pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NORTHCENTRAL REGIONAL OFFICE
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0026557**
Facility Type	**Municipal**	APS ID	**787577**
Major / Minor	**Major**	Authorization ID	**937228**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**The Municipal Authority of the City of Sunbury**	Facility Name	**Sunbury Municipal Authority Wastewater Treatment Facility**
Applicant Address	462 South 4th Street	Facility Address	485 Fawn Lane
	Sunbury, PA 17801-3134		Sunbury, PA 17801
Applicant Contact	Michael Kerstetter	Facility Contact	Michael Kerstetter
Applicant Phone	(570) 988-1930	Facility Phone	(570) 988-1930
Client ID	41774	Site ID	249013
Ch 94 Load Status	Not Overloaded	Municipality	Sunbury City
Connection Status	No Limitations	County	Northumberland
Date Application Received	July 13, 2012	EPA Waived?	No
Date Application Accepted	September 21, 2012	If No, Reason	Major Facility, Significant CB Discharge
Purpose of Application	Application for the renewal of the existing individual NPDES permit.		

Summary of Review

The Municipal Authority of the City of Sunbury has submitted an application for the renewal of the existing NPDES Permit PA0026557 for the Department's review. Upon completion of the following review, it is recommended that the permit be drafted. The associated notification will be published in the PA Bulletin for a thirty day public commenting period. The case file, permit application and draft permit are available for public review at: Northcentral Region, Department of Environmental Protection, 208 West Third Street, Suite 101, Williamsport, PA 17701. Phone (570) 327-3636 to make an appointment to review the file during the public commenting period.

Approve	Deny	Signatures	Date
X		Jonathan P. Peterman / Civil Engineer Hydraulic	April 14, 2014
		Pamela Dobbins, P.E. / Environmental Engineer Manager	
		Thomas M. Randis / Environmental Program Manager	

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	4.2
Latitude	40° 51’ 10.00”	Longitude	76° 47’ 24.80”
Quad Name	Sunbury	Quad Code	1231
Wastewater Description:	Treated Sewage Effluent		
Receiving Waters	Shamokin Creek	Stream Code	18489
NHD Com ID	54961987	RMI	1.33
Drainage Area	136.49	Yield (cfs/mi^2)	0.3346
Q_{7-10} Flow (cfs)	45.67	Q_{7-10} Basis	Stream Gage No. 1468500
Elevation (ft)	429	Slope (ft/ft)	0.00356
Watershed No.	6-B	Chapter 93 Class.	WWF
Existing Use	WWF	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	Iron, manganese, aluminum, and pH.		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final, 04/09/2001	Name	Shamokin Creek Watershed TMDL
Nearest Downstream Public Water Supply Intake	Harrisburg Municipal Water Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	3490
PWS RMI	74	Distance from Outfall (mi)	50

Changes Since Last Permit Issuance: The updated Q_{7-10} data was obtained from the updated stream gage information obtained from *Stuckey, M.H., and Roland, M.A., 2011, Selected Streamflow Statistics for Streamgage Locations In and Near Pennsylvania*. A comparative analysis was conducted using the associated stream gage (1468500) which was determined using the EcoFlows program. The analysis indicates that the Q_{7-10} is 45.67 cfs in lieu of the 43.4 cfs that was used in previous reviews. Q_{7-10} calculations are attached in Appendix A.

Other Comments: None.

Combined Sewer Overflows (CSO)

The following CSOs were identified in the application:

Outfall No.	Location Description	Receiving Stream	Location	
			Latitude	Longitude
003	Church Street Pump Station	Susquehanna River	40º 51' 34"	-76º 47' 56"
004	Reagan Street Pump Station	Susquehanna River	40º 52' 08"	-76º 47' 42"
005	Spring Run Pump Station	Shamokin Creek	40º 51' 07"	-76º 47' 43"
005-A	WWTF	Shamokin Creek	40º 51' 06"	-76º 47' 43"

Long Term Control Plan (LTCP) Discussion

In order to protect Water Quality Standards (WQS), the Municipal Authority of the City of Sunbury continues to follow the Presumption Approach for CSO compliance. By definitions contained in the PA CSO Policy, the Sunbury Municipal Authority system is defined as a *small* CSO system. A small POTW operated CSO system is one which serves a jurisdictional population of less than 75,000. This approach is outlined in the most recent Long Term Control Plan (LTCP) (June, 2012) was approved by the Department. There were no dry weather overflows occurring and the Authority is in compliance with both the approved Long Term Control Plan (LTCP) and the Nine Minimum Controls (NMCs). Since the last renewal of this permit, Municipal Authority has eliminated three CSOs (Hopper Alley, Hospital, and Route 61 Bridge). The Hopper Alley CSO (002) was eliminated in December of 2008 as part of Phase II. All flows are from are now strictly surface water /stormwater flows. All sanitary flows were directed to a small duplex pump station located on South River Ave. Both the Hospital CSO (006) and Route 61 Bridge CSO (007) were eliminated in June of 2011 as part of the Phase III, Hill Separation project. This project was designed to reduce hydraulic load at the WWTP and remove these two CSOs. All stormwater was separated and directed to Shamokin Creek. The most recent CSO inspection at the facility was held 11/19/13. No issues were noted with these CSOs and the completion of the abovementioned projects were verified.

See above for CSO outfall information. The permit will contain a Part C condition for the management of CSOs

TMDL Impairment

Shamokin Creek TMDL

The Department's Geographic Information System (GIS) shows that Shamokin Creek is impaired and a TMDL does exist for the stream segment. High levels of metals caused these impairments (iron, manganese, aluminum). All impairments resulted from acid mine drainage. The TMDL addresses the three primary metals associated with acid mine drainage (iron, manganese, aluminum) as well as depressed pH. Testing for these parameters has been conducted for both the influent and effluent concentrations. Both of these influent and effluent values are significantly less than the applicable water quality criteria and the toxic analysis spreadsheet indicates that there is no reasonable potential for the pollutants to cause an excursion above water quality standards Given the regulations contained in 40 CFR §122.44(d)(1)(ii)&(iii), it can be determined that the type of effluent from this facility has no "Reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a State numeric criteria within a State water quality standard for an individual pollutant." Therefore, the permit will not be required to contain effluent limits for the pollutant addressed in the TMDL.

Parameter	Influent (mg/L)	Effluent (mg/L)	§93.7 Criteria (mg/L)
Aluminum	0.22	0.09	0.75
Manganese	0.21	0.06	1.0
Iron	0.97	0.14	1.5

Treatment Facility Summary

Treatment Facility Name: Sunbury WWTP
Tributary Sewer System Information: The Municipal Authority of the City of Sunbury Wastewater Treatment Plant serves the City of Sunbury and Upper Augusta Township. The City contributes 95% of the flow while Upper Augusta Township contributes approximately 5%.

The discharge flow rates for the previous year (2013), in MGD, are as follows:

Existing Annual Average	Maximum Monthly Average	Month of Highest Flow
2.2	2.784	June 2013

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Ultraviolet	4.2

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
4.2	14,011	Not Overloaded	Anaerobic Digestion	Landfill

Treatment System Components (See Appendix E for Plant Process Flow Diagram):
- One (1) Influent Chamber.
- One (1) Mechanical Bar Screen.
- One (1) Manual Bar Screen.
- Two (2) Grit Chamber.
- One (1) Influent Wet Well.
- One (1) Equalization Tank.
- One (1) BNR Basin.
- Three (3) Aeration Basins.
- Two (2) Secondary Clarifiers.
- One (1) UV Disinfection Unit with UV Contact Tank.
- One (1) Chlorine Contact Tank (Back-up).
- One (1) Outfall Chamber.
- One (1) Outfall #001.
- One (1) Gravity Belt Filter.
- Two (2) Aerobic Sludge Digesters.
- One (1) Sludge Holding Tank.
- One (1) Belt Filter Press.

Changes Since Last Permit Issuance: None.

Industrial Users

The Municipal Authority of the City of Sunbury receives wastewater from the following industrial users:

Industrial User	Wastewater Flows (GPD)					Significant IU?	Pollutant Groups
	Process	NCCW	Sanitary	Other	Total		
Butter-Krust / Sara-Lee	2,419	1,613	6,451	5,644	16,127	Yes	1,2
Weis Markets, Inc. (Milk Plant)	75,000	-	500	-	75,500	Yes	1
Weis Markets, Inc. (Meat Plant)	11,400	-	650	-	12,050	Yes	1
Sun-Re Cheese Corporation	16,900	2,400	450	1,640	21,390	Yes	1
Dempsey Uniform and Linen Supply	102,000	-	3,000	-	105,000	Yes	1,2
TOTAL	207,719	4,013	11,051	7,284	230,067		

The Municipal Authority of the City of Sunbury currently maintains and operates an EPA-approved pretreatment program. As a result, the Department will continue to include permit conditions that require the operation and implementation of a pretreatment program.

Compliance History

Effluent Violations for Outfall 001 (from December 1, 2012 to November 30, 2013)

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
No violations to report						

Summary of Inspections: None.

Other Comments: None.

Summary of Inspections -The last facility inspection was conducted on 5/14/13 by Stephen Puzio which reveals that there were no issues and the facility was operating normally. A CSO inspection was conducted on 11/19/13 by Stephen Puzio, Jared Dressler, Adam Millheim, and Myself in which no major issues were noted.

NMS Query Summary -An NMS Query was run (*Violations – eFACTS – Open Violations for Client by Permit No.)* to determine whether there are any unresolved violations associated with the client that will affect issuance of the permit (per CSL Section 609). This query revealed that there were no unresolved violations.

DMR Summary -Upon review of the DMR data, the facility appears to be operating within the given concentration. This review revealed that there were no major effluent violations for Outfall 001 over the previous five years. It is to be noted that the facility is currently not participating in e-DMR which will be rectified.

Whole Effluent Toxicity (WET)

For Outfall 001, ☐ **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%, 50%, 25%, 12.5%, and 6.25%. See section below for TIWC. See Appendix G for WETT Spreadsheet.

Summary of Four Most Recent Test Results

NOEC/LC50 Data Analysis

Test Date	*Ceriodaphnia* Results (% Effluent)			*Pimephales* Results (% Effluent)			Pass? *
	NOEC Survival	NOEC Reproduction	LC50	NOEC Survival	NOEC Growth	LC50	
February 27, 2012	100	100	100	100	100	100	Yes
May 21, 2012	100	50	100	100	100	100	Yes
June 25, 2012	50	25	100	100	100	100	Yes
August 7, 2012	100	50	100	100	100	100	Yes

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

Is there reasonable potential for an excursion above water quality standards based on the results of these tests?

☐ **YES** ☒ **NO**

Comments: No reasonable potential can be assumed.

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

Acute Partial Mix Factor (PMFa): **0.0301** Chronic Partial Mix Factor (PMFc): **1.00**

1. Determine IWC – Acute (IWCa):

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

[(4.2 MGD x 1.547) / ((45.67 cfs x 0.0301) + (4.2 MGD x 1.547))] x 100 = **82.54%**

Is IWCa < 1%? ☐ **YES** ☒ **NO**

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

2b. Determine Target IWCc

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

[(4.2 MGD x 1.547) / ((45.67 cfs x 1.00) + (4.2 MGD x 1.547))] x 100 = **12.45%**

3. Determine Dilution Series

Dilution Series = 100%, 56%, 12%, 6%, and 3%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

Will WET limits be established in the permit? ☐ YES ☒ NO

If WET limits will be established, identify the species and the limit values for the permit (TU).
N/A.

If WET limits will not be established, but reasonable potential was determined, indicate the rationale for not establishing WET limits:
N/A

Part C of the permit will contain following requirements for this major sewage facility:

1. Part C Condition 114 “Whole Effluent Toxicity (WET)”

Chesapeake Bay Requirements

In order to address the TMDL, Pennsylvania developed a Chesapeake Watershed Implementation Plan (WIP) – Phase I. Since the publication of Pennsylvania's Phase I Chesapeake WIP in January 2011 and the Chesapeake Bay TMDL, several activities have occurred that necessitated the development of the Phase II WIP. Initially, a phased approach was utilized which imposed TN and TP cap loads in reissued permits for significant sewage dischargers. Accordingly, Sunbury's renewed permit, issued 2/1/2008, included these TN and TP cap loads. In accordance with the Wastewater Supplement to Phase II WIP, these cap loads will remain in the permit.

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy:

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

Discharge Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report		Report		1/week	24-Hr Comp.
Kjeldahl---N	Report			Report		1/week	24-Hr Comp.
Nitrate-Nitrite as N	Report			Report		1/week	24-Hr Comp.
Total Nitrogen	Report	Report		Report		1/month	Calculation
Total Phosphorus	Report	Report		Report		1/week	24-Hr Comp.
Net Total Nitrogen	Report	76,711*				1/month	Calculation
Net Total Phosphorus	Report	10,228**				1/month	Calculation

*TN = 4.2MGD x 6.0 mg/l x 8.34 x 365 days/yr = 76,711 lb/yr
**TP = 4.2 MGD x 0.8 mg/l x 8.34 x 365 days/yr = 10,228 lb/yr

Existing Effluent Limitations and Monitoring Requirements

Discharge Parameter	Limitations							
	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Monthly Average	Daily Max.	Minimum	Average Monthly	Average Weekly	Instantaneous Maximum	Minimum Frequency	Sample Type
Flow (MGD)	Report						Continuous	Meter
C-BOD_5	876	1401		25	40	50	2/ Week	24-Hr Comp
TSS	1051	1576		30	45	60	2/ Week	24-Hr Comp
TRC				0.5		1.6	1/ Day	Grab*
UV % Transmissivity			Report				1/ Day	Meter
pH (Std. Units)			6.0			9.0	1/ Day	Grab
Fecal Coliforms (5/1-9/30)	200 colonies/100 ml as a geometric mean and not greater than 1,000 colonies/100 ml in more than 10% of the samples tested						2/ Week	Grab
Fecal Coliforms (10/1-4/30)	2,000 colonies/100 ml as a geometric mean							

The existing effluent limits for Outfall 001 were based on a design flow of 4.2 MGD.
*When utilizing the back-up chlorine disinfection.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 4.2
Latitude 40° 51' 10.00" **Longitude** 76° 47' 24.80"
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)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Water Quality-Based Limitations

To establish whether or not water-quality based effluent limitations (WQBELs) are required, the Department models in-stream conditions. In order to determine limitations for CBOD5, ammonia-N and dissolved oxygen, the Department utilizes the WQM 7.0 v1.0b model and in order to determine limitations for toxics, the Department utilizes the PENTOXSD v2.0d model.

WQM 7.0 for Windows, Version 1.0b, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen
The Department uses the computer model WQM 7.0 to determine water quality based effluent limitations for Carbonaceous BOD ($CBOD_5$), Ammonia Nitrogen (NH_3-N), and Dissolved Oxygen (DO). This model can be utilized for single and multiple point source discharges scenarios. The WQM 7.0 model determines wasteload allocations for each parameter and then derives effluent limitations in a two part process. The model simulates the mixing (assuming complete mixing) and consumption/degradation of both DO and NH_3-N individually in the stream due to the degradation of ($CBOD_5$ and NH_3-N for DO) and (NH_3-N for NH_3-N), and compares calculated instream concentrations for each parameter to the corresponding water quality criteria. The WQM 7.0 model then calculates the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria.

The model was run using the latest information on Q7-10 stream flow, background water quality, average annual design flow, and other discharge characteristics. The existing technology based effluent limits for $CBOD_5$ (25 mg/l) and NH3-N (25 mg/l; BPJ) were used as inputs for the modeling. The DO minimum daily average criterion from §93.7 (5.0 mg/L for WWF) was used for the in-stream objective for the model. Given that this facility discharges to a WWF, the pH input will be 7.0 and the temperature input will be 25° C. The summary of the output is as follows:

Parameter	Effluent Limit		
	30 Day Average	Maximum	Minimum
$CBOD_5$	25	N/A	N/A
Ammonia-N	16.77	33.54	N/A
Dissolved Oxygen	N/A	N/A	3

The model does not recommend water-quality based effluent limitations with regards to $CBOD_5$ or dissolved oxygen. The model indicates that more stringent water quality based effluent limits are required for Ammonia-N. See the Development of Effluent Limitations section for further discussion. Refer to Appendix B for the WQM 7.0 inputs and results.

PENTOXSD for Windows Version 2.0d
PENTOXSD V2.0d is a single discharge wasteload allocation program for toxics that uses a mass-balance water quality analysis to determine recommended water quality-based effluent limits. The model incorporates consideration for mixing, first-order decay and other factors to computes a Wasteload Allocation (WLA) for each applicable criterion. Finally, the model determines a maximum water quality-based effluent limitation (WQBEL) for each parameter and outputs the more stringent of the WQBEL or the input concentration. The output of which is the recommends average monthly and maximum daily effluent limitations.

In order to determine which parameters are required to be analyzed in the PENTOXSD model, a Toxics Screening Analysis is used to identify toxic pollutants of concern. In this particular case, sampling for pollutant Groups 1 through 6 was submitted with the application. This is required by the application given the types of industrial users connected to the collection system. These values were input into the Toxics Screening Analysis v2.1 spreadsheet to determine if each pollutant was a candidate for PENTOXSD modeling (pollutant of concern). Refer to Appendix C for the Toxics Screening Analysis v2.1.

The Toxics Screening Analysis v2.1 determines pollutants of concern using the following logic:

- All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, that are greater than the most stringent applicable water quality criterion were considered to be pollutants of concern.
- Also, where the maximum reported value in an application for a pollutant is less than the detection limit using the most sensitive analytical method listed in Chapter 16, the parameter is not a parameter of concern, even if the maximum reported value exceeds the applicable Chapter 93 criterion.
- Where the maximum reported values in an application for a parameter is less than the detection limit for some analytical method other than the most sensitive analytical method listed in Chapter 16, the parameter is a pollutant of concern if the maximum reported value exceeds the Chapter 93 criterion, even if the value is reported as “non-detect.”

The PENTOXSD model was then run for all parameters of concern to evaluate reasonable potential (RP) for other toxic pollutants to cause an excursion above water quality standards. See Appendix D for the PENTOXSD model input/output. The most stringent WQBEL recommended by the model was then entered back into the same Toxics Screening Analysis v2.1 spreadsheet in order to determine which action to take regarding the pollutant. The permit recommendations of Monitor, Establish Limits, or to take no action (-) are established in the Toxics Screening Analysis v2.1 spreadsheet for each pollutant based off of the following logic:

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

A “Reasonable Potential Analysis” (See Appendix C) determined that Total Copper is candidate for monitoring.

Parameter	Effluent Limit (µg/l)	Governing Criterion	Max Daily Limit (µg/l)	WQBEL (µg/l)	WQBEL Criterion	Permit Recommendation
Total Copper	10	INPUT	15.602	29.312	AFC	Monitor

Comments: Since the applicants and their laboratories did not achieve QLs that achieve or approach the lowest Detection Limits identified in 25 Pa. Code Chapter 16, Tables 2A and 2B, the initial results indicated a finding of “reasonable potential” to exceed water quality standards and the establishment of effluent limitations and/or monitoring requirements for Total Antimony, Total Cadmium, Hexavalent Chromium, and Total Thallium as well. However, the Department permitted the applicant to re-test for these pollutants to the QL concentrations, which revealed that no reasonable potential exists for these pollutants.

Best Professional Judgement (BPJ) Limitations

See Dissolved Oxygen and toxics sections below.

Comments: None.

Additional Considerations
None

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 the abovementioned 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) and/or BPJ.

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

Discharge Parameter	Limitations*							
	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Monthly Average	Daily Maximum	Minimum	Average Monthly	Average Weekly	Instantaneous Maximum	Minimum Frequency	Sample Type
Flow (MGD)	Report	Report					Continuous	Meter
C-BOD_5	875	1400		25	40	50	2/ Week	24-Hr Comp
BOD_5 Raw Sewage Influent	Report	Report		Report			2/ Week	24-Hr Comp
TSS	1050	1575		30	45	60	2/ Week	24-Hr Comp
TSS Raw Sewage Influent	Report	Report		Report			2/ Week	24-Hr Comp
UV Transmittance (%)			Report				1/ Day	Meter
TRC				0.3		1.0	1/ Day**	Grab
NH3-N (5/1 – 10/31)	585	875		16	25	33	2/ Week	24-Hr Comp
NH3-N (11/1 – 4/30)	Report	Report		Report	Report	Report	2/ Week	24-Hr Comp
D.O.			5.0				1/ Day	Grab
pH (Std. Units)			6.0			9.0	1/ Day	Grab
Fecal Coliforms(5/1-9/30)	200 colonies/100 ml as a geometric mean					1,000	2/ Week	Grab
Fecal Coliforms (10/1-4/30)	2,000 colonies/100 ml as a geometric mean					10,000		
Total Copper (µg/l)	Report	Report		Report	Report		1/ Week	24-Hr Comp

*The proposed effluent limits for Outfall 001 were based on a design flow of 4.2 MGD.
**When utilizing back-up chlorine disinfection system.

Flow
The existing monitoring frequency (Continuous) and sample type (Meter) for Flow correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3. This monitoring remains consistent with other major sewage dischargers and is appropriate for this facility.

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)
The results of the WQM 7.0 model show that the previously applied secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for $CBOD_5$ are protective of water quality. The associated mass-based limits (lbs/day) were based on the formula: design flow (average annual) (MGD) x concentration limit (mg/L) at design flow x conversion factor (8.34). These limits were then rounded down to the nearest 5.0 in accordance with the rounding rules established in the *Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001)*, Chapter 5 - Specifying Effluent Limitations in NPDES Permits. The existing monitoring frequency (2/ Week) and sample type (24-hr composite) for $CBOD_5$ correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3 and will remain.

Total Suspended Solids (TSS)
The previously applied technology based secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for TSS will remain as well. The associated mass-based limits (lbs/day) were based on the formula: design flow (average annual) (MGD) x concentration limit (mg/L) at design flow x conversion factor (8.34). These limits were then rounded down to the nearest 5.0 in accordance with the rounding rules established in the *Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001)*, Chapter 5 - Specifying Effluent Limitations in NPDES Permits. The existing monitoring frequency (2/ Week) and sample type (24-hr composite) for TSS correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3 and will remain.

pH
CFR Title 40 §133.102(c) and 25 PA Code §95.2(1) provide the basis of effluent limitations for pH. The existing monitoring frequency (Daily) and sample type (grab) for pH correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3 and will remain.

Fecal Coliforms
The existing fecal coliform limits with I-max limits were updated from the previous Chapter 92 code to correspond with what is specified in the updated 25 PA Code § 92a.47 (a)(4)&(5). The existing monitoring frequency (2/ Week) and sample type (grab) for Fecal Coliforms correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3 and will remain.

U.V. Transmittance
The existing requirement for monitoring of UV Transmittance percentage is appropriate for this facility and consistent with permits issued throughout the region. The facility currently utilizes a meter for this monitoring and the sample type (Meter) is appropriate. The existing monitoring frequency (Daily) correspond with the TRC (disinfection) requirements found in the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3 and will remain.

Ammonia-Nitrogen (NH_3-N)
Previous reviews modeled this discharge at the Susquehanna River, which was considered the point of first use given that Shamokin Creek is impaired due to AMD. However, given that aquatic life is present at this outfall and the surrounding area, there is a TMDL that is addressing these AMD impacts, and it is anticipated that the water quality of this receiving stream will continue to improve, the discharge point on Shamokin Creek must be considered the point of first use. BPJ dictates that 25 PA Code §95.5 would not be applicable for this discharge. The results of the WQM 7.0 model, using Shamokin Creek as the point of first use, indicate that water quality based effluent limits will be required. In accordance with the *Implementation Guidance of Section 93.7 Ammonia Criteria* (391-2000-013), a seasonal multiplier of 3 times the summer limits shall be applied to obtain the winter limits. Given that these winter limits shall be significantly higher than the typical influent concentrations for Ammonia-N, only monitoring for this parameter shall be required. The associated mass-based limits (lbs/day) were based on the formula: design flow (average annual) (MGD) x concentration limit (mg/L) at design flow x conversion factor (8.34). These limits were then rounded down to the nearest 5.0 in accordance with the rounding rules established in the *Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001)*, Chapter 5 - Specifying Effluent Limitations in NPDES Permits. A monitoring frequency (2/ Week) and sample type (24-hr. Composite) for NH3-N will be implemented to correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3.

Total Residual Chlorine (TRC)
Given that the Sunbury WWTF utilizes chlorine disinfection as a back-up, a TRC model evaluation was conducted by using the technology-based effluent limitations recommended as input. (See Appendix F for the spreadsheet results.) In accordance with 25 Pa. Code § 92a.48(b)(2), a value of 0.5 mg/l (which was also the existing limit) was used in the evaluation given that the facility utilizes an hypochlorite disinfection system which has a relatively high degree of control. This effluent limit for TRC of 0.5 mg/l constitutes BAT. The attached TRC model indicates that the existing water technology based effluent limits are not protective of water quality and more stringent effluent limits of 0.3 mg/L (Average Monthly) and 1.0 mg/L (Instantaneous Maximum) will be required. This analysis was conducted previously using the Susquehanna River and the point of first use. As indicated in the abovementioned Ammonia-N section, Shamokin Creek will be used as the point of first use and these limits will be appropriate. The existing monitoring frequency (Daily) and sample type (grab) for TRC correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3 and will remain.

Dissolved Oxygen (DO)
The results of the WQM 7.0 model, a discharge of effluent from this facility with a DO concentration of 3 mg/l would not result in an exceedance of water quality requirements for this stream. However, in accordance with 25 PA Code §93.7, a minimum DO concentration of 5.0 mg/L shall be applied for WWFs. This is a BPJ determination which will prevent localized areas of depressed DO and is consistent with permitted sewage facilities throughout the region. A sample type (Grab) and monitoring frequency (1/ Day) for DO will be implemented to correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3.

Influent BOD_5 and TSS
Per discussions with EPA, raw sewage influent monitoring for BOD_5 and TSS were added to all POTW permits. This will further enable the ability to monitor the percent removal of each parameter as stipulated in section 2 of the Part A conditions and maintain records of the BOD_5 loading as required by 25 Pa. Code Chapter 94. Also, the monitoring frequencies and sample types will be identical to the effluent sampling.

Total Copper
Based on the Reasonable Potential Analysis, monitoring will be established for Total Copper will be required. The sample type (24-hr Composite) and monitoring frequency (1/ Week) corresponds to the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-4.

All of the limits proposed above are consistent with other permits issued for major wastewater treatment plants in the region.

Compliance Sampling Location: Chlorine Contact Tank

Other Comments: None.

Stormwater Requirements

The industrial activities associated with Sunbury's WWTP are identified in 40 CFR 122.26(b)(14)(ix) and thus the facility required to obtain an NPDES permit to discharge stormwater into waters of the Commonwealth of Pennsylvania. The facility is classified under SIC Code 4952- Sewerage Systems. Establishments primarily engaged in the collection and disposal of wastes conducted through a sewer system, including such treatment processes as may be provided. SIC code major group 4952 is under the coverage of Appendix J. For that reason, General Stormwater (PAG-03) Appendix J Monitoring Requirements and Best Management Practices (BMPs) have been assigned.

Part C of the permit will contain following requirements for this stormwater facility:

1. Applicable Discharges
2. Preparedness, Prevention and Contingency (PPC) Plan
3. Minimum Required BMPs
4. Annual Inspection and Compliance Evaluation
5. Stormwater Sampling Requirements

The following Minimum Required Best Management Practices (BMPs) for all POTWs will be included in the permit for the permittee to implement:

1. Manage sludge in accordance with all applicable permit requirements.

2. Store chemicals in secure areas on impervious surfaces away from storm drains.
3. For new facilities and upgrades, design wastewater treatment facilities to avoid, to the maximum extent practicable, stormwater commingling with sanitary wastewater, sewage sludge, and biosolids.
4. Efficiently use herbicides for weed control. Where practicable, use the least toxic herbicide that will achieve pest management objectives. Do not apply during windy conditions.
5. Do not wash parts or equipment over impervious surfaces that wash into storm drains.
6. Implement infiltration techniques, including infiltration basins, trenches, dry wells, porous pavement, etc., wherever practicable.

Appendices

Sunbury Appendices

Tools and References Used to Develop Permit	
☒	Q7-10 Analysis and Stream Data (see Appendix **A**)
☒	WQM 7.0 Model Input/Output (see Appendix **B**)
☒	Toxics Screening Analysis v2.1 (see Appendix **C**)
☒	PENTOXSD v2.0d Model Input/Output (see Appendix **D**)
☒	Facility Map and Schematic (see Appendix **E**)
☒	TRC Evaluation Spreadsheet (see Appendix **F**)
☒	WETT Spreadsheet (see Appendix **G**)
☒	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.
☒	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.
☒	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 Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☒	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.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.