pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0030970**
Facility Type	**Non-Municipal**	APS ID	**1032016**
Major / Minor	**Minor**	Authorization ID	**1342661**

Applicant and Facility Information

Applicant Name	**PA State System Of Higher Ed Cheyney University**	Facility Name	**Cheyney University Of PA**
Applicant Address	PO Box 200 1837 University Circle Cheyney, PA 19319-0200	Facility Address	1837 University Circle Creek Road & Cheyney Road Cheyney, PA 19319
Applicant Contact	James Lewis	Facility Contact	James Lewis
Applicant Phone	(610) 399-2092	Facility Phone	(610) 399-2092
Client ID	209276	Site ID	452780
Ch 94 Load Status	Not Overloaded	Municipality	Thornbury Township
Connection Status	No Limitations	County	Delaware
Date Application Received	February 10, 2021	EPA Waived?	Yes
Date Application Accepted	Not Applicable	If No, Reason	

Purpose of Application: Permit Renewal.

Summary of Review

The permittee submitted a renewal NPDES permit application for their treated effluent sewage discharge to Chester Creek through Outfall 001. The facility is a sewage treatment plant serving Cheyney University campus and a portion of a residential neighborhood. The previous Fact Sheet noted that 95 % of flow was from the University and 5% from Thornbury Township.

The facility consists of Influent Screening followed by the Influent Flow Equalization, which is then pumped to, and treated by, two parallel Sequencing Batch Reactors (SBR), Equalization, Effluent Filtration, Ultraviolet Disinfection, and finally discharge through the outfall. The SBR solids are wasted to an aerobic digester and two sludge holding tanks.

The limitations from the current permit are retained in this permit, as are the monitoring frequencies and sample type. Monitoring of E. coli was added to this renewal based on an updated SOP and code. E. coli will be monitored quarterly and will be grab sample which is already instituted at the facility. The influent sampling was continued in this permit as the facility serves part of a municipality. UV monitoring is continued in the permit as the facility is using UV disinfection (it was noted in the last Fact Sheet the facility switched from chlorine to UV prior to May 6, 2016).

Sludge use and disposal description and location(s): Hauled off-site

Act 14 Notifications:
Delaware County Received February 18, 2021
Thornbury Township Received February 6, 2021

Proposed Part C Conditions:

- No Stormwater

Approve	Deny	Signatures	Date
X		Harmonie Hawley, PhD, PE / Environmental Engineering Specialist /s/	May 3, 2021
X		Pravin C. Patel, P.E. / Environmental Engineer Manager /s/	05/04/2021

Summary of Review

- Acquire Necessary Property Rights
- Proper Sludge Disposal
- Abandon STP When Municipal Sewers Available
- Notification of Designation of the Responsible Operator
- Remedial Measures if Unsatisfactory Effluent
- I-Max Requirements
- Solids Management

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)	.27
Latitude	39º 55' 45.78"	Longitude	-75º 31' 30.52"
Quad Name	West Chester	Quad Code	1941
Wastewater Description:	Sewage Effluent		

Receiving Waters	Chester Creek (TSF, MF)	Stream Code	00604
NHD Com ID	25621342	RMI	14.7
Drainage Area	21	Yield (cfs/mi^2)	0.23
Q_{7-10} Flow (cfs)	4.74	Q_{7-10} Basis	PA StreamStats
Elevation (ft)	248	Slope (ft/ft)	0.00296
Watershed No.	3-G	Chapter 93 Class.	TSF, MF
Existing Use	Recreational/ Aquatic Life	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	Cause Unknown, Flow Regime Modification, Siltation		
Source(s) of Impairment	Urban Runoff/Storm Sewers		
TMDL Status	None	Name	None

Background/Ambient Data		Data Source
pH (SU)	7	TRG WQM (391-2000-007 default data)
Temperature (°F)	68 (20 °C)	TRG WQM (391-2000-007 default data)
Hardness (mg/L)	100	Toxics Analysis Spreadsheet default
Other:	N/A	None

Nearest Downstream Public Water Supply Intake		Aqua PA Main Stem Crum Creek	
PWS Waters	Chester Creek	Flow at Intake (cfs)	30.9
PWS RMI	7.1	Distance from Outfall (mi)	7.7

Changes Since Last Permit Issuance: None

Other Comments: None

Treatment Facility Summary

Treatment Facility Name: Cheyney University STP

WQM Permit No.	Issuance Date
2312403	June 28, 2012

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Sequencing Batch Reactor W/Sol Removal	Ultraviolet	0.27

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.27	540	Not Overloaded	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance: None

Other Comments: None

Compliance History

DMR Data for Outfall 001 (from March 1, 2020 to February 28, 2021)

Parameter	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20
Flow (MGD) Average Monthly	0.065	0.047	0.043	0.049	0.046	0.045	0.047	0.028	0.032	0.0423	0.0443	0.0432
pH (S.U.) Instantaneous Minimum	6.9	7.5	7.2	7.3	7.1	7.2	7.2	7.2	7.1	6.6	6.43	6.19
pH (S.U.) Instantaneous Maximum	7.8	7.8	7.9	7.7	7.7	7.9	8.0	7.9	8.4	7.7	7.01	7.24
DO (mg/L) Instantaneous Minimum	8.6	9.4	7.2	7.1	6.9	5.9	4.4	6.4	7.0	7.4	7.27	8.18
CBOD5 (lbs/day) Average Monthly	< 1.2	< 0.8	< 1.5	< 0.9	< 1.0	< 1.2	< 3.5	< 0.5	< 0.6	< 0.9	1.1	1.0
CBOD5 (mg/L) Average Monthly	< 2	< 2	< 4	< 2	< 2	< 3	< 8	< 2	< 2.0	< 2	3.1	2.2
CBOD5 (mg/L) Influent Average Monthly	65.4	50.8	34	46.1	50.3	53.9	273.4	10.7	13.1	10	19.2	38.6
CBOD5 (mg/L) Influent Instantaneous Maximum	119	140	66.7	87.1	69.3	78.2	771.0	12.9	27.2	15	44.4	98.2
TSS (lbs/day) Average Monthly	< 0.9	< 0.5	< 0.6	0.4	< 1.1	0.8	< 0.5	< 2.0	< 1.0	2.4	2.4	4.7
TSS (mg/L) Average Monthly	< 1.5	< 1.3	< 1.6	1.0	< 2.8	2.2	< 1.0	< 1.0	< 4.6	6	6.7	10.9
TSS (mg/L) Influent Average Monthly	86.8	39.5	45.4	115	109.3	106.2	46.0	16.8	16.2	26	87.3	105
TSS (mg/L) Influent Instantaneous Maximum	99.0	60	64	187	116	123.0	100.0	37	25.0	41	130	230
Fecal Coliform (No./100 ml) Geometric Mean	< 3	< 2	< 2	< 2	< 2	< 2	< 10	< 2	< 2.0	< 2	1	< 1

Fecal Coliform (No./100 ml) Instantaneous Maximum	18	< 2	< 2	< 2	< 2	< 2	700	< 2	< 2.0	< 2	1	< 1
UV Intensity (mW/cm²) Average Monthly	474.6	532.5	584.5	352.7	239.4	354.0	299	401.5	447.5	352.4	385.6	224.24
Total Nitrogen (mg/L) Average Monthly	< 12.15	< 5.0	< 5.58	< 14.32	17.45	< 17.78	< 9.59	< 9.04	< 8.30	< 10.0	12.5	15.36
Total Nitrogen (mg/L) Instantaneous Maximum	13.54	< 6.12	< 7.06	16.00	19.04	20.14	< 16.70	< 10.50	< 8.62	12.9	12.7	18.83
Ammonia (lbs/day) Average Monthly	< 0.56	< 0.04	< 0.06	< 0.04	< 0.21	< 0.04	< 0.05	< 0.02	< 0.04	< 0.04	0.2	0.2
Ammonia (mg/L) Average Monthly	< 1.0	< 0.10	< 0.2	< 0.1	< 0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5
Total Phosphorus (lbs/day) Average Monthly	0.19	< 0.04	0.08	0.43	0.35	0.06	0.04	< 0.01	< 0.02	0.06	0.03	0.06
Total Phosphorus (mg/L) Average Monthly	0.3	< 0.10	0.2	1.0	0.7	0.2	0.1	< 0.1	< 0.10	0.12	0.1	0.13
Total Copper (mg/L) Average Monthly	0.0165	< 0.0323	< 0.0100	< 0.0110	< 0.0100	< 0.0102	< 0.01	< 0.0100	< 0.0106	0.011	0.01	0.01
Total Copper (mg/L) Instantaneous Maximum	0.0190	0.0800	< 0.0100	0.0130	< 0.0100	0.0110	< 0.0100	< 0.0100	0.0130	0.011	0.01	0.02

Compliance History

Effluent Violations for Outfall 001, from: April 1, 2020 To: February 28, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
DO	08/31/20	Inst Min	4.4	mg/L	5.0	mg/L

Summary of Inspections: The most recent Inspection was on 11/05/2020 with Violations noted (failure to use NIST thermometer; failure to maintain proper sample temperature).

Other Comments: No Open Violations were found for the site on April 27, 2021; an Open Violation for the client was found for failure to submit PAG130025 renewal application.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .27
Latitude 39º 55' 45.78" **Longitude** -75º 31' 30.52"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: TSS, pH, and fecal coliform are retained from the current permit and are consistent with the above references. Chlorine is not used for disinfection so there are no limitations for TRC; however, monitoring of the UV system is retained in this renewal. In addition to the above listed parameters, monitoring for Total Nitrogen is standard practice and is retained in this permit (SOP No. BCW-PMT-033 based on Chapter 92a.61). The facility has no industrial users.

E. coli was added to the permit with a sampling frequency of once per quarter per SOP No. BCW-PMT-033 based on Chapter 92a.61.

Water Quality-Based Limitations

A “Reasonable Potential Analysis” (Attachment A) determined the following parameters were candidates for limitations: Total Copper

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

Parameter	Limit (mg/l)	SBC	Model
Total Copper	Report	1/week	TMS

Comments: The WQM model was run and the results are shown in Attachment B. The limitations for CBOD5, NH3-N, and DO were the same as the current permit and will be retained in this permit. Seasonal limits for ammonia-nitrogen are continued in the renewal. The Total Dissolved Solids are under 1,000 mg/l so monitoring is not added to this permit. The limits for Total Phosphorus are retained in this permit. There is a DRBC docket, number D-78-43CP, however it does not provide any effluent limitations.

Best Professional Judgment (BPJ) Limitations

Comments: Total Phosphorous limits are retained in the permit.

Anti-Backsliding

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 technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	Continuous	Recorded
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
CBOD5 Influent	XXX	XXX	XXX	Report	XXX	Report	1/week	24-Hr Composite
CBOD5	56.3	XXX	XXX	25	XXX	50	1/week	24-Hr Composite
TSS Influent	XXX	XXX	XXX	Report	XXX	Report	1/week	24-Hr Composite
TSS	67.6	XXX	XXX	30	XXX	60	1/week	24-Hr Composite
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab
UV Intensity (mW/cm²)	XXX	XXX	XXX	Report	XXX	XXX	1/day	Metered
Total Nitrogen	XXX	XXX	XXX	Report	XXX	Report	1/week	24-Hr Composite
Ammonia Nov 1 - Apr 30	16.8	XXX	XXX	7.5	XXX	15	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	5.6	XXX	XXX	2.5	XXX	5	1/week	24-Hr Composite

Outfall 001, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Phosphorus Nov 1 - Mar 31	4.5	XXX	XXX	2.0	XXX	4	1/week	24-Hr Composite
Total Phosphorus Apr 1 - Oct 31	2.3	XXX	XXX	1.0	XXX	2	1/week	24-Hr Composite
Total Copper	XXX	XXX	XXX	Report	XXX	Report	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 001

Other Comments: None

Attachment A: TMS

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: Cheyney University | NPDES Permit No.: PA0030970 | Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste | Wastewater Description: Municipal

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.27	100	7						

	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc (0 if left blank)	Stream Conc (0 if left blank)	Daily CV (0.5 if left blank)	Hourly CV (0.5 if left blank)	Stream CV (0 if left blank)	Fate Coeff (0 if left blank)	FOS (0 if left blank)	Criteria Mod (1 if left blank)	Chem Transl (1 if left blank)
Group 1	Total Dissolved Solids (PWS)	mg/L		337									
	Chloride (PWS)	mg/L		97.4									
	Bromide	mg/L	<	0.12									
	Sulfate (PWS)	mg/L		42.7									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L											
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L		20									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L											
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L											
	Total Silver	µg/L											
	Total Thallium	µg/L											
	Total Zinc	µg/L		15									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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

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

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Cheyney University, NPDES Permit No. PA0030970, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: Chester Creek

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	000604	14.7	248	21			Yes
End of Reach 1	000604	13.1	223	24.3			Yes

Q_{7-10}

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	14.7	0.1	4.74									100	7		
End of Reach 1	13.1	0.1	5.71												

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	14.7														
End of Reach 1	13.1														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Cheyney University, NPDES Permit No. PA0030970, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ *AFC* CCT (min): 15 PMF: 0.641 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	13.439	14.0	116	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	676	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	992	Chem Translator of 0.978 applied

☑ *CFC* CCT (min): 36.490 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	8.956	9.33	115	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	39.3	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	1,480	Chem Translator of 0.986 applied

☑ *THH* CCT (min): 36.490 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	

Total Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 13.321 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Copper	Report	Report	Report	Report	Report	µg/L	74.3	AFC	Discharge Conc > 10% WQBEL (no RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Lead	N/A	N/A	Discharge Conc < TQL
Total Zinc	636	µg/L	Discharge Conc ≤ 10% WQBEL

Attachment B: WQM

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
03G	604	EAST BRANCH CHESTER CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
14.700	Cheyney Univers	PA0030970	0.270	CBOD5	25		
				NH3-N	2.5	5	
				Dissolved Oxygen			5

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
03G	604	EAST BRANCH CHESTER CREEK	14.700	248.00	21.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	4.74	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Cheyney Univers	PA0030970	0.2700	0.2700	0.2700	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	2.50	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
03G	604	EAST BRANCH CHESTER CREEK	13.100	223.00	24.30	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	5.71	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
03G	604	EAST BRANCH CHESTER CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
14.700	4.74	0.00	4.74	.4177	0.00296	.66	30.31	45.95	0.26	0.379	20.40	7.00
Q1-10 Flow												
14.700	3.03	0.00	3.03	.4177	0.00296	NA	NA	NA	0.21	0.475	20.61	7.00
Q30-10 Flow												
14.700	6.45	0.00	6.45	.4177	0.00296	NA	NA	NA	0.30	0.323	20.30	7.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
03G	604	EAST BRANCH CHESTER CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
14.700	0.270	20.405	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
30.309	0.660	45.949	0.258
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.86	0.678	0.20	0.722
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.980	7.324	Tsivoglou	6
Reach Travel Time (days)			
0.379			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.038	3.76	0.20	8.10
0.076	3.67	0.19	8.18
0.114	3.57	0.19	8.18
0.152	3.48	0.18	8.18
0.190	3.39	0.18	8.18
0.227	3.30	0.17	8.18
0.265	3.22	0.17	8.18
0.303	3.13	0.16	8.18
0.341	3.05	0.16	8.18
0.379	2.97	0.15	8.18

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
03G	604	EAST BRANCH CHESTER CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
14.700	Cheyney Univers	9.26	5	9.26	5	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
14.700	Cheyney Univers	1.88	2.5	1.88	2.5	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
14.70	Cheyney Univers	25	25	2.5	2.5	5	5	0	0