pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0110582**
Facility Type	**Municipal**	APS ID	**1010430**
Major / Minor	**Major**	Authorization ID	**1303765**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Eastern Snyder County Regional Authority**	Facility Name	**ESCRA WWTF**
Applicant Address	P.O. Box 330	Facility Address	870 South Front Street
	Selinsgrove, PA 17870-0330		Selinsgrove, PA 17870
Applicant Contact	Greg Pysher	Facility Contact	Greg Pysher
Applicant Phone	570-374-1173	Facility Phone	570-374-1173
Client ID	44901	Site ID	257553
Ch 94 Load Status	Not Overloaded	Municipality	Penn Township
Connection Status	No Limitations	County	Snyder
Date Application Received	January 29, 2020	EPA Waived?	No
Date Application Accepted	February 10, 2020	If No, Reason	Major Facility, Significant CB Discharge
Purpose of Application	Renewal of major NPDES permit		

Summary of Review

INTRODUCTION

The Department has drafted this NPDES permit renewal for the Eastern Snyder County Regional Authority (ESCRA).

APPLICATION

Gannett Fleming Inc., the engineering consultant, submitted the NPDES Application for Individual Permit to Discharge Sewage Effluent for Major Sewage Facilities (DEP #3800-PM-BCW0009b) on behalf of ESCRA. This application was received by the Department on January 29, 2020 and considered administratively complete on February 10, 2020. Greg Pysher, Authority Manager, is both the client and site contact for this application. His additional contact information is (fax) 570-374-6078 and (email) ESCRA@verizon.net. The engineering consultant is David J. Gryger, PE, Project Engineer with Gannett Fleming, Inc of Camp Hill, PA. His contact information is (phone) 717-886-5382, (fax) 717-763-1808 and (email) dgryger@gfnet.com.

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.

The case file, permit application package and draft permit will be available for public review at Department's Northcentral Regional Office. The address for this office is 208 West Third Street, Suite 101, Williamsport, PA 17701. An appointment can be made to review these materials during the comment period by calling the file coordinator at 570-327-3636.

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Approve	Return	Deny	Signatures	Date
X			Jeffrey J. Gocek, EIT — Project Manager	01/05/2022
X			Nicholas W. Hartranft, PE — Environmental Engineer Manager	01/05/2022

DISCHARGE, RECEIVING WATERS AND WATER SUPPLY INFORMATION

Outfall No.	001	Design Flow (MGD)	2.0 (see narrative below)
Latitude	40º 46' 52.82"	Longitude	-76º 51' 31.65"
Quad Name	Sunbury, PA	Quad Code	1231
Wastewater Description:	Sewage Effluent		
Receiving Waters	Susquehanna River (WWF)	Stream Code	18668
NHD Com ID	54965823	RMI	118
Drainage Area (mi^2)	18,400	Yield (cfs/mi^2)	N/A
Q_{7-10} Flow (cfs)	2,000.8	Q_{7-10} Basis	USGS Gage #01554000
Elevation (ft)	410	Slope (ft/ft)	N/A
Watershed No.	6-A	Chapter 93 Class.	WWF, MF
Existing Use	None	Existing Use Qualifier	None
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired (Fish Consumption)		
Cause(s) of Impairment	Polychlorinated Biphenyls (PCBs)		
Source(s) of Impairment	Unknown		
TMDL Status	Pending	Name	N/A
Nearest Downstream Public Water Supply Intake	United Water Pennsylvania		
PWS Waters	Susquehanna River	Distance from Outfall (mi)	40.0

$Q_{7,10}$ DETERMINATION

The $Q_{7,10}$ is the lowest seven consecutive days of flow in a 10-year period and is used for modeling wastewater treatment plant discharges. 25 PA § 96.1 defines $Q_{7,10}$ as "*the actual or estimated lowest 7 consecutive day average flow that occurs once in 10 years for a stream with unregulated flow, or the estimated minimum flow for a stream with regulated flow*".

A stream gage upstream of the existing discharge, "Susquehanna River at Sunbury, PA" (USGS #01554000) was selected as a reference gage. A $Q_{7,10}$ flow for that gage (22.0 CFS) was obtained from *Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania* (USGS Open Files Report 2011-1070). The drainage area at the point of discharge (18,400 mi^2) was calculated by the *USGS Pennsylvania StreamStats* application. Knowing the drainage area at the discharge and both the drainage area (18,300 mi^2) and $Q_{7,10}$ (1,990 CFS) at the reference gage, the $Q_{7,10}$ at the discharge was calculated to be 2,000.87 CFS.

See Attachment 01 for the $Q_{7,10}$ determination.

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TREATMENT FACILITY

ESCRA operates a wastewater treatment facility (WWTF) serving Hummels Wharf, a Census Designated Place (32% of the flow), Penn Township (27%), Selinsgrove Borough (27%) and Shamokin Dam Borough (13%).

See Attachment 02 for a map of the WWTF location.

This WWTF consists of an influent screen, a comminutor, distribution box #1, two primary clarifiers, distribution box #2, four Vertical Loop Reactors (VLRs) for Biological Nutrient Removal (BNR), distribution box #3 (with Ferric Chloride addition for Total Phosphorus removal), two secondary clarifiers, gaseous chlorine injection, and two chlorine contact tanks. Solids are treated in two anaerobic digesters and later with two belt filter presses. Ferric chloride is used as a coagulant and is fed just prior to the secondary clarifiers.

See Attachment 03 for the treatment process flow diagram. See Attachment 04 for a site layout diagram.

The WWTF characteristics are as follows.

Waste Type	Degree of Treatment	Process Type	Disinfection	Average Annual Flow (MGD)
Sewage	Secondary with P Reduction	Activated Sludge	Gas Chlorine	2.0
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
7.0	7,000	Not Overloaded	Anaerobic Digestion	Class B/Landfill

Dewatered anaerobically stabilized Class B biosolids are produced in accordance with 25 PA § 271.932(b)(3). Sludge is disposed of at the Lycoming County Resources Management Landfill.

The annual average flows of the three years prior to application submission were 1.834 MGD (2018), 0.965 MGD (2017) and 1.093 MGD (2016). The highest monthly average flow for the previous year was 2.095 MGD, which occurred in November 2018. The highest peak instantaneous flow for that year was 2.899 MGD.

The most recent wastewater treatment upgrades were authorized by Water Quality Management (WQM) permit amendment #5503402 A-1, issued January 22, 2020. This amendment involved replacing equipment which had exceeded its useful life and providing better flood protection to the WWTF. The original permit, which authorized the installation of the VLR system, was issued in 2003. During the issuance of this 2020 permit, the Department was notified by the consultant that the true hydraulic capacity of this WWTF is 7.0 MGD, limited by the capacity of the main pumping station. An organic capacity rerate was approved in 2013 by WQM #5508403-A1, increasing the plant organic capacity to 7,000 pounds BOD_5 per day. The hydraulic capacity of 2.0 MGD was not changed at that time.

COMPLIANCE HISTORY

The WMS Query *Open Violations for Client by Permit Number* revealed no open violations for the ESCRA.

The most recent Department Compliance Evaluation Inspection (CEI), was conducted April 22, 2021. At the time of the inspection, all required treatment units were online and operational. The plant effluent was clear with a pH of 7.70, a Total Chlorine Residual (TCR) of 0.26 mg/L and a Dissolved Oxygen (DO) concentration of 10 mg/L. No violations were identified or noted during the inspection.

A Chesapeake Bay (CBAY) inspection was last performed October 28, 2020. During the 2019-2020 Water Year, the ESCRA did not exceed nutrient caploads. No violations were identified or noted during the inspection.

Recent Discharge Monitoring Report (DMR) data, from November 2020 to October 2021, is presented in the table below.

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Parameter	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20
Flow (MGD) Average Monthly	1.6916	2.2269	1.2902	1.1395	0.9983	1.2066	1.4606	1.6732	1.4271	1.2675	1.4001	1.1165
Flow (MGD) Daily Maximum	2.6803	6.3135	4.78	1.6458	1.1045	1.6777	2.4127	2.7937	2.929	1.6978	5.3253	1.6066
pH (S.U.) Minimum	7.42	7.07	7.33	7.36	7.42	7.28	7.25	7.14	7.18	6.87	6.73	7.25
pH (S.U.) Maximum	7.97	7.79	7.86	7.78	8.1	7.66	8.15	7.61	7.62	7.67	7.51	7.66
DO (mg/L) Minimum	4.61	1.03	2.85	4.99	8.37	8.33	6.0	6.8	5.66	9.62	4.19	8.54
TRC (mg/L) Average Monthly	0.4	0.45	0.41	0.40	0.41	0.27	0.23	0.25	0.25	0.28	0.28	0.23
TRC (mg/L) Instantaneous Maximum	0.59	0.79	0.75	0.63	0.72	0.45	0.36	0.41	0.42	0.47	0.43	0.40
CBOD5 (lbs/day) Average Monthly	< 53	< 79	< 42	< 37	< 33	< 39	< 48	< 57	< 47	< 41	< 61	< 37
CBOD5 (lbs/day) Weekly Average	< 62	< 131	< 59	< 40	< 34	< 44	< 56	< 70	< 58	< 48	< 158	< 39
CBOD5 (mg/L) Average Monthly	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
CBOD5 (mg/L) Weekly Average	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 5.0	< 4.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	2652	2240	1943	1941	1942	2066	2262	2124	2549	1959	2018	2216
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	3707	3068	2529	3034	2350	2371	2529	3009	3716	2317	3308	2963
BOD5 (mg/L) Raw Sewage Influent Average Monthly	202	140	195	211	235	212	192	156	233	190	196	246
TSS (lbs/day) Average Monthly	< 67	< 99	< 65	< 46	< 41	< 49	< 60	< 71	< 59	< 51	< 81	< 46
TSS (lbs/day) Raw Sewage Influent Average Monthly	3376	2391	1715	1893	1975	2137	2138	1800	2793	2227	1931	2746
TSS (lbs/day) Raw Sewage Influent Daily Maximum	4707	4158	2230	4630	2773	2680	2669	2716	6241	2932	4763	3930
TSS (lbs/day) Weekly Average	< 77	< 164	129	< 49	< 43	< 55	< 69	< 87	< 73	< 60	< 222	< 49
TSS (mg/L) Average Monthly	< 5.0	< 5.0	< 6.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
TSS (mg/L) Raw Sewage Influent Average Monthly	257	144	172	205	240	219	183	133	264	217	177	306
TSS (mg/L) Weekly Average	< 5.0	< 5.0	11	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 7.0	< 5.0
Fecal Coliform (CFU/100 ml) Geometric Mean	30	> 36	8.0	< 5.0	11	20	> 65	33	< 13	< 2.0	< 3	16
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	64	> 6000.0	102	65	120	90	> 1200	2375	80	18	32	113
Nitrate-Nitrite (mg/L) Average Monthly	4.64	4.76	5.62	5.39	5.05	7.1	4.52	3.78	5.84	6.87	9.18	9.37
Nitrate-Nitrite (lbs) Total Monthly	2016.4	1996.4	1678.3	1575.8	1281.8	2148.8	1624.9	1671.8	1756.7	2270	2520.4	2604
Total Nitrogen (mg/L) Average Monthly	< 6.268	< 7.035	< 7.073	< 7.309	< 6.44	< 8.05	6.53	10.67	11.79	9.65	< 9.97	< 10.56
Total Nitrogen (lbs) Effluent Net Total Monthly	< 2767.2	< 2952.6	< 2100.8	< 2169.8	< 1638.4	< 2443.1	2510.3	4745.3	3734.9	3171.3	< 2747.5	< 2934.7
Total Nitrogen (lbs) Total Monthly	< 2767.2	< 2952.6	< 2100.8	< 2169.8	< 1638.4	< 2443.1	2510.3	4745.3	3734.9	3171.3	< 2747.5	< 2934.7

Total Nitrogen (lbs) Effluent Net Total Annual		< 33643										
Total Nitrogen (lbs) Total Annual		< 33643										
Ammonia (lbs/day) Average Monthly	< 11	< 11	< 9.0	< 13	< 8.0	< 8.0	< 11	36	39	20	4.0	3.0
Ammonia (mg/L) Average Monthly	< 0.8	< 0.8	< 0.95	< 1.32	< 0.96	< 0.83	< 0.852	2.604	3.289	1.834	0.445	0.336
Ammonia (lbs) Total Monthly	< 350	< 337.5	< 272	< 413	< 245	< 253	< 329.1	1107	1101	615	139.2	95.0
Ammonia (lbs) Total Annual		< 5094										
TKN (mg/L) Average Monthly	< 1.596	< 2.185	< 1.41	< 1.731	< 1.33	< 0.81	1.99	6.89	5.95	2.75	< 0.75	< 1.19
TKN (lbs) Total Monthly	< 737.7	< 921.9	< 407.7	< 535.5	< 340.4	< 255.5	878.3	3073.5	1978.2	892.3	< 212	< 329.1
Total Phosphorus (lbs/day) Average Monthly	9.0	5.0	14	16	18	11	10	3.0	4.0	< 3.0	< 6.0	3.0
Total Phosphorus (mg/L) Average Monthly	0.67	0.36	1.51	1.7	2.15	1.15	0.82	0.23	0.36	< 0.3	< 0.68	0.35
Total Phosphorus (lbs) Effluent Net Total Monthly	282	148.9	427.7	491.7	548.1	344.5	293.3	98	112	< 96.5	< 190	98
Total Phosphorus (lbs) Total Monthly	282	148.9	428	492	548	344.5	293.3	98	112	< 96.5	< 190	98
Total Phosphorus (lbs) Effluent Net Total Annual		< 3106										
Total Phosphorus (lbs) Total Annual		< 3106										

The following are effluent limitation exceedances from December 2020 through October 2021.

Parameter	Date	SBC	DMR Value	Units	Limit Value
Fecal Coliform	04/30/21	Geo Mean	> 65	CFU/100 ml	2,000
Fecal Coliform	09/30/21	Geo Mean	> 36	CFU/100 ml	200
Fecal Coliform	04/30/21	IMAX	> 1,200	CFU/100 ml	10,000
Fecal Coliform	09/30/21	IMAX	> 6,000	CFU/100 ml	1,000

INDUSTRIAL USERS

The WWTF has four industrial users within the collection system. These users and associated flows, in gallons per day (GPD) are presented below.

Name	Industry	Categorical	Process Flow (GPD)	Total Flow (GPD)	Location
Kerrico	Maunfactures marble counter tops, basins, and showers	No	25	25	Selinsgrove
Farmland National Beef, LP	Process of beef and pork into case-ready packages	No	19,300	19,300	Monroe Township
PENNDOT Maintenance 3-5	Maintenance Buidling	No	Unknown	Unknown	Selinsgrove
Isle of Que	Local Brewery	No	100	355	Selinsgrove

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EXISTING LIMITATIONS

The following limitations were established at the permit issuance on July 17, 2015.

Discharge Parameter	Mass Limits (lb/day)		Concentration Limits (mg/L)				Monitoring Requirements	
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	IMAX	Minimum Measurement Frequency	Required Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
pH (SU)	XXX	XXX	6.0	XXX	XXX	9.0	1/Day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/Day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/Day	Grab
$CBOD_5$	417	667	XXX	25	40	50	2/Week	24 Hour Composite
BOD_5 INFLUENT	Report	Report	XXX	Report	XXX	XXX	2/Week	24 Hour Composite
Total Suspended Solids	500	750	XXX	30	45	60	2/Week	24 Hour Composite
TSS INFLUENT	Report	Report	XXX	Report	XXX	XXX	2/Week	24 Hour Composite
Fecal Coliform (CFU/100mL) (05/01-09/30)	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/Week	Grab
Fecal Coliform (CFU /100mL) (10/01-04/30)	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/Week	Grab
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	XXX	2/Week	24 Hour Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	2/Week	24 Hour Composite

Discharge Parameter	Mass Limits (lb/day)		Concentration Limits (mg/L)			Monitoring Requirements	
	Monthly	Annual	Minimum	Monthly Average	Maximum	Minimum Measurement Frequency	Required Sample Type
Ammonia-N	Report	Report	XXX	Report	XXX	2/Week	24 Hour Composite
Kjeldahl-N	Report	XXX	XXX	Report	XXX	2Week	24 Hour Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/Week	24 Hour Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/Month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	2/Week	24 Hour Composite
Net Total Nitrogen	Report	51,141	XXX	XXX	XXX	1/Month	Calculation
Net Total Phosphorus	Report	6,819	XXX	XXX	XXX	1/Month	Calculation

ESCRA was authorized to use 725 pounds per year as Total Nitrogen Offsets towards compliance with the Annual Net TN Mass load limitation.

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DEVELOPMENT OF EFFLUENT LIMITATIONS

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)

Total Residual Chlorine

The Department's TRC_CALC spreadsheet is a model used to evaluate Total Residual Chlorine (TRC) effluent limitations. This model determines applicable acute and chronic wasteload allocations (WLAs) for TRC based on the data supplied by the user and then compares the WLAs to the technology-based average monthly limit using the procedures described in the EPA Technical Support Document for Water Quality-Based Toxics Control.

This model recommended the following limitations.

Parameter	Effluent Limitations (mg/L)	
	Monthly Average	IMAX
Total Residual Chlorine	0.5	1.6

See Attachment 06 for the TRC_CALC model results.

Water Quality-Based Limitations

$CBOD_5$, NH_3-N and DO

WQM 7.0 for Windows (version 1.1) is a DEP computer model used to determine wasteload allocations and effluent limitations for $CBOD_5$, NH_3-N and DO for single and multiple point source discharge scenarios. This model simulates two basic processes. The NH_3-N module simulates the mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to the water quality criteria. The DO module simulates the mixing and consumption of DO in the stream due to degradation of $CBOD_5$ and NH_3-N and compares the calculated instream DO concentrations to the water quality criteria. The model then determines the highest pollutant loading the stream can assimilate and still meet water quality under design conditions.

This model recommended the following limitations.

Parameter	Effluent Limitations (mg/L)		
	30 Day Average	Maximum	Minimum
$CBOD_5$	25		
NH_3-N	25	50	
DO			3.0

See Attachment 05 for the WQM model output.

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Chesapeake Bay TMDL

Despite 25 years of extensive restoration efforts, the Chesapeake Bay Total Maximum Daily Load (TMDL) was prompted by insufficient progress and continued poor water quality in the Chesapeake Bay and its tidal tributaries. This TMDL, required by the Clean Water Act, is the largest ever developed by the Environmental Protection Agency (EPA). This document identifies the necessary pollution reductions of nitrogen, phosphorus and sediment across Delaware, Maryland, New York, Virginia, West Virginia, District of Columbia and Pennsylvania. It also sets pollution limits necessary to meet applicable water quality standards in the Bay, tidal rivers and embayments.

Pennsylvania explains how and when it will meet its pollution allocations in its Watershed Implementation Plan (WIP), which is incorporated into the TMDL. Pennsylvania's permitting strategy for significant dischargers has been outlined in the Phase I WIP and incorporated in the Phase III WIP by reference, and imposes Total Nitrogen (TN) and Total Phosphorus (TP) cap loads on the significant dischargers.

Because of the design flow of this facility, the Department considers this a Significant Sewage Discharger (Phase 1) for the purposes of implementing the Chesapeake Bay TMDL. The issuance of this permit which occurred January 11, 2008 included the establishment of annual caploads of 51,141 pounds per year TN and 6,189 pounds per year TP. Offsets of 725 pounds of TN per year were approved for compliance purposes at a past permit issuance, following the submission of proper documentation. This offset consists of 25 pounds per year TN for each retired Equivalent Dwelling Unit (EDU) connected to the collection system (29 EDUs).

The Phase III WIP calls for the continued monitoring of Ammonia-N, Kjeldahl-N, Nitrate-Nitrite as N, TN and TP.

The permit will contain a Part C condition for the Chesapeake Bay nutrient requirements. The permit will also contain a Part A footnote explaining the offsets.

Toxics Screening Analysis

As part of the application, ESCRA analyzed and submitted an effluent analysis for all parameters in Pollutant Groups (PG) 1 through 5.

Maximum pollutant concentrations, and non-detects (NDs) at Target QLs, for PG 1 and 2 were entered into the Department's Toxics Management Spreadsheet (TMS), which has since replaced both the TSA spreadsheet and PENTOXSD models used in the last renewal. The TMS is used to determine reasonable potential (RP) and calculate water quality-based effluent limitations (WQBELS) for discharges of toxic pollutants from a single discharge point. The TMS utilizes the following logic to assign either no action, effluent limitation or monitoring; 1. Establish average monthly, daily maximum and IMAX limits in the draft permit where the maximum reported concentration exceeds 50% of the WQBEL (RP is demonstrated), 2. Establish monitoring requirements for non-conservative pollutants where the maximum reported concentrations is between 25% to 50% of the WQBEL and 3. Establish monitoring requirements for conservative pollutants where the maximum reported concentration is between 10% to 50% of the WQBEL. Partial mix factors (PMFs) were obtained from the PENTOXSD modeling performed in 2014.

The TMS recommended the following monitoring and limitations.

	Mass Limits (lbs/day)		Concentration (ug/L)				
Pollutants	**AML**	**MDL**	**AML**	**MDL**	**IMAX**	**WQBEL**	**Basis**
Total Copper	Report	Report	Report	Report	Report	79.2	AFC
Benzo(a)Anthracene	0.003	0.005	0.19	0.3	0.48	0.19	CRL
Benzo(a)Pyrene	0.0003	0.0005	0.019	0.03	0.048	0.019	CRL
3,4-Benzofluoranthene	0.003	0.005	0.19	0.3	0.48	0.19	CRL
Dibenzo(a,h)Anthracene	0.0003	0.0005	0.019	0.03	0.048	0.019	CRL
Hexachlorobenzene	0.003	0.004	0.015	0.024	0.039	0.015	CRL
Indeno(1,2,3-cd)Pyrene	0.003	0.005	0.19	0.3	0.48	0.19	CRL
n-Nitrosodi-n-Propylamine	Report	Report	Report	Report	Report	0.96	CRL

In accordance with the Department Standard Operating Procedure (SOP) #BPNPSM-PMT-033, ESCRA can demonstrate through additional sampling during the draft permit comment period that these parameters, not normally found in POTW effluent, are not present in the wastewater and therefore eliminate the need for monitoring and limitations.

See Attachment 07 for the TMS Output.

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Best Professional Judgment (BPJ) Limitations

In the absence of applicable effluent guidelines for the discharge or pollutant, permit writers must identify and/or develop needed technology-based effluent limitations (TBELs) TBELs on a case-by-case basis, in accordance with the statutory factors specified in the Clean Water Act.

No BPJ limitations have been proposed for this draft.

Anti-Backsliding

In order to comply with 40 CFR § 122.44(l) (anti-backsliding requirements), the Department must issue a renewed permit with limitations as stringent as that the of the previous permit.

No less stringent limitations have been proposed for this draft.

DEVELOPMENT OF MONITORING

Influent Monitoring

In order to adequately characterize the influent wastewater, monitoring of influent Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS) will be continued at the current frequency of 2/Week. This is in accordance with Department procedure.

Dissolved Oxygen

This permit will require a monitoring requirement for Dissolved Oxygen (DO), to ensure that the effluent is well oxygenated at the point of discharge and the instream DO criteria is not violated.

Toxics Monitoring

As explained above, the Department's TMS model recommends monitoring for Total Copper and n-Nitrosodi-n-Propylamine.

E.coli

The Department is requiring the monitoring of Eschericia coli (E. coli), a pathogenic bacterium normally found in the intestines of healthy people and animals which is used as a fecal contamination indicator in freshwater ecosystems. Section 303(c)(1) of the Clean Water Act requires that Pennsylvania periodically review and revise water quality standards, if necessary. The 2017 triennial review final form rulemaking, published in 2020, has revised the Chapter 93 water quality standards regulations for bacteria to include E. coli. To further characterize fecal contamination of surface waters during the swimming season, the Department is requiring the quarterly reporting of effluent E. coli effluent values. In accordance with 25 PA § 92a.61, the Department may impose reasonable monitoring requirements on pollutants which could have impact on the quality of the Commonwealth's waters or the quality of waters in other states.

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WHOLE EFFLUENT TOXICITY TESTING

Whole Effluent Toxicity (WET) Testing is a measure of the aggregate toxic effect to aquatic organisms from all the pollutants in a facility's wastewater effluent. The WET test measures the wastewater's effect on the specific organisms' ability to survive, grow and reproduce.

For Outfall 001, **Chronic** WET Testing was completed annually. The dilution series used for the tests was: 100%, 60%, 30%, 2%, and 1%.

Summary of Four Most Recent Test Results - NOEC/LC50 Data Analysis

	***Ceriodaphnia* Results (% Effluent)**			***Pimephales* Results (% Effluent)**			
Test Date	**NOEC Survival**	**NOEC Reproduction**	**LC50**	**NOEC Survival**	**NOEC Growth**	**LC50**	**Pass? ***
2017	100	60	100	100	100	100	PASS
2018	100	100	100	100	100	100	PASS
2019	100	100	100	100	100	100	PASS
2020	100	100	100	100	100	100	PASS

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

The Target Instream Waste Concentration (TIWC) used for analysis of the results is: 2%.

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**

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO
Will WET limits be established in the permit? ☐ YES ☒ NO

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

Acute Partial Mix Factor (PMFa): **0.010** Chronic Partial Mix Factor (PMFc): **0.074**

1. **Determine IWC – Acute (IWCa)**:
   $(Q_d \times 1.547) / ((Q_{7\text{-}10} \times PMFa) + (Q_d \times 1.547))$
   [(2.0 MGD x 1.547) / ((2000 cfs x 0.010) + (2.0 MGD x 1.547))] x 100 = **13.397%**
   Is IWCa < 1%? ☐ **YES** ☒ **NO**
   Type of Test for Permit Renewal: **CHRONIC**

2. **Determine Target IWC – Chronic (IWCc)**
   $(Q_d \times 1.547) / (Q_{7\text{-}10} \times PMFc) + (Q_d \times 1.547)$
   [(2.0 MGD x 1.547) / ((2000 cfs x 0.074) + (2.0 MGD x 1.547))] x 100 = **2.047%**

3. **Determine Dilution Series**
   Dilution Series = **100%, 60%, 30%, 2%, and 1%.**
   (See Attachment C of WET SOP for dilution series, based on TIWCc,)

The permit will contain a Part C Special Condition for the WET Testing requirements, which will include annual testing.

CONTINUED on the next page.

REMOVAL OF MONITORING

It appears that during the last issuance (2015), requirements to monitor Ammonia-Nitrogen and Total Phosphorus were mistakenly included in Part A.I.A (page 3) with other non-nutrient parameters. This is most likely due to a bug in NMS, the permitting system then used by the Department to generate NPDES permits. The monitoring for these parameters was properly included with the other nutrient monitoring and cap loads in Part A.I.B (page 5). Since no basis was included in the 2014 Fact Sheet for the inclusion of these parameters in Part A.I.A, it is considered a mistake and they will be removed and listed in Part A.I.B with the nutrient requirements in this draft permit.

STORMWATER OUTFALL

ESCRA maintains one stormwater outfall at the WWTF. The outfall characteristics are as follows.

Outfall	Receiving Stream	Latitude	Longitude
SW3	Susquehanna River	40°46'52"	-76°51'48"

The permit will contain a Part C Special Condition for the management of stormwater discharging from the WWTF.

RECEIVING STREAM

Stream Characteristics

The receiving stream is the Susquehanna River. The Susquehanna River, according to 25 PA § 93.9M, is protected for *Warm Water Fishes (WWF)* and *Migratory Fishes (MF)*. These are the streams *Designated Uses*, which is defined in 25 PA § 93.1 as "those uses specified in §§ 93.9a – 93.9z for each waterbody or segment whether or not the use is being attained". Designated uses are regulations promulgated by the Environmental Quality Board (EQB) throughout the rulemaking process. This stream currently has no *Existing Use*, which is defined in 25 PA § 93.1 as "those uses actually attained in the waterbody on or after November 28, 1975 whether or not they are included in the water quality standards". Marsh Creek is identified by stream code 21856. This stream is in (Chapter 93) drainage list M and State Water Plan watershed 6A (Penns and Middle Creeks).

Impairment/TMDL

This section of the Susquehanna River is attaining its designated uses for recreation but not attaining its designated uses for fish consumption. The fish consumption impairment is due polychlorinated biphenyls (cause) from an unknown source. No TMDL has been calculated for this part of the Susquehanna River.

An assessment of designated uses with respect to Aquatic Life has yet to be conducted for this part of the Susquehanna River.

CONTINUED on the next page.

ADDITIONAL CONSIDERATIONS

Hauled-In Wastes

According to the application materials, ESCRA does not accept hauled-in wastes.

Mass Limitations

Existing mass limitations for $CBOD_5$ and TSS are calculated by multiplying the concentration (mg/L) by the flow (MGD) by the conversion (8.34).

Rounding of Limitations

Limitations have been rounded in accordance with the Department's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (#362-0400-001).

Limit Multipliers

The instantaneous maximum limitations have been calculated using multipliers of 2.0 (for sewage discharges) and 2.5 (for toxic industrial discharges) for determining the IMAX. This practice is in accordance with the Department's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (#362-0400-001).

Sample Frequencies and Types

The sample type and minimum measurement frequencies are in accordance with the Department's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (#362-0400-001). The minimum measurement frequencies of the nutrient parameters are in accordance with the Department's *Phase III Watershed Implementation Plan* of the Chesapeake Bay TMDL.

Standard Operating Procedures (SOPs)

The review of this permit application was performed in accordance with the Department's *SOP for New and Reissuance Sewage Individual NPDES Permit Applications* and *SOP for Establishing Effluent Limitations for Individual Sewage Permits* (SOP #BPNPSM-PMT-033).

Special Permit Conditions

Stormwater Prohibition
Approval Contingencies
Proper Waste Disposal
Total Residual Chlorine Optimization
Solids Management for Non-Lagoon Treatment Systems
Whole Effluent Toxicity – No Permit Limits
Stormwater Requirements for Sewage Facilities >= 1.0 MGD

Supplemental Discharge Monitoring Reports

Daily Effluent Monitoring
Non-Compliance Reporting
Biosolids Production and Disposal
Hauled-in Municipal Waste
Influent and Process Control
Lab Accreditation

CONTINUED on the next page.

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

Discharge Parameter	Mass Limits (lb/day)		Concentration Limits (mg/L)				Monitoring Requirements	
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	IMAX	Minimum Measurement Frequency	Required Sample Type
Flow (MGD)	Report	Report Daily Maximum	XXX	XXX	XXX	XXX	Continuous	Metered
pH (SU)	XXX	XXX	6.0 Instantaneous Minimum	XXX	XXX	9.0	1/Day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/Day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.50	XXX	1.60	1/Day	Grab
$CBOD_5$	417	667	XXX	25	40	50	2/Week	24 Hour Composite
BOD_5 Influent	Report	XXX	XXX	Report	XXX	XXX	2/Week	24 Hour Composite
Total Suspended Solids	500	750	XXX	30	45	60	2/Week	24 Hour Composite
TSS Influent	Report	XXX	XXX	Report	XXX	XXX	2/Week	24 Hour Composite
Fecal Coliform (No./100mL) (05/01-09/30)	XXX	XXX	XXX	200 Geometric Mean	XXX	1,000	1/Day	Grab
Fecal Coliform (No./100mL) (10/01-04/30)	XXX	XXX	XXX	2,000 Geometric Mean	XXX	10,000	1/Day	Grab
E. coli (No./100mL)	XXX	XXX	XXX	XXX	XXX	Report	1/Month	Grab
Total Copper (µg/L)	Report	Report Daily Maximum	XXX	Report	Report Daily Maximum	XXX	1/Week	24 Hour Composite
Benzo(a)Anthracene (µg/L)	0.003	0.005 Daily Maximum	XXX	0.19	0.30 Daily Maximum	0.48	1/Week	24 Hour Composite
Benzo(a)Pyrene (µg/L)	0.0003	0.0005 Daily Maximum	XXX	0.019	0.03 Daily Maximum	0.048	1/Week	24 Hour Composite
3,4-Benzofluoranthene (µg/L)	0.003	0.005 Daily Maximum	XXX	0.19	0.30 Daily Maximum	0.48	1/Week	24 Hour Composite
Dibenzo(a,h)Anthracene (µg/L)	0.0003	0.0005 Daily Maximum	XXX	0.019	0.03 Daily Maximum	0.048	1/Week	24 Hour Composite
Hexachlorobenzene (µg/L)	0.0003	0.0004 Daily Maximum	XXX	0.015	0.024 Daily Maximum	0.039	1/Week	24 Hour Composite
Indeno(1,2,3-cd)Pyrene (µg/L)	0.003	0.005 Daily Maximum	XXX	0.19	0.30 Daily Maximum	0.48	1/Week	24 Hour Composite
n-Nitrosodi-n-Propylamine (µg/L)	Report	Report Daily Maximum	XXX	Report	Report Daily Maximum	XXX	1/Week	24 Hour Composite

CONTINUED on the next page.

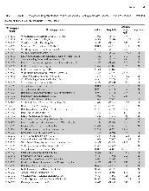
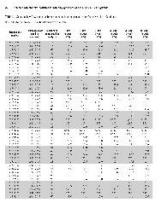
The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

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

Discharge Parameter	Mass Limits (lb/day)		Concentration Limits (mg/L)			Monitoring Requirements	
	Monthly	Annual	Minimum	Monthly Average	Maximum	Minimum Measurement Frequency	Required Sample Type
Ammonia-N	Report	Report	XXX	Report	XXX	2/Week	24 Hour Composite
Kjeldahl-N	Report	XXX	XXX	Report	XXX	2/Week	24 Hour Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/Week	24 Hour Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/Month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	2/Week	24 Hour Composite
Net Total Nitrogen	XXX	51,141	XXX	XXX	XXX	1/Year	Calculation
Net Total Phosphorus	XXX	6,819	XXX	XXX	XXX	1/Year	Calculation

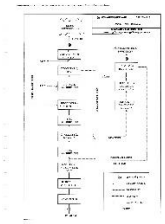
END of Fact Sheet.

ATTACHMENT 01


ATTACHMENT 02

ATTACHMENT 03



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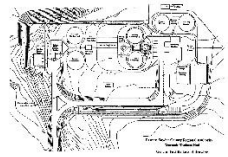

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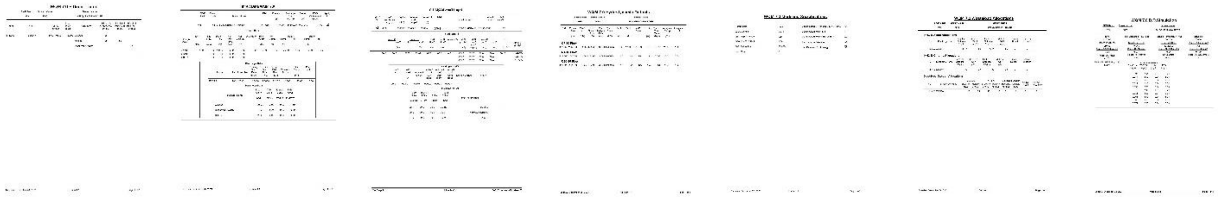

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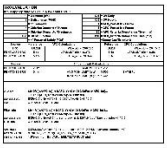

ATTACHMENT 07