data Source	
pH (SU)			
Temperature (°F)			
Hardness (mg/L)			
Other:			
Nearest Downstream Public Water Supply Intake	Pottstown Water Authority		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	
PWS RMI	Approx. 57	Distance from Outfall (mi)	Approx. 8.5 miles

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

Changes Since Last Permit Issuance:

\*The last permit used gage correlation with USGS gage at Reading #1471500, a drainage area of 966.5 sq.miles, and an LFY of 0.2 cfs/sq.mi. resulting in a Q7-10 of 190 cfs. Gage 1471500 is inactive but data is available for the adjacent USGS gage #1471510 at Reading: Q7-10/Drainage Area = Low Flow Yield= 244 cfs / 880 sq.mi. = 0.28 cfs/sq.mi. The estimated Q7-10 at the discharge location would be: 0.28 cfs/sq.mi. \* 971 sq.mi. = 269 cfs.

Other Comments:

The combined flow of 7.1 MGD from outfall 001 and 002 was used as the design flow in the past permit and in this renewal. The water quality based effluent concentration limits were developed based on this combined flow of 7.1 MGD. The mass load limits were developed based on a flow of 1.2 MGD for outfall 001 and 5.9 MGD for outfall 002.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	002	Design Flow (MGD)	5.9 MGD per eFacts
Latitude	40° 16' 33" (per updated mapping)	Longitude	75° 50' 16" (updated maps)
Quad Name		Quad Code	
Wastewater Description: Sewage Effluent			
Receiving Waters	Schuylkill River	Stream Code	00833
NHD Com ID	25963760	RMI	65.6
Drainage Area	971 sq mi.	Yield (cfs/mi <sup>2</sup> )	0.28
Q7-10 Flow (cfs)	269 (equivalent of 173.9 MGD) *	Q7-10 Basis	Correlation w/ USGS gage *
Elevation (ft)	155	Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	WWF, MF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired for Fish Consumption		
Cause(s) of Impairment	PCB		
Source(s) of Impairment	Source Unknown		
TMDL Status	Final	Name	Schuylkill River PCB TMDL
Background/Ambient Data		Data Source	
pH (SU)			
Temperature (°F)			
Hardness (mg/L)			
Other:			
Nearest Downstream Public Water Supply Intake	Pottstown Water Authority		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	
PWS RMI	Approx. 57	Distance from Outfall (mi)	Approx. 8 miles

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

Changes Since Last Permit Issuance:

\*The last permit used gage correlation with USGS gage at Reading #1471500, a drainage area of 966.5 sq.miles, and an LFY of 0.2 cfs/sq.mi. resulting in a Q7-10 of 190 cfs. Gage 1471500 is inactive but data is available for the adjacent USGS gage #1471510 at Reading: Q7-10/Drainage Area = Low Flow Yield= 244 cfs / 880 sq.mi. = 0.28 cfs/sq.mi. The estimated Q7-10 at the discharge location would be: 0.28 cfs/sq.mi. \* 971 sq.mi. = 269 cfs.

Other Comments:

The combined flow of 7.1 MGD from outfall 001 and 002 was used as the design flow in the past permit and in this renewal. The water quality based effluent concentration limits were developed based on this combined flow of 7.1 MGD. The mass load limits were developed based on a flow of 1.2 MGD for outfall 001 and 5.9 MGD for outfall 002.

Even with the discharge from the east plant being directed to the west plant and discharged at outfall 002, the combined design flow of 7.1 MGD is below the west plant's hydraulic capacity of 8.43 MGD.

Treatment Facility Summary				
a <b>Treatment Facility Name:</b> Exeter Township STP				
<b>WQM Permit No.</b>		<b>Issuance Date</b>		
0692402 A-3		5/26/2017 <sup>1</sup> (last amendment)		
0692402		8/6/1992		
<sup>1</sup> the amendment was issued for new raw sewage pumps but the project has not been constructed and has now exceeded the two years to start construction per the permit's Conditions.				
a				
<b>Waste Type</b>	<b>Degree of Treatment</b>	<b>Process Type</b>	<b>Disinfection</b>	<b>Avg Annual Flow (MGD)</b>
Sewage	Secondary With Ammonia Reduction	Activated Sludge	Gas Chlorine	7.1 *
a				
a				
<b>Hydraulic Capacity (MGD)</b>	<b>Organic Capacity (lbs/day)</b>	<b>Load Status</b>	<b>Biosolids Treatment</b>	<b>Biosolids Use/Disposal</b>
9.63 **	20,289	Not Overloaded	Anaerobic Digestion	Landfill

\*East plant design flow of 1.2 MGD + West plant design flow of 5.9 MGD = 7.1 MGD combined.

\*\*East plant hydraulic capacity of 1.2 MGD + West plant hydraulic capacity of 8.43 MGD = 9.63 MGD combined.

Raw Sewage Pump Station

- 1 Mechanical Bar Screen
- 1 Grit Removal Unit
- 4 Primary Clarifiers
- 5 Aeration Tanks
- 4 Secondary Clarifiers
- 2 Chlorine Contact Tanks
- 1 Gravity Sludge thickening tank (for WAS)
- 2 Primary Anaerobic Digesters
- 1 Sludge Holding Tank
- 2 Centrifuges for Dewatering, with decant to influent wet well
- 1 Sludge Dryer, Rotary Kiln
- 4 Sludge Drying Beds, but none on-line/used
- Landfill disposal of biosolids, currently

Pump Stations (PS's):

- Lincoln Road, inspected daily, suction lift
- Buddies Place, submersible pump
- Pottstown Avenue, submersible pump
- South Baumstown, submersible pump
- Pineland Road, submersible pump
- Glen Oley, submersible pump

Draw-down tests are performed annually on all pump stations

**PREVIOUS PERMIT LIMITS**

001:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.40	XXX	0.90 *	1/day	Grab
TSS	300	451	XXX	30	45	60	1/week	24-Hr Composite
CBOD5	250	400	XXX	25	40	50	1/week	24-Hr Composite
Ammonia - N	200	XXX	XXX	20	XXX	XXX	1/week	24-Hr Composite
Total Copper	0.570	XXX	XXX	0.057	XXX	0.114	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000	XXX	XXX	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200	XXX	XXX	1/week	Grab
Total PCBs	XXX	XXX	XXX	Report	XXX	XXX	2/year	24-hour Composite

\*as an hourly max. limit

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**PREVIOUS PERMIT LIMITS, continued**

002:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.40	XXX	0.90 *	1/day	Grab
TSS	1476	2214	XXX	30	45	60	1/week	24-Hr Composite
CBOD5	1230	1968	XXX	25	40	50	1/week	24-Hr Composite
Ammonia - N	984	XXX	XXX	20	XXX	40	1/week	24-Hr Composite
Total Copper	2.805	XXX	XXX	0.057	XXX	0.114	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000	XXX	XXX	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200	XXX	XXX	1/week	Grab
Total PCBs	Report	XXX	XXX	Report	XXX	XXX	2/year	24-hour Composite

\*as an hourly maximum limit



**Compliance History**

A summary of DMRs is attached.

**Compliance History: 2016-2018**

January 2019 – SSO's at Manholes 55, 56, 56A, 57, 60.

12/11/2018 – DEP requested Exeter Twp finalize an agreement with a qualified contractor for the emergency by-pass and pump station refurbishment

10/22/2018 – Notice of Violation for SSO occurring on October 17, 2018. Influent Pump Station failure and flooding.

Exeter's Response: a failed influent check valve caused flooding of the dry well completely submerging the pump motors and drives. May need to replace irreparably damaged equipment. Bypassing the pump station with three diesel pumps in the interim. Can handle high flows/wet weather with three pumps operating. All have alarms. Not accepting hauled-in wastes. (A forth by-pass pump was added later; combined capacity 20 MGD)

8/29/2018 – Compliance Evaluation Inspection. No Violations.

8/14/2018 – Non-Compliance Reporting Form (Supplemental DMR) - meter pit #3 overflowed sewage into Antietam Creek during storm surge; SSO at manhole #10 with discharge of sewage into Schuylkill River

8/7/2018 – Incident. **Violation.** Unauthorized discharge of sewage to State waters. Unresolved as of 10/9/2018.

5/9/2018 – Incident. **Violation.** Unauthorized discharge of sewage at Glen Oley Pump Station (PS). Unresolved as of 10/9/2018.

5/1/2018 – Incident. **Violation.** Unauthorized discharge of sewage at Outfall 001. Unresolved as of 10/9/2018.

4/4/2018 – Incident. **Violation.** Unauthorized discharge of sewage at STP. Unresolved as of 10/9/2018.

3/15/2018 – **Notice of Violation sent from March 2, 2018 field inspection.** Unauthorized discharge of sewage at STP. Unresolved as of 10/9/2018.

2/14/2018 – **Notice of Violation sent.** Failure of chlorination system on January 14<sup>th</sup>, partially treated sewage discharged to Schuylkill River. Failure to notify DEP within 4 hours and failure to notify downstream users or Schuylkill River. Unresolved.

1/29/2018 – Inspection. No Violation.

9/13/2017 – Compliance Evaluation Inspection. No Violations.

4/28/2017 – Incident. **Violation.** Discharge of sewage. Resolved.

8/24/2016 - Compliance Evaluation Inspection. No Violations.

7/21/2016 - **Consent Assessment** for Biosolids Violations in October and November 2015: molybdenum concentration too high and failure to meet pathogen reduction in accordance with permit PAG08-3610. Closed/resolved.

6/7/2016 – Incident. **Violation.** Unauthorized discharge of sewage on June 2: SSO. Resolved.

5/27/2016 – Sanitary Sewage Overflow. Violation. Resolved.

**Development of Effluent Limitations**

**Outfall No.** 001 and 002 **Design Flow (MGD)** 1.2 MGD for 001, 5.9 MGD for 002  
**Latitude** \_\_\_\_\_ **Longitude** \_\_\_\_\_  
**Wastewater Description:** Sewage Effluent

**Technology-Based Effluent Limitations (TBELs)**

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation	Delaware River Basin Commission
CBOD <sub>5</sub>	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)	
Ammonia	20	Average Monthly			18 CFR Part 410
Total Dissolved Solids	Sufficient to not cause in-stream conc. to exceed the lesser of 500 mg/l or 133% of background*	Average Monthly			18 CFR Part 410

\*discussed in WQBEL section of the Fact Sheet

In addition, the facility accepts wastewater from five significant industrial users (per 2017 and 2018 Pretreatment Reports attached to Chapter 94 reports), two of which are categorical industrial users per the permittee i.e. subject to federal Effluent Limitation Guidelines and CFR Part 403 if their indirect discharge is conveyed to a Publicly Owned Treatment Works (POTW). See the table below. For all except Birdsboro Kosher Farm, the effluent sampling in the renewal application included the discharges from these users. Birdsboro Kosher Farm might have started contributing wastewater after the effluent sampling was conducted for the 2012 renewal application but would have been captured in the 2017 and 2018 Priority Pollutant Scans that were conducted as part of the Pretreatment Program, with sampling results forwarded to and reviewed by the DEP.

IU	CIU before POTW becomes privately owned?	Description of Industry	ELG (applicable for POTWs, used as BPJ for private STPs)	Pretreat. Stds? As conc.'s?	Total ww (gpd) per NPDES renewal application	% of WWTP's design flow (7.1 MGD) *	% of WWTP's estimated dry weather hydraulic capacity *
Arkema, Inc.	Yes	Mfr. of polymeric plastic	40 CFR Part 414-Organic Chemicals/Plastics/Synthetic Mfg.	No PSES or PSNS beyond Part 403 reporting	45,320 (process ww)	0.6 %	Estimated as 1.7%
SFS Intec	Yes	Mfr. Of assorted fasteners and screws	40 CFR Part 433-Metal Finishing	<b>Yes PSES &amp; PSNS, as conc.'s, for metals</b>	3500 (process ww)	0.05 %	Estimated as 0.13%
Godiva Chocolatier	No	Candy maker	none	N/A	30,000 (process ww)	0.42%	Estimated as 1.1%
Birdsboro Kosher Farm (BKF)	Not enough info to determine but not id'd as CIU by applicant	Poultry Processing	40 CFR Part 432 for some wastewater but not identified as applicable per applicant	No PSES or PSNS, not even Part 403 reporting	Not supplied	Not known	Not Known
Pioneer Crossing Landfill	Not identified as CIU by applicant	Municipal solid waste landfill	40 CFR Part 445	No PSES or PSNS beyond Part 403 reporting	50,000 (process ww)	0.7 %	Estimated as 1.9%
<b>HAULED-IN WASTE:</b>							
GlaxoSmith Kline, (from 2011 summary in NPDES appl., Form 2S)	Not enough info to determine, but not id'd as CIU by applicant	Pharmaceutical	40 CFR Part 439 for some wastewater but not identified as applicable per applicant	<b>Yes, as conc.'s, for some wastewater, some processes</b>	1.59 dry metric tons/ 1.75 dry English tons (Approx. 1.3 MG ww if 3% solids)	Estimated as 0.05% (if 1.3 MG/ 365 days/yr / 7.1 MGD)	Estimated as 0.13% (if 1.3 MG/ 365 days/yr/ 2.7 MGD)
Brush Wellman **	Not per applicant	Not supplied	Potentially 40 CFR Part 468 (Subpart B)	No	8000 gallons	<0.01%	<0.01%
Ontelaunee Orchards **	Not per applicant	Not supplied	Not enough info given	-	1500	<0.01%	<0.01%
Spring Glen Foods **	Not per applicant	Refrig.food products	Not enough info given	-	83,200	<0.01%	<0.01%
Turkey Hill Ice Cream **	Not per applicant	Dairy products/ beverages	Potentially 40 CFR Part 405	Yes, but not as conc.'s	67,100	<0.01%	<0.01%

\*the dry weather hydraulic capacity of the WWTP is not known by permit writer to calculate the IU flows as a % of the dry weather hydraulic capacity. The minimum Monthly Average flow reported in the eDMR system for January 1, 2017 through April 30, 2019 was 2.7 MGD and was used for purposes of estimation.

\*\*lists of hauled-in waste sources were supplied but the lists did not distinguish which were sanitary wastewater and which were industrial wastewater and whether any industrial wastewater was process wastewater. (No ELGs/BPJ would be applicable for hauled-in sanitary wastewater or for some non-process industrial wastewater.)

All 5 have local user permits and are sampled and inspected by the Exeter WWTP facility staff. No violations or significant noncompliance occurred during 2017 or 2018 according to the Pretreatment Reports attached to the Chapter 94 Reports.

Because of the low volumes contributed by the industrial users (IU's) and the lack of Pretreatment Standards in the ELGs for industrial users other than SFS Intec, no TBELs based on ELGs are deemed necessary. The PSES and PSNS for 40 CFR Part 433 are attached to this Fact Sheet. Since local limits have been in place and controlling discharges of these metals, and given that the contribution of process wastewater from SFS Intec is only 0.05% of the treatment plant's design flow, no new TBELs at outfalls 001 and 002 are being imposed for these metals. **For "CIUs" contributing to a privately-owned treatment plant in lieu of a POTW, any TBELs imposed based on ELGs would be BPJ, Best Professional Judgement.**

Pervious EPA-authorized Pretreatment Program:

Per EPA's review of the 2017 Annual Pretreatment Report, **local limits** were in place for the following: Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Zinc, Beryllium, Cyanide, Phenol, Chloroform, Toluene, Bis(2-ethylhexyl) Phthalate, BOD5, TSS, and Ammonia. No IU's were in Significant Non-compliance. All SIU's had local permits and were inspected and sampled. (Note: the maximum allowable headworks concentrations were based on 7.1 MGD.)

EPA's 2016 Annual Report Review noted that there was one Copper effluent exceedance out of the four sample results and no Copper exceedances in the four influent samples. EPA's review letter did not state the actual Copper concentration for the effluent exceedance. There were no effluent exceedances noted in EPA's 2015 Annual Report Review.

All parameters that were identified in the potential ELGs as "pollutants of concern" were sampled for a) in the facility's influent and effluent with the results submitted in the NPDES permit application, and b) in the facility's influent which were reported in the annual Pretreatment Program reports—with the exception of three parameters in the Landfill ELGs: alpha-terpineol, benzoic acid, and p-cresol but no Pretreatment Standards are included in the Landfill ELGs (nor does the State have surface water quality criteria for alpha-terpineol or benzoic acid). All pollutants of concern from the potential ELGs (except for alpha-terpineol, benzoic acid, and p-cresol) were evaluated for WQBELs. The development of WQBELs is discussed in the next section of the Fact Sheet.

### **Water Quality-Based Effluent Limitations (WQBELs)**

TMDL:

The receiving water is listed as an impaired water (303(d) Listed Stream as reported to EPA) with a final TMDL for reducing PCB concentrations. The TMDL, however, does not assign Wasteload Allocations (WLA) to individual point source discharges but instead establishes a goal of 0.044 ng/l and sampling and reduction efforts. The previous permit required PCB monitoring using a sensitive analytical method. The results of the monitoring indicate that PCBs at outfall 002 consistently are reported above the TMDL goal of 0.044 ng/l. The average concentration for the reviewed data, after subtracting the larger of the field blank or method blank concentrations, was 5.3 ng/l. There have been no discharges from outfall 001.

To address the PCB impairment, the renewal permit will require a Pollutant Minimization Plan (PMP) to be prepared and submitted to DEP for approval, then implemented. Tracking sources and removing sources, or requiring pretreatment at the source, are the intent. Discharge monitoring will continue to be required to measure progress made during the implementation of the PMP Plan.

**TDS:**

The DRBC Docket for this facility allows 1500 mg/l as a Monthly Average **TDS** limit for both outfalls following a TDS Determination. In the TDS Determination, 133% of background concentration was estimated by the DRBC as 492 mg/l: 370 mg/l background concentration x 133%. According to the DRBC, the facility's discharge of 1500 mg/l TDS on average and using the hydraulic design capacity of 8.43 MGD would raise the in-stream concentration to approximately 427 mg/l during Q7-10 stream flows, less than both the 500 mg/l TDS criteria and the 133% of background criteria. A copy of the DRBC docket is attached.

Because this NPDES permit authorizes outfall 001 as well as outfall 002, the same evaluation was performed for the combined hydraulic capacity of 9.63 MGD instead of DRBC's calculation using 8.43 MGD, with the result that the combined discharges would also not cause an exceedance of DRBC's instream TDS criteria:

$$C_d Q_d + C_s Q_s = C_T Q_T$$

$$(C_d \text{ mg/l} * 9.63 \text{ MGD}) + (370 \text{ mg/l} * 269 \text{ cfs} * (1 \text{ cfs}/ 1.547 \text{ MGD})) = (492 \text{ mg/l}) * (9.63 \text{ MGD} + 269 \text{ cfs} * 1 \text{ cfs}/1.547 \text{ MGD})$$

Solving for  $C_d = 429.3 \text{ mg/l}$  , < 500 mg/l and < 133% of background (492 mg/l)

**WQBELs based on DEP modeling:**

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

Parameter	Limit (mg/l)	SBC	Model
Total Copper	0.053	Monthly Average	PENTOX Version 2.0d
Total Copper	0.083	Daily Maximum	PENTOX Version 2.0d
Ammonia (NH3-N)	7.1	Monthly Average	WQM 7.0 Version 1.0b
Ammonia (NH3-N)	14.2	Daily Maximum	WQM 7.0 Version 1.0b
CBOD <sub>5</sub>	20.2	Monthly Average	WQM 7.0 Version 1.0b
Total Residual Chlorine	0.5	Monthly Average	TRC Excel Spreadsheet
Total Residual Chlorine	1.6	Instant.Maximum	TRC Excel Spreadsheet

The Drainage areas and Q7-10 values at the upstream, downstream, and interim points were taken from the USGS PA Stream Stats online tool. The Low Flow Yield was based on USGS gage correlation. Elevations and River Mile indices were estimated from DEP's eMapPa software. Permitted discharge flows were copied from DEP databases, permits, and permit applications.

The facility has a diffuser on their discharge pipe at outfall 002 (but not on outfall 001). The models were not adjusted to account for additional mixing due to the diffuser, however, because the diffuser could be clogged, slimed, or damaged by now or could become less effective in the future, the extended discharge pipe could have been dislodged or broken, there are no mixing studies to demonstrate the actual mixing occurring in the River, and because the concentration limits are also being applied to outfall 001 which has no diffuser or extended discharge pipe. The permit limits are instead written to be protective of the receiving water and downstream Public Water Supply intake with or without the diffuser.

**TOXICS/ PENTOX:**

The PENTOX model is a single point discharge, steady-state model which calculates mixing between the discharge and the receiving water. Therefore, the flows from outfalls 001 and 002 were combined in using the model and the concentration limitations for 001 and 002 are applied to both, as was done in the previous NPDES permit. The mass limits for 001 and 002 will be based on each outfalls design flow, as was done in the previous NPDES permit.

In running the PENTOX model, the first simulation gave a width, depth, and velocity that seemed unlikely for this stretch of River; it also indicated that the CRL criteria would not be met before the downstream Public Water Supply intake. Measuring the width of the Schuylkill River using eMapPA/ESRI Streets Imagery/USGS/Garmin/aerial photography tools indicated 167.4' during obviously high flow conditions: the river was past the treeline at the time. The width during stream low-flow conditions would have to be less than 167', yet the PENTOX model had calculated a width of 278.3', a depth of 1.14' and a velocity of 0.9 fps. Using Open Channel Flow Calculator online tool with an estimated low-flow stream width

of 155 feet, a Manning's n coefficient of 0.045, rectangular channel flow (used by PENTOX), and the Q7-10 of 269 cfs, yielded a depth and velocity that matched the Q7-10 most closely. The width and depth were then used as PENTOX model input variables to achieve more accurate results; the velocity calculated by the model approximated the velocity indicated by the flow calculator indicator tool. (The TRG for the PENTOX model encourages site-specific data, or better estimated data if that is what is available, to be used instead of defaults. Document #391-2000-011, page 59: "If the model reports that your stream is 60 feet wide at Q7-10 but you know that it is no more than 25 feet wide at Q7-10, you should re-run the analysis after editing the input data.")

Historic Storet data from Water Quality Network 113 on the Schuylkill River upstream of the discharge point, from January 2007 through 2018, indicated an average stream Hardness of 133 mg/l, a median pH of 7.8 s.u., and a Temperature of 20°C or 21°C during low-flow conditions (July, August, September). These values were used in the PENTOX and WQM 7.0 models. The permittee's application indicated an average discharge Hardness of 109 mg/l; thus the model's default value of 100 mg/l was not adjusted. Other default input values are shown on the attached pages, such as background concentrations, discharge temperature and pH, and coefficients.

NOTE: 1) In using the PENTOX model, artificially large numbers were input into the "Discharge Concentration" column to force a WQBEL to be calculated for each parameter rather than defaulting to the "Discharge Concentration" number. The WQBELs calculated can then be used in the following Reasonable Potential Analysis and used for calculating Maximum Allowable Headworks concentrations and local limits in the future. 2) The 2007 and 2002 Protection Reports and their attached PENTOX model output pages indicated that the width, depth, velocity, travel time, and PMFa were not adjusted therefore resulting in a larger reach travel time and larger Complete Mixing Time than the current, attached model simulation. Despite the existence of a diffuser on the discharge pipe at outfall 002, the PMFa was not adjusted in 2007 and 2002 model simulations. A larger PMFa would result in less stringent Acute Fish Criteria (AFC)-based WQBELs. The stream Hardness used was 275 mg/l in both the 2007 and 2002 model simulations, but the source of this input variable was not documented. A larger stream Hardness (or Analysis Hardness, the stream Hardness at Criteria Compliance Time such as after initial mixing) yields less stringent WQBELs for metals whose criteria are Hardness-dependent.

A "Reasonable Potential Analysis" (Attached) determined nine toxic parameters were candidates for limitations, in addition to Total Dissolved Solids (TDS) and Nitrate-Nitrate as N (NO<sub>3</sub>-NO<sub>2</sub>) due to the downstream Public Water Supply, and were thus included in the DEP modeling effort to evaluate the need for Water Quality Based Effluent Limits:

Total Antimony, Total Cadmium, Hexavalent Chromium, Total Cobalt, Total Copper, Total Selenium, Phenolics, Bis(2-Ethylhexyl) Phthalate, and Hexachlorobutadiene + TDS + NO<sub>3</sub>-NO<sub>2</sub>

The Toxics Screening Analysis (TSA) Worksheet used by DEP is attached. After comparing the maximum effluent concentrations to the WQBELs developed by the PENTOX model, the worksheet narrowed down the parameters needing WQBELs to just Total Copper, the same as the previous permit's Protection Report. The TSA did also recommend monitoring requirements for the following parameters which are evaluated further in the below discussion: Cadmium, Hexavalent Chromium, and Total Phenolics. The TSA also recommended monitoring for TDS which has already been discussed.

Note: the local limits required by the previous Pretreatment Program were included in the PENTOX model in addition to the other 11 candidates for WQBELs because calculated WQBELs--even when not imposed as permit limits--can be helpful in future maximum headworks analysis and local limit re-evaluations. A separate PENTOX simulation was run specifically for the water quality criteria that applies to Public Water Supply use, in order to include the PWS location, drainage area, and withdrawal rate at the end of the modeled reach and confirm that no limits for those parameters were necessary to protect the PWS intake. The model output pages are also attached for that simulation.

## Cadmium

Total Cadmium was not detected in the influent (0 detects out of 3 samples); the Reporting Levels (RLs) used were below the calculated WQBEL. Cadmium was only detected in the effluent as 0.1 ug/l (J qualified, meaning estimated). If 0.1 ug/l were used in the first column of the TSA instead of the largest MDL (Method Detection Level) or RL (lab Reporting Level), this parameter would not have been flagged as a candidate for PENTOX modeling and WQBELs because 0.1 ug/l is below the criteria. The estimated effluent concentration of 0.1 ug/l is also less than 10 % of the model's calculated WQBEL of 8.63 ug/l. No monitoring requirement has therefore been added to the NPDES permit for Total Cadmium.

### Hexavalent Chromium

The NPDES application reported 50 ug/l of Hexavalent Chromium in the influent and non-detect for each of three effluent samples but used a RL of 20 ug/l for the effluent samples. The 5/14/2017 and 5/17/2018 samples that were forwarded did not include Hexavalent Chromium, only Total Chromium: the maximum reported Total Chromium effluent concentration in the 2017 and 2018 data (only two datapoints) was 4 ug/l. The 2012 application reported the maximum effluent concentration for Total Chromium as 3 ug/l. Based on these results, it is not expected that Hexavalent Chromium in the effluent would be greater than 50.8 ug/l, the PENTOX-calculated WQBEL. In addition, local limits include Total Chromium. EPA's review of the previous Pretreatment Program did not identify exceedances for Total Chromium (compliance with local limits and exceedances of influent goals would have been reviewed by EPA). Therefore, no monitoring requirement has been added to the NPDES permit for Hexavalent Chromium.

### Total Phenolics

The maximum influent concentration reported was 200 ug/l (out of three samples). The maximum effluent concentration reported was <50 ug/l; Total Phenolics was 'non-detect' for four out of five effluent samples: <50 ug/l, <10 ug/l, 10 ug/l (J qualified for estimated), <50 ug/l, and <50 ug/l. The PENTOX-calculated WQBEL was 139 ug/l. The only detected concentration, 10 ug/l, is less than 10% of the WQBEL of 139 ug/l. Because a) the treatment plant has been reducing the Phenolics concentration to below the WQBEL and because b) the water quality criteria based on THH are met before the downstream Public Water Supply intake, as shown by the Hydrodynamics page of the PENTOX model output (which uses conservative assumptions such as no additional mixing provided by the diffuser), no monitoring requirement is being added to the permit at this time.

### Copper

The maximum concentration of Total Copper in the effluent came from the NPDES application: 50 ug/l. The maximum influent concentration reported was 254 ug/l, also from the NPDES application. Because the maximum concentration in the effluent exceeded the calculated WQBEL, a permit limit is deemed necessary. The calculated WQBELs of 53.3 ug/l as a Monthly Average and 83.1 ug/l as a Daily maximum are more stringent than the previous permit limits of 57 ug/l as a Monthly Average and 114 ug/l. The 28 months of DMRs that were reviewed (from January 1, 2017 through April 30, 2019) indicate that these new more stringent limits can be met immediately; therefore no compliance schedule has been included in the draft renewal permit, consistent with the DEP's Standard Operating Procedure (SOP) for Establishing Effluent Limits for Individual Sewage Dischargers. Because the more stringent WQBEL is expected to be met immediately, no Pre-Draft survey or site-specific data gathering is being required as provided in DEP's SOP for Establishing WQBELs and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers. The maximum Monthly Average concentration reported in the reviewed DMRs for Total Copper was 39 mg/l; the 90<sup>th</sup> percentile of the Monthly Average reported concentrations was 35 ug/l. (There is expected to be two months between the applicant receiving the draft permit and the final permit's effective date, i.e. to be prepared for the new limits.)

Note: the calculated WQBELs of 0.053 mg/l as a Monthly Average and 0.083 mg/l as a Daily Maximum are also more stringent than the Pretreatment Standards (TBELs) for metal process wastewater dischargers subject to 40 CFR 433: 2.07 mg/l as a Monthly Average and 3.38 mg/l as a Daily Maximum for Copper.

### WQM 7.0 MODEL:

Whereas the PENTOX model cannot model more than one point source discharger, the WQM 7.0 model can. The nearest downstream Sewage Treatment Plants were included in the model, with their associated design discharges and existing permit limits, as recommended in the Technical Guidance document for this model. Again, historic Storet data from Water Quality Network 113 on the Schuylkill River upstream of the discharge point were used for Temperature and pH during low-flow conditions. Again, width and depth were adjusted as described for the PENTOX model.

Whereas the PENTOX model accounts for mixing and partial mixing, the WQM 7.0 model does not have that feature. For the WQM 7.0 model, the Q7-10 is typically adjusted to account for incomplete mixing which occurs in wide rivers. For example, the Low flow Yield (LFY) or the Drainage Areas (D.A.) have been divided by 3 for the Schuylkill River in the past, to account for partial mixing. (The LFY and D.A.'s are model input variables whereas the Q7-10 is not an input



variable but derived by the models:  $Q7-10 = LFY * D.A.$ ). The DEP's SOP for Establishing Effluent Limitations for Individual Sewage Permits recommends multiplying the acute Partial Mix Factor (PMFa) calculated by the PENTOX model by the Q7-10 (or by the model inputs LFY or D.A). Doing so would yield much more stringent limits than the existing permit and would not account for the discharge pipe extending into the River or for the diffuser at 002, so that such an approach would be overly-conservative. Because this is an existing discharger with no increase in flow or upgrades to their treatment plant, the previous practice of using a PMF of 0.33 for adjusting the LFY in the WQM 7.0 model was continued as has been done in the past for other existing dischargers to the Schuylkill River.

The model yielded more stringent limits for **CBOD5** and for **Ammonia** than in the previous permit. The 28 DMRs reviewed, from January 1, 2017 through April 30, 2019, indicate that the facility can meet the new limits immediately such that no compliance schedule has been included in the draft renewal permit. The maximum Monthly Average concentration reported for CBOD5 (at outfall 002) was 9 mg/l, compared to the proposed new CBOD5 limit of 20.3 mg/l as a Monthly Average. The maximum Monthly Average concentration reported for Ammonia (at outfall 002) was 4 mg/l, compared to the proposed new CBOD5 limit of 7.1 mg/l as a Monthly Average during the warm months and 20 mg/l during the cooler months.

Because Ammonia is less toxic to aquatic life in cold water conditions, a less stringent limit can be imposed for the months of October through April consistent with other NPDES permits [Technical Guidance Document: 391-2000-013]. A multiplier of 3 was applied to the WQBEL developed by the model to arrive at the winter monthly average limit of 21.3 mg/l. Because 21.3 mg/l is larger than the TBEL of 20°C from the DRBC regulations, 20.0°C has been imposed instead as the permit limit during the colder months.

Reasons for the Ammonia and CBOD5 limits becoming more stringent than in the previous permit:

- 1) The previous permit limits (2003 and 2008) were developed as if there were full mixing in the receiving water from this facility's discharge and from the other nearby sewage facilities that were modeled with it which is inconsistent with the DEP's current SOP for Establishing Effluent Limits for Sewage Dischargers.
- 2) The previous permit limits (2008) were developed by pulling certain input variables stored from 2002's models (or earlier) including a width to depth ratio that was based on a previous PENTOX simulation that did not correct for the likely width, depth, or velocity of the wide River and that used a different stream pH during low-flow conditions;
- 3) The most recently available drainage areas, elevations, Low Flow Yields, and RMI's were used;
- 4) Amity STP, one of the nearby STPs included in the model, significantly increased its discharge flow since the last permit was issued.

TRC:

The attached model results for Total Residual Chlorine (TRC) utilizes the equations and calculations as presented in the Department's 1998 Implementation Guidance for TRC (Document #391-2000-015), for developing chlorine limitations. The same TRC limits were calculated, 0.5 mg/l as a Monthly Average and 1.6 mg/l as an IMAX, whether the facility discharge is 1.2 MGD, 5.9 MGD or 7.1 MGD. The previous limits of 0.40 mg/l as a Monthly Average and 0.90 mg/l as a Maximum are more stringent. Because the existing permit limits are WQBELs (based on a previous site-specific study) and the facility has been consistently meeting these limits, they will be carried forward into the renewal permit due to anti-backsliding rules with one exception: the previous permit specified that 0.9 mg/l was an "hourly maximum" but also specified a sample type of "Grab". The draft renewal permit does not include an hourly maximum limit because an hourly maximum limit would be a) hard to enforce, b) not able to be coded in DEP's WMS system, and c) not compatible with a "Grab" sample type. Instantaneous Maximum limits are usually imposed for TRC, not hourly maximums. An equivalent Instantaneous Maximum limit to correlate with the existing Monthly Average limit of 0.40 mg/l was determined as follows:  $1.6 \text{ mg/l IMAX per model} / 0.5 \text{ mg/l Monthly Average per model} = 3.2$ . Applying this multiplier to 0.40 mg/l results in an **IMAX of 1.3 mg/l**.

A review of 28 DMRs from January 1, 2017 through April 30, 2019 indicate that the maximum reported TRC value at outfall 002 was 0.82 mg/l. The 90<sup>th</sup> Percentile of the Maximum values reported in the 28 DMRs for TRC at outfall 002 was 0.71 mg/l. It is expected that the permittee can meet the new proposed IMAX limit without a compliance schedule.

**Best Professional Judgment (BPJ) Limitations**

The TSS limits typically match the BOD<sub>5</sub> limits [Pa Code Ch. 92a.47]. Because CBOD<sub>5</sub> effluent limits are imposed instead of BOD<sub>5</sub> in this permit, a correlation between BOD<sub>5</sub> and CBOD<sub>5</sub> was used to determine the appropriate TSS limits to impose: BOD<sub>5</sub> of 30 mg/l = CBOD<sub>5</sub> of 25 mg/l, BOD<sub>5</sub>:CBOD<sub>5</sub> = 1.2. TSS = CBOD<sub>5</sub> of 20.3 mg/l x 1.2 = 24.4 mg/l as a monthly average. TSS = CBOD<sub>5</sub> of 30.5 mg/l x 1.2 = 36.6 mg/l as a weekly average.

A review of the facility's DMRs from January 1, 2017 through April 30, 2019 indicates one month in which both the proposed Monthly Average and Weekly Average for TSS would have been exceeded: September 2018's DMR reported 26 mg/l as the Monthly Average and 46 mg/l as the Weekly Average. The 90<sup>th</sup> Percentiles of the reported DMR values for Monthly Average TSS and Weekly Average TSS were below the proposed TSS limits of 24 mg/l and 36.6 mg/l, respectively. No compliance schedule therefore has been included.

**Mass Load vs. Concentration Limits**

In accordance with the DEP's Technical Guidance Manual 362-0400-001 (and the SOP for Establishing Effluent Limitations for Individual Sewage Permits), average monthly mass loading limits have been established for CBOD<sub>5</sub>, TSS, NH<sub>3</sub>, and Total Copper; average weekly mass loading limits have additionally been established for CBOD<sub>5</sub> and TSS; and a daily maximum mass load limit has been established for Total Copper.

**Sample Types and Frequencies**

Sample Types and Frequencies are according to the DEP's Technical Guidance Manual 362-0400-001 or carried forward from the previous permit when deemed appropriate.

**OTHER THAN LIMITS.....**

**Pretreatment Program**

EPA does not review Pretreatment Programs when the industrial users convey to a non-POTW; the regulations stipulate POTWs. DEP will require and review the Pretreatment Program instead. Many of the same elements are being required, for this facility and other privately owned and operated sewage treatment plants: headworks analysis, local limits, routine monitoring, influent priority pollutant scans, and annual reports.

**TDS Baseline**

For the sake of Chapter 95.10, which became effective in 2010, TDS baselines are calculated and documented in the Fact Sheets. The TDS "baseline" is intended to document TDS loading at or after August 2010, before any subsequent increases in loading occur. The DMRs did not include TDS monitoring results. The 2012 permit application reported 1770 mg/l as the maximum concentration in the effluent based on 47 samples. The design discharge flow as of August 2010 was also 7.1 MGD. Therefore, the TDS "baseline" for the purpose of determining when the requirements of Chapter 95.10 will be applicable (future increases in loading) is:  
 $1770 \text{ mg/l} * 7.1 \text{ MGD} * 8.34 \text{ conversion factor} = 104,809 \text{ lbs/day}$

**TN and TP Monitoring**

In an effort to understand nutrient loading on PA streams, sewage dischargers with design flows greater than 2000 gpd are being required to at least monitor for Total Nitrogen and Total Phosphorus in new and reissued permits. Total Nitrogen is the total of TKN + NO<sub>3</sub> + NO<sub>2</sub>.

**Stormwater**

Stormwater discharges at a major Sewage Treatment Plant qualify by definition as “stormwater associated with industrial activity” and must be authorized by a NPDES permit. Four stormwater-only outfalls exist at the facility. Sampling results were supplied in the application for all four: no regulatory standards were exceeded and no benchmark values from the DEP’s general permit PAG-03/Appendix J were exceeded. No limits or monitoring are required as part of the permit.

As with the previous permit, the draft renewal permit includes the requirement for a Preparedness, Prevention, and Contingency (PPC) Plan and the implementation of Best Management Practices (BMPs). The PPC Plan must include visual inspections of the site. Records of the inspections must be kept on-site.

**Anti-Backsliding**

No limits in the renewal permit are less stringent than the previous permit.

**Antidegradation**

The effluent limits in this permit have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge. The applicable TMDL requires monitoring of PCBs in the discharge and implementing measures to reduce the concentrations and loads from PCBs. To address the PCBs impairing the Schuylkill River, this permit (Part C Conditions) requires the permittee to prepare and implement a PCB Pollutant Minimization Plan.

**Whole Effluent Toxicity (WET)**

For Outfall 002,  Acute  Chronic WET Testing was completed:

- For the permit renewal application (4 tests).
- Quarterly throughout the permit term.
- Quarterly throughout the permit term and a TIE/TRE was conducted.
- Other:

The dilution series used for the tests was: 100%, 45%, 20%, 9%, and 4%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 9.2% (per 12/2007 Protection Report/Fact Sheet)

**Summary of Four Most Recent Test Results**

NOEC/LC50 Data Analysis

Test Date	<i>Ceriodaphnia</i> Results (% Effluent)			<i>Pimephales</i> Results (% Effluent)			Pass? *
	NOEC Survival	NOEC Reproduction	LC50	NOEC Survival	NOEC Growth	LC50	
May 7, 2012	100%	20%	100%	100%	100%	100%	Yes
June 26, 2012	100%	100%	100%	100%	100%	100%	Yes
August 21, 2012	100%	100%	100%	100%	100%	100%	Yes
October 16, 2012	100%	100%	100%	100%	100%	100%	Yes

\* A “passing” result is that which is greater than or equal to the TIWC value.

Tests were conducted by American Aquatic Testing, Inc.

Is there reasonable potential for an excursion above water quality standards based on the results of these tests? (*NOTE – In general, reasonable potential is determined anytime there is at least one test failure in the previous four tests.*)

YES  NO

**Evaluation of Test Type, IWC and Dilution Series for Renewed Permit**

Acute Partial Mix Factor (PMFa): 0.15

Chronic Partial Mix Factor (PMFc): 1

**1. Determine IWC – Acute (IWC<sub>a</sub>):**

$$(Q_d \times 1.547) / ((Q_{7-10} \times PMFa) + (Q_d \times 1.547))$$

$$[(7.1 \text{ MGD} \times 1.547) / ((269 \text{ cfs} \times 0.15) + (7.1 \text{ MGD} \times 1.547))] \times 100 = 21.4\% = \text{IWC}_a\%$$

Is IWC<sub>a</sub> < 1%?  YES  NO

**Type of Test for Permit Renewal: Chronic**

**2. Determine Target IWC<sub>c</sub>**

$$(Q_d \times 1.547) / (Q_{7-10} \times PMFc) + (Q_d \times 1.547)$$

$$[(7.1 \text{ MGD} \times 1.547) / ((269 \text{ cfs} \times 1) + (7.1 \text{ MGD} \times 1.547))] \times 100 = 4.0\% = \text{TIWC}_c\%$$

**3. Determine Dilution Series**

(*NOTE – check Attachment C of WET SOP for dilution series based on TIWC<sub>a</sub> or TIWC<sub>c</sub>, whichever applies.*)

Dilution Series = 100%, 60%, 30%, 4%, 2%.

**WET Limits**

Has reasonable potential been determined?  YES  NO

Will WET limits be established in the permit?  YES  NO

**Major changes from previous permit:**

- more stringent Total Copper limits at both outfalls based on updated modeling;
- more stringent Ammonia (during warm months), CBOD5, and TSS limits at both outfalls based on updated modeling;
- Total Dissolved Solids limit of 1500 mg/l as a monthly average at outfalls 001 and 002 consistent with DRBC docket;
- Instantaneous Fecal Coliform limits as per Standards promulgated in 2011;
- the TRC “hourly maximum” limit imposed at both outfalls 001 and 002 has been converted to an “Instantaneous Maximum” limit;
- addition of monitoring requirements for Total Nitrogen (calculated from TKN and NO3-NO2 samples) and Total Phosphorus, required for most STPs in State;
- Condition added specifying Chronic WET tests be conducted with designated dilution series, new Statistical Analysis of results, annual testing requirement as a minimum, and procedures to follow for failures;
- Pretreatment Program to be reviewed by DEP rather than EPA and other permit language changes were made that are appropriate for a privately owned/operated STP rather than for a publicly owned treatment works;
- additional requirement of a Pollutant Minimization Plan to reduce PCBs in discharge, as part of Schuylkill River PCB TMDL;
- PCB sampling in Part A limits tables has been broken out as once per year during wet weather and once per year during dry weather as was previously required in the permit’s Part C conditions, with a Statistical Base Code of Daily Maximum, not Monthly Average;
- the required influent sampling is included in the Part A Limits tables unlike the previous permit;
- extra significant digits/decimal places due to new DEP software;
- “Minimum” in limits table is now specified as “Instantaneous Minimum”;
- updated “standard language”, placed in all NPDES permits in State.

**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, as needed. Instantaneous Maximum (IMAX) limits are generally 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) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instant. Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.40	XXX	1.3	1/day	Grab
CBOD5	203	305	XXX	20.3	30.5	40.6	1/week	24-Hr Composite
BOD5 Raw Sewage Influent *	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	244	366	XXX	24.4	36.6	48.8	1/week	24-Hr Composite
TSS Raw Sewage Influent*	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TDS	Report	XXX	XXX	1500.0	XXX	3000	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10,000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ammonia Nov 1 – Apr 30	200	XXX	XXX	20.0	XXX	40.0	1/week	24-Hr Composite
Ammonia May 1 – Oct 30	71	XXX	XXX	7.1	XXX	14.2	1/week	24-Hr Composite
TKN	Report	XXX	XXX	Report	XXX	XXX	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) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instant. Minimum	Average Monthly	Weekly Average	Instant. Maximum		
NO3-NO2	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/week	Calculation
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Copper	0.53	0.83 Daily Max.	XXX	0.053	0.083 Daily Max	0.13	1/week	24-Hr Composite
PCBs, Dry Weather (ng/l)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	24-Hr Composite
PCBs, Wet Weather (ng/l)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	24-Hr Composite

\* if there is no discharge from the outfall during a reporting period, the influent BOD5 and TSS samples do not need to be collected, analyzed and reported

Compliance Sampling Location:

After the East Treatment Plant

**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, as needed. Instantaneous Maximum (IMAX) limits are generally 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 002, Effective Period: Permit Effective Date through Permit Expiration Date.**

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instant. Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.40	XXX	1.3	1/day	Grab
CBOD5	999	1501	XXX	20.3	30.5	40.6	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	1201	1801	XXX	24.4	36.6	48.8	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TDS	Report	XXX	XXX	1500.0	XXX	3000	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10,000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ammonia Nov 1 – Apr 30	984	XXX	XXX	20.0	XXX	40.0	1/week	24-Hr Composite
Ammonia May 1 – Oct 30	349	XXX	XXX	7.1	XXX	14.2	1/week	24-Hr Composite
TKN	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite



Outfall 002, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instant. Minimum	Average Monthly	Weekly Average	Instant. Maximum		
NO3-NO2	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/week	Calculation
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Copper	2.6	4.1 Daily Max	XXX	0.053	0.083 Daily Max	0.13	1/week	24-Hr Composite
PCBs, Dry Weather (ng/L)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	24-Hr Composite
PCBs, Wet Weather (ng/L)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	24-Hr Composite

Compliance Sampling Location: after the West treatment plant

Other Comments:

See Part C of Permit for PCB Sampling Conditions and reporting

Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment)
<input checked="" type="checkbox"/>	PENTOXSD for Windows Model (see Attachment)
<input checked="" type="checkbox"/>	TRC Model Spreadsheet (see Attachment)
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment)
<input checked="" type="checkbox"/>	Toxics Screening Analysis Spreadsheet (see Attachment)
<input checked="" type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input checked="" type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 385-2000-011, 9/08.
<input checked="" type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
<input checked="" type="checkbox"/>	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
<input checked="" type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
<input checked="" type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
<input checked="" type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
<input checked="" type="checkbox"/>	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.
<input checked="" type="checkbox"/>	Design Stream Flows, 391-2000-023, 9/98.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	SOP: Establishing Effluent Limitations for Individual Sewage Permits, BPNPSM-PMT-033, 8/23/2013.
<input checked="" type="checkbox"/>	SOP: Establishing WQBELs and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers, BCW-PMT-037, January 10, 2019.
<input checked="" type="checkbox"/>	DRBC Docket D-1992-003 CP2.