

Application Type Renewal  
Facility Type Industrial  
Major / Minor Minor

**NPDES PERMIT FACT SHEET  
INDIVIDUAL INDUSTRIAL WASTE (IW)  
AND IW STORMWATER**

Application No. PA0009741  
APS ID 343404  
Authorization ID 1486721

**Applicant and Facility Information**

Applicant Name	<u>Constellation Energy Generation LLC</u>	Facility Name	<u>Muddy Run Pumped Storage Facility</u>
Applicant Address	<u>2569 Shures Landing Road</u> <u>Darlington, MD 21034</u>	Facility Address	<u>1925 River Road</u> <u>Drumore, PA 17518</u>
Applicant Contact	<u>Cheri Peifer</u>	Facility Contact	<u>Cheri Peifer</u>
Applicant Phone	<u>(817) 319-1757</u>	Facility Phone	<u>(610) 246-9791</u>
Client ID	<u>147686</u>	Site ID	<u>252351</u>
SIC Code	<u>4911</u>	Municipality	<u>Drumore Township</u>
SIC Description	<u>Trans. &amp; Utilities - Electric Services</u>	County	<u>Lancaster</u>
Date Application Received	<u>May 30, 2024</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>May 30, 2024</u>	If No, Reason	<u></u>
Purpose of Application	<u>NPDES Renewal.</u>		

**Summary of Review**

Constellation Energy Generation LLC has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit. The existing permit was issued on November 8, 2019, and became effective on December 1, 2019, authorizing discharge of treated sewage from the Muddy Run Pumped Storage Facility into the Susquehanna River. The existing permit expiration date was November 30, 2024, and the permit has been administratively extended since that time. On September 14, 2022, an amendment NPDES permit was issued to transfer the permit from Exelon Generation Company LLC to Constellation Energy Generation LLC.

Per the previous fact sheet, Muddy Run Pumped Storage Facility is a hydroelectric power generating plant that uses the pump/storage method. Water is pumped from the Susquehanna River during nonpeak hours to an impoundment, and is then released from the impoundment through the electric generating turbines during peak hours with return of the river water back to the Susquehanna River (through sluice gates, not through outfalls covered by the NPDES permit). Hydroelectric power is not subject to any EPA Effluent Limitation Guidelines.

Changes in this renewal: Quarterly monitoring requirements for PFOA, PFOS, PFBS, and HFPO-DA have been added to the permit for Outfall 001 and Outfall 004. E. Coli monitoring has been added to the permit for Outfall 401.

Supplemental information for this facility is provided at the end of this fact sheet.

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

Approve	Deny	Signatures	Date
X		<i>Benjamin R. Lockwood</i> Benjamin R. Lockwood / Environmental Engineering Specialist	March 4, 2026
X		<i>Maria D. Bebenek for</i> Daniel W. Martin, P.E. / Environmental Engineer Manager	March 25, 2026

**Summary of Review**

or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	1.051 (under normal conditions)
Latitude	39° 48' 25"	Longitude	76° 17' 57"
Quad Name		Quad Code	
Wastewater Description:	Noncontact Cooling Water (NCCW), intermittent water from dewatering pit, plant air handling/cooling equipment, and infrequent wastewater diverted from Outfall 004		
Receiving Waters	Susquehanna River (WWF)	Stream Code	06685
NHD Com ID	57471265	RMI	7.4
Drainage Area	26,799 ft <sup>2</sup>	Yield (cfs/mi <sup>2</sup> )	0.126
Q <sub>7-10</sub> Flow (cfs)	3,377	Q <sub>7-10</sub> Basis	USGS Gage #01576000
Elevation (ft)	106	Slope (ft/ft)	
Watershed No.	7-K	Chapter 93 Class.	WWF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	Thermal Modifications, Mercury, PCBs		
Source(s) of Impairment	Industrial Thermal Discharges, Source Unknown, Source Unknown		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Chester Water Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	5.6

Changes Since Last Permit Issuance: A drainage area of 26,799 mi<sup>2</sup> and a Q<sub>7-10</sub> flow of 3,377 cubic feet per second (cfs) were determined by establishing a correlation to the yield of USGS Gage Station #01576500 on the Susquehanna River. The Q<sub>7-10</sub> and drainage area at the gage are 3,270 cfs and 25,990 mi<sup>2</sup>, respectively. These values are taken from the USGS document "Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania". The Q<sub>7-10</sub> runoff rate at the gage station was calculated as follows:

$$Q_{7-10} = (3,270 \text{ cfs}) / 25,990 \text{ mi}^2 = 0.126 \text{ cfs/mi}^2$$

The drainage area at the discharge point, taken from USGS PA StreamStats = 26,799 mi<sup>2</sup>

The Q<sub>7-10</sub> at the discharge point = 26,799 mi<sup>2</sup> x 0.126 cfs/mi<sup>2</sup> = 3,377 cfs

Due to incomplete mixing in the Susquehanna River, ¼ of the Q<sub>7-10</sub> was used in modeling, 844 cfs. This is consistent with the existing permit.

Other Comments: The design flow of 1.051 mgd does not include any flow due to the occasional emptying of the shaft of river water in the event the generating turbines need to be accessed for inspections/repairs/maintenance. It also does not include the flow from Outfall 004, in the event of bypass from Outfall 004 to 001. 1.051 mgd is the maximum daily discharge rate for normal design conditions.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>002</u>	Design Flow (MGD)	<u>2.16</u>
Latitude	<u>39° 48' 25"</u>	Longitude	<u>76° 17' 57"</u>
Quad Name	<u></u>	Quad Code	<u></u>
Wastewater Description: <u>Backwash from intake strainers</u>			
Receiving Waters	<u>Susquehanna River (WWF)</u>	Stream Code	<u>06685</u>
NHD Com ID	<u>57471265</u>	RMI	<u>7.4</u>
Drainage Area	<u>26,799 ft<sup>2</sup></u>	Yield (cfs/mi <sup>2</sup> )	<u>0.126</u>
Q <sub>7-10</sub> Flow (cfs)	<u>3,377</u>	Q <sub>7-10</sub> Basis	<u>USGS Gage #01576000</u>
Elevation (ft)	<u>106</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>7-K</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u>N/A</u>	Existing Use Qualifier	<u>N/A</u>
Exceptions to Use	<u>N/A</u>	Exceptions to Criteria	<u>N/A</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Thermal Modifications, Mercury, PCBs</u>		
Source(s) of Impairment	<u>Industrial Thermal Discharges, Source Unknown, Source Unknown</u>		
TMDL Status	<u>N/A</u>	Name	<u>N/A</u>
Nearest Downstream Public Water Supply Intake	<u>Chester Water Authority</u>		
PWS Waters	<u>Susquehanna River</u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u></u>	Distance from Outfall (mi)	<u>5.6</u>

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>003</u>	Design Flow (MGD)	<u>Variable (stormwater)</u>
Latitude	<u>39° 48' 29"</u>	Longitude	<u>76° 18' 1"</u>
Quad Name	<u></u>	Quad Code	<u></u>
Wastewater Description: <u>Stormwater from roof drains</u>			
Receiving Waters	<u>Susquehanna River (WWF, MF)</u>	Stream Code	<u>06685</u>
NHD Com ID	<u>57471265</u>	RMI	<u>7.4</u>
Drainage Area	<u>26,799 ft<sup>2</sup></u>	Yield (cfs/mi <sup>2</sup> )	<u>0.126</u>
Q <sub>7-10</sub> Flow (cfs)	<u>3,377</u>	Q <sub>7-10</sub> Basis	<u>USGS Gage #01576000</u>
Elevation (ft)	<u>106</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>7-K</u>	Chapter 93 Class.	<u>WWF, MF</u>
Existing Use	<u>N/A</u>	Existing Use Qualifier	<u>N/A</u>
Exceptions to Use	<u>N/A</u>	Exceptions to Criteria	<u>N/A</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Thermal Modifications, Mercury, PCBs</u>		
Source(s) of Impairment	<u>Industrial Thermal Discharges, Source Unknown, Source Unknown</u>		
TMDL Status	<u>N/A</u>	Name	<u>N/A</u>
Nearest Downstream Public Water Supply Intake	<u>Chester Water Authority</u>		
PWS Waters	<u>Susquehanna River</u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u></u>	Distance from Outfall (mi)	<u>5.6</u>

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>004</u>	Design Flow (MGD)	<u>1.584</u>
Latitude	<u>39° 48' 25"</u>	Longitude	<u>76° 17' 56"</u>
Quad Name	<u></u>	Quad Code	<u></u>
Wastewater Description:	<u>Oil-Water Separator Effluent, including groundwater and river seepage, floor drains, stormwater from roof decks, treated sanitary wastewater, infrequent compressor condensate, and river water from tanks used during the execution of fish related studies</u>		
Receiving Waters	<u>Susquehanna River (WWF, MF)</u>	Stream Code	<u>06685</u>
NHD Com ID	<u>57471265</u>	RMI	<u>7.4</u>
Drainage Area	<u>26,799 ft<sup>2</sup></u>	Yield (cfs/mi <sup>2</sup> )	<u>0.126</u>
Q <sub>7-10</sub> Flow (cfs)	<u>3,377</u>	Q <sub>7-10</sub> Basis	<u>USGS Gage #01576000</u>
Elevation (ft)	<u>106</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>7-K</u>	Chapter 93 Class.	<u>WWF, MF</u>
Existing Use	<u>N/A</u>	Existing Use Qualifier	<u>N/A</u>
Exceptions to Use	<u>N/A</u>	Exceptions to Criteria	<u>N/A</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Thermal Modifications, Mercury, PCBs</u>		
Source(s) of Impairment	<u>Industrial Thermal Discharges, Source Unknown, Source Unknown</u>		
TMDL Status	<u>N/A</u>	Name	<u>N/A</u>
Nearest Downstream Public Water Supply Intake	<u>Chester Water Authority</u>		
PWS Waters	<u>Susquehanna River</u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u></u>	Distance from Outfall (mi)	<u>5.6</u>

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>401 (internal monitoring point)</u>	Design Flow (MGD)	<u>0.0069</u>
Latitude	<u>39° 48' 25"</u>	Longitude	<u>76° 17' 57"</u>
Quad Name	<u></u>	Quad Code	<u></u>
Wastewater Description: <u>Treated sanitary wastewater</u>			
Receiving Waters	<u>Susquehanna River (WWF, MF)</u>	Stream Code	<u>06685</u>
NHD Com ID	<u>57471265</u>	RMI	<u>7.4</u>
Drainage Area	<u>26,799 ft<sup>2</sup></u>	Yield (cfs/mi <sup>2</sup> )	<u>0.126</u>
Q <sub>7-10</sub> Flow (cfs)	<u>3,377</u>	Q <sub>7-10</sub> Basis	<u>USGS Gage #01576000</u>
Elevation (ft)	<u>106</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>7-K</u>	Chapter 93 Class.	<u>WWF, MF</u>
Existing Use	<u>N/A</u>	Existing Use Qualifier	<u>N/A</u>
Exceptions to Use	<u>N/A</u>	Exceptions to Criteria	<u>N/A</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Thermal Modifications, Mercury, PCBs</u>		
Source(s) of Impairment	<u>Industrial Thermal Discharges, Source Unknown, Source Unknown</u>		
TMDL Status	<u>N/A</u>	Name	<u>N/A</u>
Nearest Downstream Public Water Supply Intake	<u>Chester Water Authority</u>		
PWS Waters	<u>Susquehanna River</u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u></u>	Distance from Outfall (mi)	<u>5.6</u>

Changes Since Last Permit Issuance: None

Other Comments: None

<b>Compliance History</b>	
<b>Summary of DMRs:</b>	A summary of the past 12-month DMR effluent data is presented on the next page of this fact sheet.
<b>Summary of Inspections:</b>	7/20/2020: An administrative inspection was conducted. All treatment units were online and operable, and there were no outstanding issues at the time.  8/14/2023: A routine inspection was conducted. Field results were within permitted limits. No other issues were noted.

Other Comments: There are currently no open violations for this Applicant.

Compliance History

DMR Data for Outfall 001 (from January 1, 2025 to December 31, 2025)

Parameter	DEC-25	NOV-25	OCT-25	SEP-25	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25
Flow (MGD) Average Monthly	1.051	1.05	1.051	1.051	1.051	1.051	1.051	1.051	1.051	1.051	1.051	1.051
Flow (MGD) Daily Maximum	1.051	1.05	1.051	1.051	1.051	1.051	1.051	1.051	1.051	1.051	1.051	1.051
pH (S.U.) Instantaneous Minimum	8.1	7.96	7.7	8.03	7.7	8.0	8.06	7.9	7.92	8.3	8.0	7.8
pH (S.U.) Instantaneous Maximum	8.1	7.96	7.7	8.03	7.7	8.0	8.06	7.9	7.92	8.3	8.0	7.8
TRC (mg/L) Average Monthly	0.04	0.07	0.06	0.08	0.11	0.05	0.14	0.02	0.04	0.02	0.02	0.06
TRC (mg/L) Instantaneous Maximum	0.04	0.07	0.06	0.08	0.11	0.05	0.14	0.02	0.04	0.02	0.02	0.06
Temperature (°F) Average Monthly	74	78.96	81	80.78	86	86	80.42	79	64.94	56	55	53
TSS (mg/L) Daily Maximum	4.0	6.2	< 4.0	5.5	5.2	20	17	12.8	7.2	4.8	< 4	< 4.0
Oil and Grease (mg/L) Average Monthly	< 5.1	< 5.1	< 5.2	< 5.1	< 5.2	< 5.2	< 5.1	< 5.2	< 4.9	< 5.0	< 5.3	< 5.0
Oil and Grease (mg/L) Instantaneous Maximum	< 5.1	< 5.1	< 5.2	< 5.1	< 5.2	< 5.2	< 5.1	< 5.2	< 4.9	< 5.0	< 5.3	< 5.0

DMR Data for Outfall 002 (from January 1, 2025 to December 31, 2025)

Parameter	DEC-25	NOV-25	OCT-25	SEP-25	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25
Flow (MGD) Average Monthly	2.160	2.16	2.160	2.16	2.160	2.160	2.16	2.160	2.16	2.160	2.160	2.160
Flow (MGD) Daily Maximum	2.160	2.16	2.160	2.16	2.160	2.160	2.16	2.160	2.16	2.160	2.160	2.160

**NPDES Permit Fact Sheet  
Muddy Run Pumped Storage Facility**

**NPDES Permit No. PA0009741**

**DMR Data for Outfall 004 (from January 1, 2025 to December 31, 2025)**

Parameter	DEC-25	NOV-25	OCT-25	SEP-25	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25
Flow (MGD) Average Monthly	1.548	1.548	1.569	1.584	1.584	1.584	1.584	1.584	1.58	1.584	1.584	1.584
Flow (MGD) Daily Maximum	1.548	1.548	1.584	1.584	1.584	1.584	1.584	1.584	1.58	1.584	1.584	1.584
pH (S.U.) Instantaneous Minimum	8.0	7.73	8.1	8.22	7.9	8.1	8.05	7.8	7.97	8.1	8.1	7.9
pH (S.U.) Instantaneous Maximum	8.0	7.73	8.1	8.22	7.9	8.1	8.05	7.8	7.97	8.1	8.1	7.9
TRC (mg/L) Average Monthly	0.020	0.05	0.080	0.11	< 0.020	0.08	< 0.02	0.09	< 0.02	0.02	0.02	0.030
TRC (mg/L) Instantaneous Maximum	0.020	0.05	0.080	0.11	0.020	0.08	< 0.02	0.09	< 0.02	0.02	0.02	0.030
TSS (mg/L) Daily Maximum	< 4	6.5	5	7.8	4.5	9	10.7	7	< 4	5	< 4	4
Oil and Grease (mg/L) Average Monthly	< 5.1	< 5.1	< 5.0	< 5.2	< 5.2	< 5.1	< 5.3	< 5.1	< 5.1	< 5.2	< 5	< 5.0
Oil and Grease (mg/L) Instantaneous Maximum	< 5.1	< 5.1	< 5.0	< 5.2	< 5.2	< 5.1	< 5.3	< 5.1	< 5.1	< 5.2	< 5	< 5.0

**DMR Data for Outfall 401 (from January 1, 2025 to December 31, 2025)**

Parameter	DEC-25	NOV-25	OCT-25	SEP-25	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25
Flow (MGD) Average Monthly	0.00035	0.0039	0.00072	0.0014	0.00033	0.00032	0.00054	0.00065	0.001	0.00085	0.00078	0.00064
Flow (MGD) Daily Maximum	0.00066	0.00156	0.00200	0.0091	0.00051	0.00053	0.00034	0.00218	0.00329	0.00143	0.00132	0.00098
CBOD5 (mg/L) Average Monthly	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	7	< 2	< 2
CBOD5 (mg/L) Instantaneous Maximum	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	7	< 2	< 2
TSS (mg/L) Average Monthly	< 4	< 4	5	< 4	< 4	< 4	4	< 4	< 4	< 4	< 4	< 4
TSS (mg/L) Instantaneous Maximum	< 4	< 4	5	< 4	< 4	< 4	4	< 4	< 4	< 4	< 4	< 4

**NPDES Permit Fact Sheet**  
**Muddy Run Pumped Storage Facility**

**NPDES Permit No. PA0009741**

Fecal Coliform (No./100 ml) Geometric Mean	6	< 1	35	2	< 1	< 1	7	1	20	11	4	< 1
Fecal Coliform (No./100 ml) Instantaneous Maximum	6	< 1	35	2	< 1	< 1	7	1	20	11	4	< 1

Existing Effluent Limitations and Monitoring Requirements

Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/month	Estimate
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/month	Grab
Temperature (°F)	XXX	XXX	XXX	110 Daily Average	XXX	XXX	1/month	I-S
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	1/month	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5*	XXX	1.6*	1/month*	Grab*
Oil and Grease	XXX	XXX	XXX	15*	XXX	30*	1/month*	Grab*

\* Oil and Grease and TRC requirements are ONLY applicable in the event the wastewater from the seepage pit is temporarily re-routed from Outfall 004 to Outfall 001.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

From sample tap located in pump room off of discharge header

Outfall 002

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/month	Estimate

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at discharge from Outfall 002

Outfall 004

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/month	Estimate
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/month	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/month	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	1/month	Grab
Oil and Grease	XXX	XXX	XXX	15	XXX	30	1/month	Grab

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):  
at discharge from the oil/water separator

Outfall 401

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD) Internal Monitoring Point	Report	Report	XXX	XXX	XXX	XXX	1/month	Estimate
Carbonaceous Biochemical Oxygen Demand (CBOD5) Internal Monitoring Point	XXX	XXX	XXX	25	XXX	50	1/month	Grab
Total Suspended Solids Internal Monitoring Point	XXX	XXX	XXX	30	XXX	60	1/month	Grab
Fecal Coliform (No./100 ml) Internal Monitoring Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/month	Grab
Fecal Coliform (No./100 ml) Internal Monitoring May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/month	Grab

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):  
at Outfall 401

**Development of Effluent Limitations**

<b>Outfall No.</b>	<u>001</u>	<b>Design Flow (MGD)</b>	<u>1.051 (under normal operating conditions)</u>
<b>Latitude</b>	<u>39° 48' 25"</u>	<b>Longitude</b>	<u>76° 17' 57"</u>
<b>Wastewater Description:</b>	<u>Noncontact Cooling Water (NCCW), intermittent water from dewatering pit, plant air handling/cooling equipment, and infrequent wastewater diverted from Outfall 004</u>		

**Outfall 004**

During normal operation, groundwater and river seepage from the lower floors of the powerhouse, other buildings' seepage, treated sanitary wastewater from the on-site sewage treatment plant (STP), floor drains, stormwater from roof decks, and potentially air compressor condensate are conveyed to Outfall 004. However, if the oil/water separator is bypassed, these flows will be conveyed from the seepage pit to Outfall 001. The previous permit included limits for Total Residual Chlorine (TRC) and Oil and Grease, but these parameters are only required to be monitored if Outfall 004 is being bypassed to Outfall 001. The TRC spreadsheet was run, and it recommends a monthly average limit of 0.5 mg/l and an IMAX limit of 1.6 mg/l, which are consistent with the existing permit limits. These limits will remain in the permit. The permit will also include the technology-based effluent limits for Oil and Grease of a monthly average limit of 15 mg/l and a daily maximum limit of 30 mg/l, which is consistent with the existing permit. The monitoring requirement for Total Suspended Solids (TSS) will remain in the permit.

**pH**

PA Code §§ 95.2(1) requires effluent pH limits of 6.0 to 9.0 S.U. at all times in effluent. The permit will continue to require pH limit of 6.0 to 9.0 S.U.

**Temperature Limitations**

A reasonable potential (RP) analysis was performed for temperature which is the main pollutant of concern in the NCCW. Effluent limitations for temperature were calculated using the Case 2 Thermal Worksheet with a wastewater flow of 1.051 mgd, which is listed as the maximum daily discharge rate in the application. A stream Q<sub>7-10</sub> flow of 844 cfs was used in the temperature worksheet. The worksheet recommended permit limits for a discharge to WWF of 110°F, which is the cap for limits generated by the worksheet. This is consistent with the existing Temperature limit for Outfall 001; therefore, it will remain the same. A printout of the worksheet is attached.

**Chesapeake Bay Total Maximum Daily Load (TMDL)**

DEP developed a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). This strategy can be located in the Pennsylvania Chesapeake Watershed Implementation Plan (WIP), dated January 11, 2011. Subsequently, an update to the WIP was published as the Phase 3 WIP. As part of the Phase 3 WIP, a Phase 3 Watershed Implementation Plan Wastewater Supplement (Phase 3 Supplement) was developed, providing an update on TMDL implementation for point sources and DEP's current implementation strategy for wastewater. The Phase 3 Supplement was most recently revised on April 2, 2025. Industrial discharges have been prioritized by Central Office based on their delivered TN and TP loadings to the Bay. Significant industrial wastewater dischargers are facilities that discharge more than 75 lbs/day of TN or 25 lbs/day of TP on an average annual basis and the rest are classified as non-significant dischargers. DEP developed a Chesapeake Bay industrial waste (IW) monitoring plan for all industrial facilities that discharge to the Chesapeake Bay. This facility is classified as a non-significant discharger with little or no potential to introduce nutrients to the receiving stream; therefore, no monitoring for TP and TN series will be required at this time for Outfall 001.

**Toxics**

Effluent sample results for toxic pollutants reported on the renewal application were entered into DEP's Toxics Management Spreadsheet Version 1.3 to develop appropriate permit requirements for toxic pollutants of concern. The Toxics Management Spreadsheet combines the functions of PENTOXSD and DEP's Toxics Screening Analysis. Default stream hardness and pH values were used in the spreadsheet. Based on effluent sample results reported on the application, the Toxics Management Spreadsheet did not recommend any additional parameters receive monitoring or limits.

This data was analyzed based on the guidelines found in DEP's Water Quality Toxics Management Strategy (Document No. 361-0100-003) and DEP's SOP No. BPNPSM-PMT-033. The results are attached to this fact sheet. The Toxics Management Spreadsheet uses the following logic:

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

Since the reported maximum concentrations were less than 10% of their respective WQBEL, per DEP's SOP No. BPNPSM-PMT-033, no additional limits or monitoring are necessary.

### **Total Dissolved Solids (TDS)**

DEP's SOP No. BCW-PMT-032 states that at a minimum, a monitoring requirement should be established for TDS for any discharge that exceeds 1,000 mg/l. Constellation reported a maximum effluent value of 130 mg/l for TDS in the NPDES application. Therefore, monitoring for TDS will not be required.

### **PFAS-Related Compounds**

DEP's NPDES renewal application for Industrial Waste Facilities now requires effluent testing for PFAS related compounds as part of Pollutant Group 1: Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), Perfluorobutanesulfonic acid (PFBS), and Hexafluoropropylene oxide dimer acid (HFPO-DA). Per DEP's SOP BCW-PMT-032, If sampling that is completed as part of the permit renewal application reveals a detection for any of these compounds, a quarterly monitoring requirement for all compounds will be established in the permit. If sampling that is completed as part of the permit renewal application demonstrates non-detect values at or below the Target QLs for these compounds in a minimum of 3 samples, an annual monitoring requirement for all compounds will be established in the permit. As the PFAS compounds were detected in sampling as part of the application submittal, quarterly monitoring requirements will be established for all compounds in this renewal permit. Monitoring for PFOA, PFOS, HFPO-DA, and PFBS may be discontinued if the results in 4 consecutive monitoring periods indicate non-detect results at or below the Target QLs of 4.0 ng/l for PFOA, 3.7 ng/l for PFOS, 3.5 ng/l for PFBS, and 6.4 ng/l for HFPO-DA. The NPDES permit will include this monitoring language as a footnote in Part A of the permit.

### **Stormwater**

Outfall 001 does not receive stormwater under normal operating conditions, but it has the potential to receive stormwater if Outfall 004 is bypassed to Outfall 001. Constellation is classified under SIC Code 4911 for Electric Services. The facility's stormwater discharge does not fall within the EPA definition of storm water associated with industrial activity per 40 CFR 122.26(b)(14); therefore, monitoring will not be required. Part C requirements for stormwater outfalls will be included in the permit.

### **Anti-Degradation**

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

### **303(d) Listed Streams**

The discharge is located on a stream segment that is designated on the 303(d) list as impaired. There is an aquatic life impairment for thermal modifications from industrial thermal discharges. There is a fish consumption impairment for mercury and PCBs from an unknown source.

### **Class A Wild Trout Fisheries**

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

**Anti-Backsliding**

Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions addressed by DEP in this fact sheet.

**Development of Effluent Limitations**

<b>Outfall No.</b>	<u>002</u>	<b>Design Flow (MGD)</b>	<u>2.16</u>
<b>Latitude</b>	<u>39° 48' 25"</u>	<b>Longitude</b>	<u>76° 17' 57"</u>
<b>Wastewater Description:</b> <u>Backwash from intake strainers</u>			

**Limitations**

Constellation withdraws water from the Susquehanna River, and conveys the water through intake strainers. These strainers protect the pumps and turbines from river water debris. The only flow discharged through Outfall 002 is river water containing the debris; therefore, water quality limitations will not be needed. It is recommended that flow be monitored, which is consistent with the existing permit.

**Anti-Degradation**

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

**303(d) Listed Streams**

The discharge is located on a stream segment that is designated on the 303(d) list as impaired. There is an aquatic life impairment for thermal modifications from industrial thermal discharges. There is a fish consumption impairment for mercury and PCBs from an unknown source.

**Class A Wild Trout Fisheries**

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

**Anti-Backsliding**

Pursuant to 40 CFR § 122.44(I)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions addressed by DEP in this fact sheet.

**Development of Effluent Limitations**

<b>Outfall No.</b>	<u>003</u>	<b>Design Flow (MGD)</b>	<u>Variable (stormwater)</u>
<b>Latitude</b>	<u>39° 48' 29"</u>	<b>Longitude</b>	<u>76° 18' 1"</u>
<b>Wastewater Description:</b>	<u>Stormwater</u>		

**Limitations**

Constellation is classified under SIC Code 4911 for Electric Services. The facility's stormwater discharge does not fall with the EPA definition of storm water associated with industrial activity per 40 CFR 122.26(b)(14); therefore, monitoring will not be required. Part C requirements for stormwater outfalls will be included in the permit.

**Development of Effluent Limitations**

<b>Outfall No.</b>	<u>004</u>	<b>Design Flow (MGD)</b>	<u>1.584</u>
<b>Latitude</b>	<u>39° 48' 25"</u>	<b>Longitude</b>	<u>76° 17' 56"</u>

**Wastewater Description:** Oil-Water Separator Effluent, including groundwater and river seepage, floor drains, stormwater from roof decks, treated sanitary wastewater, infrequent compressor condensate, and river water from tanks used during the execution of fish related studies

**pH**

PA Code §§ 95.2(1) requires effluent pH limits of 6.0 to 9.0 S.U. at all times in effluent. The permit will continue to require pH limit of 6.0 to 9.0 S.U.

**Total Residual Chlorine**

The attached computer printout utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The Guidance references Chapter 92, Section 92.2d (3) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The attached printout indicates that a water quality limit of 0.5 mg/l would be needed to prevent toxicity concerns. It is recommended that a TRC limit of 0.5 mg/l monthly average and 1.6 mg/l instantaneous maximum be applied this permit cycle, the same as the existing limit.

**Total Suspended Solids (TSS)**

A monitor requirement for TSS was included for this wastewater when it discharged to Outfall 001. When the wastewater was diverted to the new Outfall 004, this requirement was carried over. The monitoring requirement for TSS will remain in the permit.

**Oil and Grease**

Oil and grease limits were considered appropriate during the previous permit cycle, due to the composition of the wastewater. Limits of 15 mg/l as a monthly average and 30 mg/l as an IMAX were imposed consistent with Title 25 PA Code Chapter 95.2 and the NPDES Permit Writing Guidance Manual (362-0400-001). These limits will remain in the permit.

**Chesapeake Bay Total Maximum Daily Load (TMDL)**

DEP developed a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). This strategy can be located in the Pennsylvania Chesapeake Watershed Implementation Plan (WIP), dated January 11, 2011. Subsequently, an update to the WIP was published as the Phase 3 WIP. As part of the Phase 3 WIP, a Phase 3 Watershed Implementation Plan Wastewater Supplement (Phase 3 Supplement) was developed, providing an update on TMDL implementation for point sources and DEP's current implementation strategy for wastewater. The Phase 3 Supplement was most recently revised on April 2, 2025. Industrial discharges have been prioritized by Central Office based on their delivered TN and TP loadings to the Bay. Significant industrial wastewater dischargers are facilities that discharge more than 75 lbs/day of TN or 25 lbs/day of TP on an average annual basis and the rest are classified as non-significant dischargers. DEP developed a Chesapeake Bay industrial waste (IW) monitoring plan for all industrial facilities that discharge to the Chesapeake Bay. This facility is classified as a non-significant discharger with little or no potential to introduce nutrients to the receiving stream; therefore, no monitoring for TP and TN series will be required at this time for Outfall 004.

**PFAS-Related Compounds**

DEP's NPDES renewal application for Industrial Waste Facilities now requires effluent testing for PFAS related compounds as part of Pollutant Group 1: Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), Perfluorobutanesulfonic acid (PFBS), and Hexafluoropropylene oxide dimer acid (HFPO-DA). Per DEP's SOP BCW-PMT-032, If sampling that is completed as part of the permit renewal application reveals a detection for any of these compounds, a quarterly monitoring requirement for all compounds will be established in the permit. If sampling that is completed as part of the permit renewal application demonstrates non-detect values at or below the Target QLs for these compounds in a minimum of 3 samples, an annual monitoring requirement for all compounds will be established in the permit. As the PFAS compounds were detected in sampling as part of the application submittal, quarterly monitoring requirements will be established for all

compounds in this renewal permit. Monitoring for PFOA, PFOS, HFPO-DA, and PFBS may be discontinued if the results in 4 consecutive monitoring periods indicate non-detect results at or below the Target QLs of 4.0 ng/l for PFOA, 3.7 ng/l for PFOS, 3.5 ng/l for PFBS, and 6.4 ng/l for HFPO-DA. The NPDES permit will include this monitoring language as a footnote in Part A of the permit.

**Total Dissolved Solids (TDS)**

DEP's SOP No. BCW-PMT-032 states that at a minimum, a monitoring requirement should be established for TDS for any discharge that exceeds 1,000 mg/l. Constellation reported a maximum effluent value of 130 mg/l for TDS in the NPDES application. Therefore, monitoring for TDS will not be required.

**Stormwater**

Constellation is classified under SIC Code 4911 for Electric Services. The facility's stormwater discharge does not fall within the EPA definition of storm water associated with industrial activity per 40 CFR 122.26(b)(14); therefore, monitoring will not be required. Part C requirements for stormwater outfalls will be included in the permit.

**Anti-Degradation**

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

**303(d) Listed Streams**

The discharge is located on a stream segment that is designated on the 303(d) list as impaired. There is an aquatic life impairment for thermal modifications from industrial thermal discharges. There is a fish consumption impairment for mercury and PCBs from an unknown source.

**Class A Wild Trout Fisheries**

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

**Anti-Backsliding**

Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions addressed by DEP in this fact sheet.

**Development of Effluent Limitations**

<b>Outfall No.</b> <u>401</u>	<b>Design Flow (MGD)</b> <u>0.0069</u>
<b>Latitude</b> <u>39° 48' 25"</u>	<b>Longitude</b> <u>76° 17' 57"</u>
<b>Wastewater Description:</b> <u>Treated sanitary wastewater</u>	

**Technology-Based Limitations**

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

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

Comments: The abovementioned technology-based limitations (TBELs) apply, subject to water quality analysis and BPJ where applicable. pH limits are not included in the existing permit, since the flow from the STP is negligible and does not discharge directly to the Susquehanna River. A pH limit will not be added to this renewal permit. The IMAX limits for fecal coliform will be included in the permit.

**CBOD<sub>5</sub>, NH<sub>3</sub>-N**

Pursuant to 40 CFR § 122.44(d)(1)(i), more stringent requirements should be considered when pollutants are discharged at the levels which have the reasonable potential to cause or contribute to excursions above water quality standards.

WQM 7.0 ver. 1.1b is a water quality model designed to assist DEP in determining appropriate water quality based effluent limits (WQBELs) for carbonaceous biochemical oxygen demand (CBOD<sub>5</sub>), ammonia (NH<sub>3</sub>-N) and dissolved oxygen (D.O.). DEP's Technical Guidance No. 391-2000-007 provides the technical methods contained in WQM 7.0 for determining wasteload allocations and for determining recommended NPDES effluent limits for point source discharges. The model was utilized for this permit renewal. The model output indicated a CBOD<sub>5</sub> average monthly limit of 25 mg/l, an NH<sub>3</sub>-N average monthly limit of 25 mg/l, and a D.O. minimum limit of 5.0 mg/l were protective of water quality. The flow data used to run the model was acquired from USGS PA StreamStats and is included as an attachment. The CBOD<sub>5</sub> limit of 25 mg/l is the same as the existing permit limit, which will remain in the renewal. An ammonia-nitrogen monitoring requirement was not included in the existing permit, due to the fact that the flow from Outfall 401 combines with a large amount of non-process water and stormwater before discharging at Outfall 004. The ratio of the wastewater to the sewage effluent is 313:1, therefore, additional monitoring of ammonia-nitrogen is not necessary at the internal monitoring point Outfall 401. Ammonia-nitrogen will not be included in this renewal permit as a monitoring requirement, which is consistent with the existing permit requirements.

D.O. limits are not included in the existing permit, since the flow from the STP is negligible and does not discharge directly to the Susquehanna River; therefore, it will not be included in this permit.

### **Total Residual Chlorine**

Limits for TRC are included for Outfall 004, instead of the internal monitoring point. The wastewater from Outfall 401 is conveyed to Outfall 004, so an additional TRC limit is not required here. This is consistent with the existing permit.

### **E. Coli**

PA Code § 92a.61 requires IMAX reporting of E. Coli. Per DEP's SOP No. BCW-PMT-033, sewage dischargers with a design flow of 0.002 – 0.05 mgd will include E. Coli monitoring with a frequency of 1/year. This parameter has been added to the renewal permit.

### **Chesapeake Bay Total Maximum Daily Load (TMDL)**

DEP developed a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). This strategy can be located in the Pennsylvania Chesapeake Watershed Implementation Plan (WIP), dated January 11, 2011. Subsequently, an update to the WIP was published as the Phase 3 WIP. As part of the Phase 3 WIP, a Phase 3 Watershed Implementation Plan Wastewater Supplement (Phase 3 Supplement) was developed, providing an update on TMDL implementation for point sources and DEP's current implementation strategy for wastewater. The Phase 3 Supplement was most recently revised on April 2, 2025. Industrial discharges have been prioritized by Central Office based on their delivered TN and TP loadings to the Bay. Significant industrial wastewater dischargers are facilities that discharge more than 75 lbs/day of TN or 25 lbs/day of TP on an average annual basis and the rest are classified as non-significant dischargers. DEP developed a Chesapeake Bay industrial waste (IW) monitoring plan for all industrial facilities that discharge to the Chesapeake Bay. This facility is classified as a non-significant discharger with little or no potential to introduce nutrients to the receiving stream; therefore, no monitoring for TP and TN series will be required at this time for Outfall 401.

### **Anti-Degradation**

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

### **303(d) Listed Streams**

The discharge is located on a stream segment that is designated on the 303(d) list as impaired. There is an aquatic life impairment for thermal modifications from industrial thermal discharges. There is a fish consumption impairment for mercury and PCBs from an unknown source.

### **Class A Wild Trout Fisheries**

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

### **Anti-Backsliding**

Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions addressed by DEP in this fact sheet.

**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” (386-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/month	Estimate
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/month	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/month	Grab
Temperature (°F)	XXX	XXX	XXX	110	XXX	XXX	1/month	I-S
TSS	XXX	XXX	XXX	XXX	Report	XXX	1/month	Grab
Oil and Grease	XXX	XXX	XXX	15	XXX	30	1/month	Grab
PFOA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFOS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFBS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
HFPO-DA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab

Compliance Sampling Location: From sample tap located in pump room off of discharge header

Other Comments: \*Oil and Grease and TRC requirements are ONLY applicable in the event the wastewater from the seepage pit is temporarily re-routed from Outfall 004 to Outfall 001.

**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" (386-0400-001), SOPs and/or BPJ.

**Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.**

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/month	Estimate

Compliance Sampling Location: At discharge from Outfall 002

Other Comments: 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” (386-0400-001), SOPs and/or BPJ.

**Outfall 004, Effective Period: Permit Effective Date through Permit Expiration Date.**

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/month	Estimate
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/month	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/month	Grab
TSS	XXX	XXX	XXX	XXX	Report	XXX	1/month	Grab
Oil and Grease	XXX	XXX	XXX	15	XXX	30	1/month	Grab
PFOA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFOS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFBS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
HFPO-DA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab

Compliance Sampling Location: At discharge from the oil/water separator

Other Comments: 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” (386-0400-001), SOPs and/or BPJ.

**Outfall 401, Effective Period: Permit Effective Date through Permit Expiration Date.**

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/month	Estimate
CBOD5	XXX	XXX	XXX	25	XXX	50	1/month	Grab
TSS	XXX	XXX	XXX	30	XXX	60	1/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

Compliance Sampling Location: At discharge from the sewage treatment plant

Other Comments: None

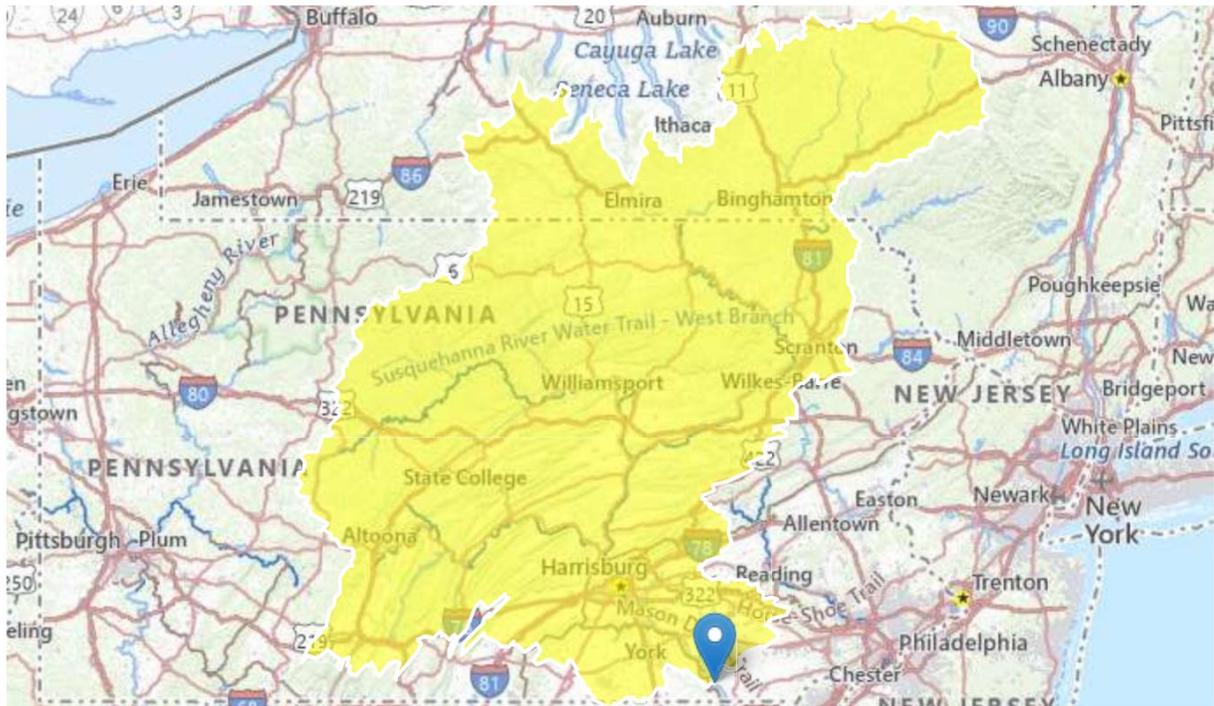
Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment [redacted])
<input type="checkbox"/>	Toxics Management Spreadsheet (see Attachment [redacted])
<input checked="" type="checkbox"/>	TRC Model Spreadsheet (see Attachment [redacted])
<input checked="" type="checkbox"/>	Temperature Model Spreadsheet (see Attachment [redacted])
<input checked="" type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input checked="" type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 386-2000-002, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
<input checked="" type="checkbox"/>	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
<input checked="" type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
<input checked="" type="checkbox"/>	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
<input type="checkbox"/>	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
<input type="checkbox"/>	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
<input type="checkbox"/>	Design Stream Flows, 386-2000-003, 9/98.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
<input checked="" type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	SOP: BCW-PMT-032, No. BPNPSM-PMT-001
<input type="checkbox"/>	Other: [redacted]

## Constellation Energy Generation LLC PA0009741 Outfall 001

Region ID: PA

Clicked Point (Latitude, Longitude): 39.80672, -76.29941

Time: 2026-03-03 11:30:45 -0500



### StreamStats Update

Starting with version 4.30.0, the StreamStats application uses services that were redeveloped with open-source software components. Users may observe minor variations in computed results when compared to those from previous versions. These differences are expected and do not reflect errors in the underlying data or analytical methods. Users are advised to consider these potential variations when interpreting or comparing results generated across different versions of StreamStats. Please email [streamstats@usgs.gov](mailto:streamstats@usgs.gov) with any questions or concerns. A full list of changes can be found at

<https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release>  
(<https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release>) .

 Collapse All

➤ Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	8.0332	degrees
DRNAREA	Area that drains to a point on a stream	26799	square miles
ROCKDEP	Depth to rock	4.54	feet
URBAN	Percentage of basin with urban development	3.0444	percent

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
BSLOPD	Mean Basin Slope degrees	8.0332	degrees	1.7	6.4
DRNAREA	Drainage Area	26799	square miles	4.78	1150
ROCKDEP	Depth to Rock	4.54	feet	4.13	5.21
URBAN	Percent Urban	3.0444	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	9820	ft <sup>3</sup> /s
30 Day 2 Year Low Flow	10900	ft <sup>3</sup> /s
7 Day 10 Year Low Flow	7720	ft <sup>3</sup> /s
30 Day 10 Year Low Flow	8090	ft <sup>3</sup> /s
90 Day 10 Year Low Flow	8630	ft <sup>3</sup> /s

*Low-Flow Statistics Citations*

**Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)**

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.31.1

SSHydro Services Version: 1.1.1

SSDelineate Services Version: 1.0.1

NSS Services Version: 2.2.1

GageStats Services Version: 1.2.1

Pourpoint Services Version: 1.2.0

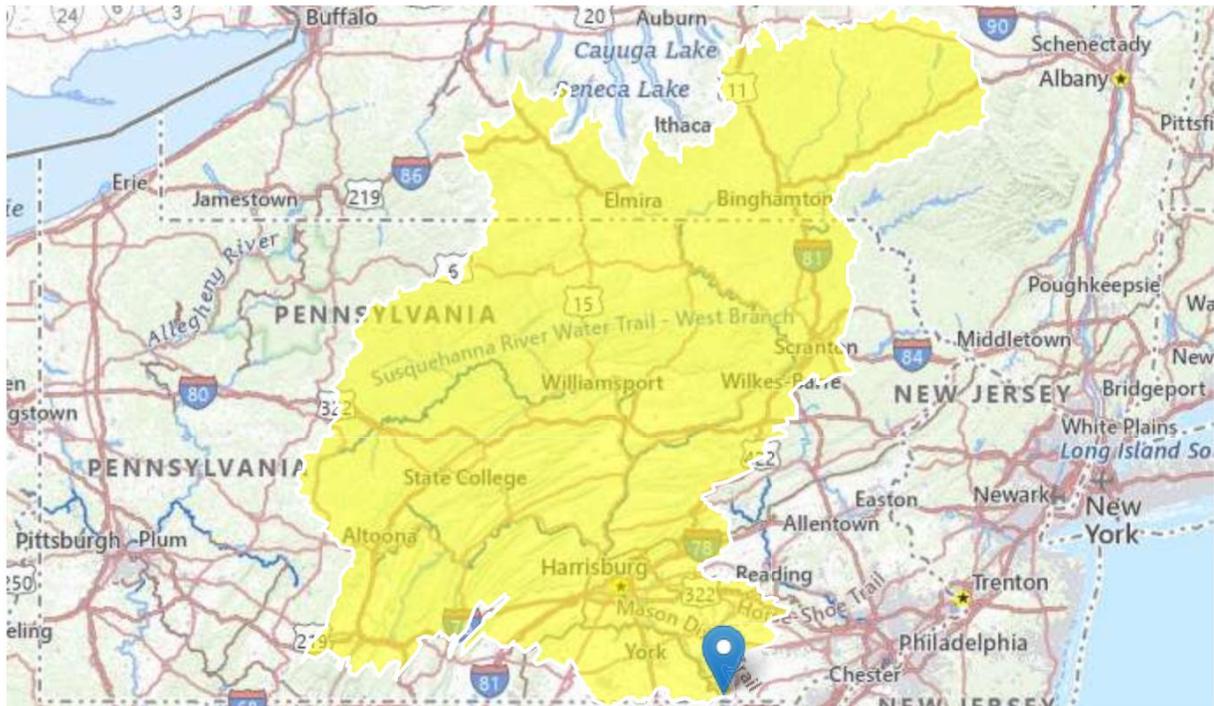
Batch Processor Version: 1.6.1

## Constellation Energy Generation LLC PA0009741 RMI = 2.6

Region ID: PA

Clicked Point (Latitude, Longitude): 39.75042, -76.24053

Time: 2026-03-03 11:46:16 -0500



### StreamStats Update

Starting with version 4.30.0, the StreamStats application uses services that were redeveloped with open-source software components. Users may observe minor variations in computed results when compared to those from previous versions. These differences are expected and do not reflect errors in the underlying data or analytical methods. Users are advised to consider these potential variations when interpreting or comparing results generated across different versions of StreamStats. Please email [streamstats@usgs.gov](mailto:streamstats@usgs.gov) with any questions or concerns. A full list of changes can be found at

<https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release>  
(<https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release>) .

 Collapse All

➤ Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	8.0223	degrees
DRNAREA	Area that drains to a point on a stream	26981	square miles
ROCKDEP	Depth to rock	4.54	feet
URBAN	Percentage of basin with urban development	3.0284	percent

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
BSLOPD	Mean Basin Slope degrees	8.0223	degrees	1.7	6.4
DRNAREA	Drainage Area	26981	square miles	4.78	1150
ROCKDEP	Depth to Rock	4.54	feet	4.13	5.21
URBAN	Percent Urban	3.0284	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	9870	ft <sup>3</sup> /s
30 Day 2 Year Low Flow	10900	ft <sup>3</sup> /s
7 Day 10 Year Low Flow	7760	ft <sup>3</sup> /s
30 Day 10 Year Low Flow	8130	ft <sup>3</sup> /s
90 Day 10 Year Low Flow	8680	ft <sup>3</sup> /s

*Low-Flow Statistics Citations*

**Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)**

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Application Version: 4.31.1

SSHydro Services Version: 1.1.1

SSDelineate Services Version: 1.0.1

NSS Services Version: 2.2.1

GageStats Services Version: 1.2.1

Pourpoint Services Version: 1.2.0

Batch Processor Version: 1.6.1

Flow Data for Thermal Discharge Analysis

**Facility: Constellation Energy Generation LLC**

**Permit Number: PA0009741**

**Stream Name: Susquehanna River**

**Analyst/Engineer: Benjamin Lockwood**

**Stream Q7-10 (cfs): 844**

	Facility Flows			Stream Flows				
	Intake (Stream) (MGD)	Intake (External) (MGD)	Consumptive Loss (MGD)	Discharge Flow (MGD)	PMF	Upstream Stream Flow (cfs)	Adjusted Stream Flow (cfs)	Downstream Stream Flow (cfs)
Jan 1-31	1.051	0	0	1.051	1.00	2700.80	2699.17	2700.80
Feb 1-29	1.051	0	0	1.051	1.00	2954.00	2952.37	2954.00
Mar 1-31	1.051	0	0	1.051	1.00	5908.00	5906.37	5908.00
Apr 1-15	1.051	0	0	1.051	1.00	7849.20	7847.57	7849.20
Apr 16-30	1.051	0	0	1.051	1.00	7849.20	7847.57	7849.20
May 1-15	1.051	0	0	1.051	1.00	4304.40	4302.77	4304.40
May 16-31	1.051	0	0	1.051	1.00	4304.40	4302.77	4304.40
Jun 1-15	1.051	0	0	1.051	1.00	2532.00	2530.37	2532.00
Jun 16-30	1.051	0	0	1.051	1.00	2532.00	2530.37	2532.00
Jul 1-31	1.051	0	0	1.051	1.00	1434.80	1433.17	1434.80
Aug 1-15	1.051	0	0	1.051	1.00	1181.60	1179.97	1181.60
Aug 16-31	1.051	0	0	1.051	1.00	1181.60	1179.97	1181.60
Sep 1-15	1.051	0	0	1.051	1.00	928.40	926.77	928.40
Sep 16-30	1.051	0	0	1.051	1.00	928.40	926.77	928.40
Oct 1-15	1.051	0	0	1.051	1.00	1012.80	1011.17	1012.80
Oct 16-31	1.051	0	0	1.051	1.00	1012.80	1011.17	1012.80
Nov 1-15	1.051	0	0	1.051	1.00	1350.40	1348.77	1350.40
Nov 16-30	1.051	0	0	1.051	1.00	1350.40	1348.77	1350.40
Dec 1-31	1.051	0	0	1.051	1.00	2025.60	2023.97	2025.60

Please forward all comments to Tom Starosta at 717-787-4317, tstarosta@state.pa.us.

Version 2.0 -- 07/01/2005 Reference: Implementation Guidance for Temperature Criteria, DEP-ID: 391-2000-017

NOTE: The user can only edit fields that are blue.

NOTE: MGD x 1.547 = cfs.

Thermal Discharge Limit Calc

3/4/2026

PA Temperature Criteria and Stream Flow Multipliers

Facility: **Constellation Energy Generation LLC**

Permit Number: PA0009741

Stream: Susquehanna River

	WWF Criteria (°F)	CWF Criteria (°F)	TSF Criteria (°F)	316 Criteria (°F)	Q7-10 Multipliers (Used in Analysis)	Q7-10 Multipliers (Default - Info Only)
Jan 1-31	40	38	40	58	3.2	3.2
Feb 1-29	40	38	40	58	3.5	3.5
Mar 1-31	46	42	46	58	7	7
Apr 1-15	52	48	52	58	9.3	9.3
Apr 16-30	58	52	58	58	9.3	9.3
May 1-15	64	54	64	64	5.1	5.1
May 16-31	72	58	68	72	5.1	5.1
Jun 1-15	80	60	70	80	3	3
Jun 16-30	84	64	72	84	3	3
Jul 1-31	87	66	74	87	1.7	1.7
Aug 1-15	87	66	80	87	1.4	1.4
Aug 16-31	87	66	87	87	1.4	1.4
Sep 1-15	84	64	84	84	1.1	1.1
Sep 16-30	78	60	78	78	1.1	1.1
Oct 1-15	72	54	72	72	1.2	1.2
Oct 16-31	66	50	66	66	1.2	1.2
Nov 1-15	58	46	58	58	1.6	1.6
Nov 16-30	50	42	50	58	1.6	1.6
Dec 1-31	42	40	42	58	2.4	2.4

NOTES:

WWF= Warm water fishes

CWF= Cold water fishes

TSF= Trout stocking

Thermal Discharge Limit Calc

3/4/2026

Warm Water Fishes (WWF) Stream

Thermal Discharge Recommended Permit Limits

Facility: Constellation Energy Generation LLC

Permit Number: PA0009741

Stream: Susquehanna River

	WWF		Ambient Stream Temperature (°F) (Site-specific data)	Target Maximum Stream Temp. <sup>1</sup> (°F)	WWF		PMF
	Ambient Stream Temperature (°F) (Default)	Temperature (°F)			Daily WLA <sup>2</sup> (Million BTUs/day)	Daily WLA <sup>3</sup> (°F)	
Jan 1-31	35	0	40	72,787	110.0	1.051	1.00
Feb 1-29	35	0	40	79,610	110.0	1.051	1.00
Mar 1-31	40	0	46	191,065	110.0	1.051	1.00
Apr 1-15	47	0	52	211,536	110.0	1.051	1.00
Apr 16-30	53	0	58	211,536	110.0	1.051	1.00
May 1-15	58	0	64	139,204	110.0	1.051	1.00
May 16-31	62	0	72	232,007	110.0	1.051	1.00
Jun 1-15	67	0	80	177,417	110.0	1.051	1.00
Jun 16-30	71	0	84	177,417	110.0	1.051	1.00
Jul 1-31	75	0	87	92,803	110.0	1.051	1.00
Aug 1-15	74	0	87	82,795	110.0	1.051	1.00
Aug 16-31	74	0	87	82,795	110.0	1.051	1.00
Sep 1-15	71	0	84	65,053	110.0	1.051	1.00
Sep 16-30	65	0	78	65,053	110.0	1.051	1.00
Oct 1-15	60	0	72	65,508	110.0	1.051	1.00
Oct 16-31	54	0	66	65,508	110.0	1.051	1.00
Nov 1-15	48	0	58	72,787	110.0	1.051	1.00
Nov 16-30	42	0	50	58,229	110.0	1.051	1.00
Dec 1-31	37	0	42	54,590	110.0	1.051	1.00

<sup>1</sup> This is the maximum of the WWF WQ criterion or the ambient temperature. The ambient temperature may be either the design (median) temperature for WWF, or the ambient stream temperature based on site-specific data entered by the user.

A minimum of 1°F above ambient stream temperature is allocated.

<sup>2</sup> The WLA expressed in Million BTUs/day is valid for Case 1 scenarios, and disabled for Case 2 scenarios.

<sup>3</sup> The WLA expressed in °F is valid only if the limit is tied to a daily discharge flow limit (may be used for Case 1 or Case 2).

WLAs greater than 110°F are displayed as 110°F.

Thermal Discharge Limit Calc

3/4/2026

Results Based on 316 Criteria

Thermal Discharge Recommended Permit Limits

Facility: Constellation Energy Generation LLC

Permit Number: PA0009741

Stream: Susquehanna River

	316 Ambient Stream Temperature <sup>4</sup> (°F)	316 Target Maximum Stream Temp. <sup>1</sup> (°F)	316 Daily WLA <sup>2</sup> (Million BTUs/day)	316 Daily WLA <sup>3</sup> (°F)	PMF at Discharge Flow (MGD)
Jan 1-31	34.2	58	346,464	110.0	1.051
Feb 1-29	32	58	413,974	110.0	1.051
Mar 1-31	39.9	58	576,379	110.0	1.051
Apr 1-15	46.7	58	478,071	110.0	1.051
Apr 16-30	52.4	58	236,920	110.0	1.051
May 1-15	62.2	64	41,761	110.0	1.051
May 16-31	58.4	72	315,530	110.0	1.051
Jun 1-15	82.3	83.3	13,647	110.0	1.051
Jun 16-30	79.7	84	58,684	110.0	1.051
Jul 1-31	82.3	87	36,348	110.0	1.051
Aug 1-15	84	87	19,106	110.0	1.051
Aug 16-31	78.9	87	51,587	110.0	1.051
Sep 1-15	77.4	84	33,027	110.0	1.051
Sep 16-30	75.2	78	14,011	110.0	1.051
Oct 1-15	57.5	72	79,155	110.0	1.051
Oct 16-31	52.7	66	72,605	110.0	1.051
Nov 1-15	50.6	58	53,862	110.0	1.051
Nov 16-30	45.2	58	93,167	110.0	1.051
Dec 1-31	35.15	58	249,476	110.0	1.051

<sup>1</sup> These data are the output from the 316 study. A minimum of 1°F above ambient stream temperature is allocated.

<sup>2</sup> The WLA expressed in Million BTUs/day is valid for Case 1 scenarios, and disabled for Case 2 scenarios.

<sup>3</sup> The WLA expressed in °F is valid only if the limit is tied to a daily discharge flow limit (may be used for Case 1 or Case 2). WLAs greater than 110°F are displayed as 110°F.

<sup>4</sup> The ambient stream temperature must be entered by the user. It can be the default temperature for WWF, CWF, or TSF waters, or it can be based on site-specific data.

Thermal Discharge Limit Calc

3/4/2026

TRC\_CALC

1A	B	C	D	E	F	G
2	<b>TRC EVALUATION</b>					
3	Input appropriate values in B4:B8 and E4:E7					
4	844	= Q stream (cfs)		0.5	= CV Daily	
5	1.051	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)			=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA_afc = 165.611		1.3.2.iii	WLA_cfc = 161.451
12	PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373		5.1c	LTAMULT_cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc = 61.711		5.1d	LTA_cfc = 93.860
14						
15	Source	Effluent Limit Calculations				
16	PENTOXSD TRG	5.1f	AML_MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
18			INST MAX LIMIT (mg/l) = 1.635			
	WLA_afc	(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))... ...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)				
	LTAMULT_afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)				
	LTA_afc	wla_afc*LTAMULT_afc				
	WLA_cfc	(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))... ...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)				
	LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)				
	LTA_cfc	wla_cfc*LTAMULT_cfc				
	AML_MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))				
	AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)				
	INST MAX LIMIT	1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)				



## Discharge Information

Instructions Discharge Stream

Facility: **Constellation Energy Generation LLC** NPDES Permit No.: **PA0009741** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **IW Process Effluent without ELG**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q <sub>7-10</sub>	Q <sub>h</sub>
1.051	75.6	8.2						

Discharge Pollutant	Units	Max Discharge Conc	0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
			Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L	130								
	Chloride (PWS)	mg/L	17.8								
	Bromide	mg/L									
	Sulfate (PWS)	mg/L	< 19.9								
	Fluoride (PWS)	mg/L	0.12								
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	<								
	Free Cyanide	µg/L									
	Total Cyanide	µg/L									
	Dissolved Iron	µg/L									
	Total Iron	µg/L									
	Total Lead	µg/L	<								
	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										
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)Anthracene	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	<																			





## Stream / Surface Water Information

Constellation Energy Generation LLC, NPDES Permit No. PA0009741, Outfall 001

Instructions Discharge Stream

Receiving Surface Water Name: Susquehanna River No. Reaches to Model: 1

- Statewide Criteria
- Great Lakes Criteria
- ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi <sup>2</sup> )*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	006685	7.4	106	26799			Yes
End of Reach 1	006685	2.6	105	26981			Yes

### Q<sub>7-10</sub>

Location	RMI	LFY (cfs/mi <sup>2</sup> )*	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	7.4	0.1	844									100	7		
End of Reach 1	2.6	0.1	850									100	7		

### Q<sub>h</sub>

Location	RMI	LFY (cfs/mi <sup>2</sup> )*	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	7.4														
End of Reach 1	2.6														










**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
07K	6685	SUSQUEHANNA RIVER	7.400	106.00	26799.00	0.00000	0.00	<input checked="" type="checkbox"/>

**Stream Data**

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary		Stream	
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.100	0.00	844.00	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
Constellation	PA0009741	0.0069	0.0069	0.0069	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	25.00	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
07K	6685	SUSQUEHANNA RIVER	2.600	105.00	26981.00	0.00000	0.00	<input checked="" type="checkbox"/>

**Stream Data**

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary		Stream	
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.100	0.00	850.00	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 Hydrodynamic Outputs**

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
07K		6685				SUSQUEHANNA RIVER						
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
<b>Q7-10 Flow</b>												
7.400	844.00	0.00	844.00	.0107	0.00004	1.291	754.21	584.34	0.87	0.338	20.00	7.00
<b>Q1-10 Flow</b>												
7.400	540.16	0.00	540.16	.0107	0.00004	NA	NA	NA	0.68	0.434	20.00	7.00
<b>Q30-10 Flow</b>												
7.400	1147.84	0.00	1147.84	.0107	0.00004	NA	NA	NA	1.03	0.285	20.00	7.00

### WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5		

**WQM 7.0 Wasteload Allocations**

SWP Basin      Stream Code                      Stream Name  
07K                      6685                                      SUSQUEHANNA RIVER

**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
7.400	Constellation	16.76	50	16.76	50	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
7.400	Constellation	1.89	25	1.89	25	0	0

**Dissolved Oxygen Allocations**

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
7.40	Constellation	25	25	25	25	5	5	0	0

**WQM 7.0 D.O.Simulation**

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
07K	6685	SUSQUEHANNA RIVER		
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
7.400	0.007	20.000	7.000	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
754.207	1.291	584.342	0.867	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
2.00	0.000	0.00	0.700	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
8.243	0.160	Tsivoglou	5	
<u>Reach Travel Time (days)</u>	<b>Subreach Results</b>			
0.338	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.034	2.00	0.00	8.24
	0.068	2.00	0.00	8.24
	0.101	2.00	0.00	8.24
	0.135	2.00	0.00	8.24
	0.169	2.00	0.00	8.24
	0.203	2.00	0.00	8.24
	0.237	2.00	0.00	8.24
	0.271	2.00	0.00	8.24
	0.304	2.00	0.00	8.24
	0.338	2.00	0.00	8.24

**WQM 7.0 Effluent Limits**

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
07K		6685		SUSQUEHANNA RIVER			
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)
7.400	Constellation	PA0009741	0.007	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5