pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0010031**
Facility Type	**Industrial**	APS ID	**1033213**
Major / Minor	**Major**	Authorization ID	**1344726**

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

Applicant and Facility Information

Applicant Name	**Shawville Power LLC**	Facility Name	**Shawville Generating Station**
Applicant Address	250 Power Plant Road, Box F	Facility Address	250 Power Plant Drive
	Shawville, PA 16873		Shawville, PA 16873
Applicant Contact	Karen E. McClelland	Facility Contact	John Telford
Applicant Phone	(724) 877-4462	Facility Phone	(814) 768-4283
Client ID	350842	Site ID	244416
SIC Code	4911	Municipality	Bradford Township
SIC Description	Trans. & Utilities - Electric Services	County	Clearfield
Date Application Received	March 2, 2021	EPA Waived?	No
Date Application Accepted	March 11, 2021	If No, Reason	Major Facility

Purpose of Application: Renewal of an existing NPDES permit for the discharge of industrial wastewater, stormwater, and sewage.

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.

Approve	Deny	Signatures	Date
X		*Derek S. Garner* Derek S. Garner / Project Manager	September 24 2021
X		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	September 24, 2021

Facility Overview

Overview

Shawville Power LLC ("Shawville") operates the Shawville Generating Station; a natural gas-powered power plant with a closed-cycle recirculating cooling system located in Shawville, PA located along the southern bank of the West Branch Susquehanna River.

Refer to Attachment A for a satellite overview of the facility.

Treatment

All industrial wastewater flows are treated at the onsite 3.427 MGD industrial wastewater treatment plant ("IWWTP"). Treatment at the IWWTP includes; mixing, neutralization, chemical precipitation, flocculation, sedimentation, gravity thickening, and oil and grease removal.

Sewage has historically been treated at the onsite 0.018 MGD sewage treatment plant ("STP") and monitored at internal monitoring point ("IMP") 205. Treatment at the STP included; comminutors, equalization, aerobic digestion, sedimentation, and disinfection. Per email correspondence dated June 21, 2021 (Attachment B), Shawville has clarified that the STP is currently in long-term protective layup. Onsite sewage is currently hauled offsite and Shawville is working towards obtaining holding tank certification for storage. If staffing increases in the future such that sewage would need to be treated on site, Shawville intends to reactivate the STP and, thus, requests that sewage-related requirements remain in the permit.

Outfalls

Outfalls 001, 002, 003, 009, 010, and 012 are stormwater discharges. Shawville has requested that these outfalls receive a no exposure certification since the currently facility configuration and operations preclude contact with industrial activities. No exposure certification discussions can be found in the individual outfall discussions in the Development of Effluent Limitations section below.

Outfalls 004 and 011 and IMP 505 are stormwater induced overflows of wastewater that is normally treated by the IWWTP. These overflows occur only when the capacities of the pump facilities are exceeded. Any discharge that occurs from these outfalls or IMP must be reported as a spill.

IMPs 101 and 201 are stormwater induced overflows of wastewater that would typically be conveyed to the leachate pump station, but instead are routed to Outfall 001.

IMP 102 is a stormwater induced overflow of the leachate pump station.

IMP 105 is a discharge of intake screen wash water. No effluent limits or monitoring requirements are established at this IMP. Debris collected on the intake trash racks is not permitted to be returned to the waterway. However, leaves captured in the trash racks that are washed from the screens by auxiliary screen nozzles may be returned to the waterway via this IMP.

IMP 205 is treated effluent from the sewage treatment plant. IMP 405 is treated effluent from the industrial wastewater treatment plant. Both flows are combined downstream of their respective IMPs and are discharged via Outfall 005.

IMP 305 is an emergency overflow of the neutralization tank "A". Any discharge from this IMP must be reported as a spill.

IMP 605 as a sampling point for the cooling tower blowdown prior to blending with other waste streams.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	**001**	Design Flow (MGD)	n/a
Latitude	41º 3' 28.00"	Longitude	-78º 22' 15.00"
Quad Name	Lecontes Mills	Quad Code	1019
Wastewater Description:	North Ash Disposal Site Stormwater		

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829837	RMI	n/a
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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	Metals		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final	Name	West Branch Susquehanna

IMP No.	**101**	Design Flow (MGD)	n/a
Latitude	41º 3' 36.00"	Longitude	-78º 22' 4.00"
Quad Name	Lecontes Mills	Quad Code	1019
Wastewater Description:	Settling Pond Emergency Overflow		

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829837	RMI	n/a
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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	Metals		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final	Name	West Branch Susquehanna

IMP No.	**201**	Design Flow (MGD)	n/a
Latitude	41º 3' 28.00"	Longitude	-78º 22' 15.00"
Quad Name	Lecontes Mills	Quad Code	1019

Wastewater Description: Hill Side Seepage North Ash Disposal Site Emergency Overflow

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829837	RMI	n/a
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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	Metals		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final	Name	West Branch Susquehanna

Outfall No.	**002**	Design Flow (MGD)	n/a
Latitude	41º 3' 40.00"	Longitude	-78º 22' 31.00"
Quad Name	Clearfield	Quad Code	1019

Wastewater Description: Setting/Storage Ponds A/B Stormwater

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829933	RMI	163.88
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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	Metals		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final	Name	West Branch Susquehanna

IMP No.	**102**	Design Flow (MGD)	n/a
Latitude	41º 3' 37.00"	Longitude	-78º 22' 29.00"
Quad Name	Clearfield	Quad Code	1018

Wastewater Description: Leachate Pump Station Emergency Overflow

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829933	RMI	n/a
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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	Metals		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final	Name	West Branch Susquehanna

Outfall No.	**003**	Design Flow (MGD)	n/a
Latitude	41º 3' 52.00"	Longitude	-78º 22' 15.00"
Quad Name	Lecontes Mills	Quad Code	1019

Wastewater Description: Regulator Station Area Stormwater

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829797	RMI	164.09
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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	Metals		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final	Name	West Branch Susquehanna

Outfall No.	**004**	Design Flow (MGD)	n/a
Latitude	41º 3' 59.00"	Longitude	-78º 22' 7.00"
Quad Name	Lecontes Mills	Quad Code	1019

Wastewater Description: Stormwater Induced Sump Overflow

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829797	RMI	163.90
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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	Metals		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final	Name	West Branch Susquehanna

Outfall No.	**005**	Design Flow (MGD)	3.445
Latitude	41º 4' 7.00"	Longitude	-78º 21' 51.00"
Quad Name	Lecontes Mills	Quad Code	1019

Wastewater Description: IW Process Effluent w/ ELG, IW Process Effluent w/out ELG, Sewage, Stormwater, Contaminated Groundwater

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829723	RMI	164.15
Drainage Area	930	Yield (cfs/mi^2)	0.1338
Q_{7-10} Flow (cfs)	124	Q_{7-10} Basis	Streamgage No. 01541303
Elevation (ft)	1037	Slope (ft/ft)	n/a
Watershed No.	8-C	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	Metals		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final	Name	West Branch Susquehanna

Nearest Downstream Public Water Supply Intake	Pennsylvania-American Water Company		
PWS Waters	West Branch Susquehanna River	Flow at Intake (cfs)	679.73
PWS RMI	10.66	Distance from Outfall (mi)	153.49

IMP No.	**105**	Design Flow (MGD)	n/a
Latitude	41º 4' 2.00"	Longitude	-78º 22' 0.00"
Quad Name	Lecontes Mills	Quad Code	1019

Wastewater Description: Intake Screen Wash Water

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829723	RMI	n/a
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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: Metals
Source(s) of Impairment: Abandoned Mine Drainage
TMDL Status: Final Name: West Branch Susquehanna

IMP No.	**205**	Design Flow (MGD)	0.018
Latitude	41º 4' 0.00"	Longitude	-78º 22' 0.00"
Quad Name	Lecontes Mills	Quad Code	1019

Wastewater Description: Sewage Effluent

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829723	RMI	n/a
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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: Metals
Source(s) of Impairment: Abandoned Mine Drainage
TMDL Status: Final Name: West Branch Susquehanna

IMP No.	**305**	Design Flow (MGD)	n/a
Latitude	41º 4' 4.00"	Longitude	-78º 21' 58.00"
Quad Name	Lecontes Mills	Quad Code	1019

Wastewater Description: Emergency Overflow of Neutralization Tank

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829723	RMI	n/a
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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: Metals
Source(s) of Impairment: Abandoned Mine Drainage
TMDL Status: Final Name: West Branch Susquehanna

IMP No.	**405**	Design Flow (MGD)	3.427
Latitude	41º 3' 47.00"	Longitude	-78º 22' 20.00"
Quad Name	Lecontes Mills	Quad Code	1019

Wastewater Description: IW Process Effluent with ELG, IW Process Effluent without ELG, Stormwater

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829837	RMI	n/a
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	Chapter 93 Class.	WWF, MF
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: Metals
Source(s) of Impairment: Abandoned Mine Drainage
TMDL Status: Final Name: West Branch Susquehanna

IMP No.	**505**	Design Flow (MGD)	n/a
Latitude	41º 4' 6.00"	Longitude	-78º 21' 55.00"
Quad Name	Lecontes Mills	Quad Code	1019

Wastewater Description: Stormwater Induced Overflow of Diversion Structure

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829837	RMI	n/a
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	Chapter 93 Class.	WWF, MF
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: Metals
Source(s) of Impairment: Abandoned Mine Drainage
TMDL Status: Final Name: West Branch Susquehanna

IMP No.	**605**	Design Flow (MGD)	2.07
Latitude	41º 4' 7.00"	Longitude	-78º 21' 53.00"
Quad Name	Lecontes Mills	Quad Code	1019

Wastewater Description: Cooling Tower Blowdown

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829797	RMI	n/a
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	Chapter 93 Class.	WWF, MF
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: Metals
Source(s) of Impairment: Abandoned Mine Drainage
TMDL Status: Final Name: West Branch Susquehanna

Outfall No.	**009**	Design Flow (MGD)	n/a
Latitude	41º 4' 6.00"	Longitude	-78º 21' 46.00"
Quad Name	Lecontes Mills	Quad Code	1019
Wastewater Description:	Cooling Tower Area Stormwater		

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829723	RMI	164.12
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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	Metals		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final	Name	West Branch Susquehanna

Outfall No.	**010**	Design Flow (MGD)	n/a
Latitude	41º 4' 5.00"	Longitude	-78º 22' 0.00"
Quad Name	Lecontes Mills	Quad Code	1019
Wastewater Description:	Office Parking Area Stormwater		

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829797	RMI	n/a
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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	Metals		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final	Name	West Branch Susquehanna

Outfall No.	**011**	Design Flow (MGD)	n/a
Latitude	41º 3' 43.00"	Longitude	-78º 22' 26.00"
Quad Name	Lecontes Mills	Quad Code	1019

Wastewater Description: Stormwater Induced Overflow of Subdrain Pump Station

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829797	RMI	n/a
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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: Metals
Source(s) of Impairment: Abandoned Mine Drainage
TMDL Status: Final Name: West Branch Susquehanna

Outfall No.	**012**	Design Flow (MGD)	n/a
Latitude	41º 3' 48.00"	Longitude	-78º 22' 20.00"
Quad Name	Lecontes Mills	Quad Code	1019

Wastewater Description: Industrial Wastewater Treatment Plant Area Stormwater

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61829837	RMI	n/a
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	8-C	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: Metals
Source(s) of Impairment: Abandoned Mine Drainage
TMDL Status: Final Name: West Branch Susquehanna

Compliance History

The following effluent violations occurred over the existing permit's term:

Outfall	Noncompliance Date	Noncompliance Category	Parameter	Sample Value	Violation Condition	Permit Value	Units	SBC
205	8/22/2019	Concentration 2 Effluent Violation	Fecal Coliform	> 2419	>	200	CFU/100 ml	Geo Mean
205	8/22/2019	Concentration 3 Effluent Violation	Fecal Coliform	< 2419	>	1000	CFU/100 ml	IMAX
205	9/17/2019	Concentration 2 Effluent Violation	Carbonaceous Biochemical Oxygen Demand (CBOD5)	55.67	>	25	mg/L	Avg Mo
205	9/17/2019	Concentration 3 Effluent Violation	Carbonaceous Biochemical Oxygen Demand (CBOD5)	161	>	50	mg/L	IMAX
205	9/17/2019	Concentration 3 Effluent Violation	Fecal Coliform	< 2419	>	1000	CFU/100 ml	IMAX
205	5/5/2020	Concentration 2 Effluent Violation	Total Suspended Solids	46	>	30	mg/L	Avg Mo
205	6/16/2020	Concentration 2 Effluent Violation	Total Suspended Solids	76	>	30	mg/L	Avg Mo
205	6/16/2020	Concentration 3 Effluent Violation	Total Suspended Solids	76	>	60	mg/L	IMAX

A notice of violation dated July 1, 2021 regarding the above exceedances was sent to Shawville (see Attachment C).

The facility was most recently inspected by DEP on June 22, 2021. The inspection report (see Attachment D) noted that there were no impacts at, above, or below any of the outfalls.

Clean Water Act Sec. 316(b) Determination

In 2017, Shawville completed construction of a closed-cycle recirculating cooling system. As the owner of an existing facility with a new unit, as defined in 40 CFR §§ 125.92(k) and 125.92(u), Shawville is subject to the requirements at §§ 125.94 through 125.99 since the facility is a point source (§ 125.91(a)(1)), the design intake flow ("DIF") is greater than 2.0 MGD (§ 125.91(a)(2)), and more than 25% of the intake flow is used exclusively for cooling purposes (§ 125.91(a)(3)).

Specifically, § 125.94(e) requires existing facility's with new units to achieve the impingement mortality and entrainment standards, at a minimum, to a level commensurate with that which can be attained by the use of a closed-cycle recirculating system. Since the Shawville has constructed and currently operates a closed-cycle recirculating system, Section 316(b) of the Clean Water Act is satisfied.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** n/a
Latitude 41º 3' 28.00" **Longitude** -78º 22' 15.00"
Wastewater Description: North Ash Disposal Site Stormwater

Technology-Based Limitations

There are no applicable technology-based effluent limitations for industrial stormwater.

Water Quality-Based Limitations

A water quality analysis for a stormwater discharge is not appropriate.

Best Professional Judgment ("BPJ") Limitations

Shawville has requested a no exposure certification for Outfall 003. The application indicates that industrial activity no longer occurs in the outfall's drainage area, and Shawville has requested a no exposure certification. Since there is no industrial activity exposed to stormwater a no exposure certification is appropriate.

Anti-Backsliding

Since the permit's last renewal, site conditions have changed so that the outfall is now eligible for a no exposure certification. Consequently, in accordance with 40 CFR 122.44(l)(2)(i)((A)(1), monitoring requirements for pH, TSS, total copper, total nickel, total zinc, dissolved iron, and oil and grease have been removed from Outfall 001.

IMP No. 101 **Design Flow (MGD)** n/a
Latitude 41º 3' 36.00" **Longitude** -78º 22' 4.00"
Wastewater Description: Settling Pond Emergency Overflow

Technology-Based Limitations

There are no applicable technology-based effluent limitations for industrial stormwater.

Water Quality-Based Limitations

A water quality analysis for a stormwater discharge is not appropriate.

Best Professional Judgment ("BPJ") Limitations

Parameter	Limit (mg/l)	Basis
pH	Report	Existing BPJ Determination
Total Suspended Solids	Report	
Total Copper	Report	
Total Nickel	Report	
Total Zinc	Report	
Dissolved Iron	Report	
Oil & Grease	Report	

The above monitoring requirements are were established in previous renewals of the permit using BPJ. DEP believes these monitoring requirements are still appropriate and should remain in the permit.

West Branch Susquehanna River Watershed Total Maximum Daily Load ("TMDL")

The West Branch Susquehanna River is impaired for metals and low pH resulting from drainage of abandoned coal mines. To address the impairments, a TMDL was developed for segments in the River's watershed. The TMDL address the three primary metals associated with abandon mine drainage: iron, aluminum, and manganese and acidity. The previous permit renewal established monitoring frequencies for the three metals. DEP believes that these requirements are still appropriate and should remain in the permit.

Anti-Backsliding

The proposed reporting requirements are the same as the previous renewal. Anti-backsliding regulations should not impact IMP 101.

IMP No. 201 **Design Flow (MGD)** n/a
Latitude 41º 3' 28.00" **Longitude** -78º 22' 15.00"
Wastewater Description: Hill Side Seepage North Ash Disposal Site Emergency Overflow

Technology-Based Limitations

There are no applicable technology-based effluent limitations for industrial stormwater.

Water Quality-Based Limitations

A water quality analysis for a stormwater discharge is not appropriate.

Best Professional Judgment ("BPJ") Limitations

Parameter	Limit (mg/l)	Basis
pH	Report	Existing BPJ Determination
Total Suspended Solids	Report	
Total Copper	Report	
Total Nickel	Report	
Total Zinc	Report	
Dissolved Iron	Report	
Oil & Grease	Report	

The above monitoring requirements are were established in previous renewals of the permit using BPJ. DEP believes these monitoring requirements are still appropriate and should remain in the permit.

West Branch Susquehanna River Watershed Total Maximum Daily Load ("TMDL")

The West Branch Susquehanna River is impaired for metals and low pH resulting from drainage of abandoned coal mines. To address the impairments, a TMDL was developed for segments in the River's watershed. The TMDL address the three primary metals associated with abandon mine drainage: iron, aluminum, and manganese and acidity. The previous permit renewal established monitoring frequencies for the three metals. DEP believes that these requirements are still appropriate and should remain in the permit.

Anti-Backsliding

The proposed reporting requirements are the same as the previous renewal. Anti-backsliding regulations should not impact IMP 201.

Outfall No.	002	**Design Flow (MGD)**	n/a
Latitude	41º 3' 40.00"	**Longitude**	-78º 22' 31.00"

Wastewater Description: Setting/Storage Ponds A/B Stormwater

Technology-Based Limitations

There are no applicable technology-based effluent limitations for industrial stormwater.

Water Quality-Based Limitations

A water quality analysis for a stormwater discharge is not appropriate.

Best Professional Judgment ("BPJ") Limitations

Shawville has requested a no exposure certification for Outfall 002. The application indicates that industrial activity no longer occurs in the outfall's drainage area, and Shawville has requested a no exposure certification. Since there is no industrial activity exposed to stormwater a no exposure certification is appropriate.

Anti-Backsliding

Since the permit's last renewal, site conditions have changed so that the outfall is now eligible for a no exposure certification. Consequently, in accordance with 40 CFR 122.44(l)(2)(i)((A)(1), monitoring requirements for pH, TSS, total copper, total nickel, total zinc, dissolved iron, and oil and grease have been removed from Outfall 002.

Outfall No. 102 **Design Flow (MGD)** n/a
Latitude 41º 3' 37.00" **Longitude** -78º 22' 29.00"
Wastewater Description: Leachate Pump Station Emergency Overflow

Technology-Based Limitations

There are no applicable technology-based effluent limitations for industrial stormwater.

Water Quality-Based Limitations

A water quality analysis for a stormwater discharge is not appropriate.

Best Professional Judgment ("BPJ") Limitations

Parameter	Limit (mg/l)	Basis
pH	Report	Existing BPJ Determination
Total Suspended Solids	Report	
Total Copper	Report	
Total Nickel	Report	
Total Zinc	Report	
Dissolved Iron	Report	
Oil & Grease	Report	

The above monitoring requirements are were established in previous renewals of the permit using BPJ. DEP believes these monitoring requirements are still appropriate and should remain in the permit.

West Branch Susquehanna River Watershed Total Maximum Daily Load ("TMDL")

The West Branch Susquehanna River is impaired for metals and low pH resulting from drainage of abandoned coal mines. To address the impairments, a TMDL was developed for segments in the River's watershed. The TMDL address the three primary metals associated with abandon mine drainage: iron, aluminum, and manganese and acidity. The previous permit renewal established monitoring frequencies for the three metals. DEP believes that these requirements are still appropriate and should remain in the permit.

Anti-Backsliding

The proposed reporting requirements are the same as the previous renewal. Anti-backsliding regulations should not impact IMP 102.

Outfall No.	003	**Design Flow (MGD)**	n/a
Latitude	41º 3' 59.00"	**Longitude**	-78º 22' 15.00"

Wastewater Description: Regulator Station Area Stormwater

Technology-Based Limitations

There are no applicable technology-based effluent limitations for industrial stormwater.

Water Quality-Based Limitations

A water quality analysis for a stormwater discharge is not appropriate.

Best Professional Judgment ("BPJ") Limitations

Shawville has requested a no exposure certification for Outfall 003. The application indicates that industrial activity no longer occurs in the outfall's drainage area, and Shawville has requested a no exposure certification. Since there is no industrial activity exposed to stormwater a no exposure certification is appropriate.

Anti-Backsliding

Since the permit's last renewal, site conditions have changed so that the outfall is now eligible for a no exposure certification. Consequently, in accordance with 40 CFR 122.44(l)(2)(i)((A)(1), monitoring requirements for pH, TSS, total copper, total nickel, total zinc, dissolved iron, and oil and grease have been removed from Outfall 003.

Outfall No.	004	**Design Flow (MGD)**	n/a
Latitude	41º 3' 52.00"	**Longitude**	-78º 22' 7.00"

Wastewater Description: Stormwater Induced Sump Overflow

As noted in the Facility Overview section above, Outfall 004 is a stormwater induced overflow of wastewater that is normally treated by the IWWTP. The overflow only occurs when the capacity of the pumping facility is exceeded. Any discharge that occurs from this outfall must be reported as a spill. No limits or monitoring requirements are applied to this discharge.

Outfall No.	005	**Design Flow (MGD)**	3.445
Latitude	41º 4' 7.00"	**Longitude**	-78º 21' 51.00"

Wastewater Description: The final discharge of IMPs 105, 205, 305, 405, 505, and 605.

Technology-Based Limitations

Relevant technology-based limitations have been applied at the appropriate upstream internal monitoring points.

Water Quality-Based Limitations

DEP models in-stream conditions to determine if WQBELs are appropriate. Shawville Generating Station has two separate waste streams (IMPs 205 and 405/605) that combine before final discharge at Outfall 005. Sampling at Outfall 005 is not possible because the outfall is located at the toe of a dam that extends out into the river and is completely inaccessible during periods of high flows. Since establishing WQBELs at Outfall 005 is necessary,a flow-weighted concentration must be calculated in order to create an accurate characterization of the combined effluent. A flow-weighted concentration was calculated using technology-based limits, sample results submitted through eDMR, or sample results reported in the renewal application. The calculations are included in Attachment E.

The water quality model WQM 7.0 v1.1 is used to determine the WQBELs for dissolved oxygen, CBOD5, and ammonia-n based on a multiple-discharge analysis, if applicable. The model assumes complete and instantaneous mixing with the receiving surface water. The reach chosen to model the in-stream characteristics is appropriate as a recovery in dissolved oxygen levels is demonstrated. The modeling output is as follows:

Parameter	Effluent Limit (mg/l)		
	30 Day Avg	Maximum	Minimum
CBOD5	5.1		
NH3-N	11.1	22.2	
Dissolved Oxygen			3

The recommended effluent limits mirror those of the input concentrations; meaning, the current permit limits and/or discharge concentrations are not negatively impacting the West Branch Susquehanna River. WQM input/output data is included in Attachment F.

Unlike WQM 7.0 v1.1, the Toxics Management Spreadsheet v1.3 (“TMS”) is a single discharge model that does not assume instantaneous mixing with the receiving water upon discharge, but instead, assigns a partial mixing factor based upon surface water and discharge characteristics.

The flow-weighted concentrations calculated using the approach identified above were entered into the TMS. Background concentration data for the West Branch Susquehanna River obtained from the intake data submitted with the application was also entered into the TMS. The modeling output recommendations for limits and reporting requirements are as follows (next page):

	Mass Limits		*Concentration Limits*						
Pollutants	**AML (lbs/day)**	**MDL (lbs/day)**	**AML**	**MDL**	**IMAX**	**Units**	**Governing WQBEL**	**WQBEL Basis**	**Comments**
Total Aluminum	33.6	52.4	1,170	1,825	2,924	µg/L	1,170	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Hexavalent Chromium	Report	Report	Report	Report	Report	µg/L	25.8	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Manganese	Report	Report	Report	Report	Report	µg/L	11,177	THH	Discharge Conc > 10% WQBEL (no RP)
Total Mercury	0.017	0.026	0.58	0.9	1.45	µg/L	0.58	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Thallium	0.08	0.12	2.78	4.34	6.96	µg/L	2.78	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	693	AFC	Discharge Conc > 10% WQBEL (no RP)
Acrylamide	0.13	0.21	4.64	7.23	11.6	µg/L	4.64	CRL	Discharge Conc ≥ 50% WQBEL (RP)

Toxics Management Spreadsheet input/output data is included as Attachment G.

A total residual chlorine evaluation was performed at Outfall 005 using the TRC_CALC spreadsheet. The spreadsheet recommends an average monthly limit of 0.233 mg/l and IMAX limit of 0.763 mg/l. However, this is based on an allowable discharge concentration of 0.5 mg/l, which is identified as BAT in 25 Pa. Code § 92a.48(b)(2). Any chlorine discharged from Outfall 005 will be contributed by the STP at a flowrate no greater than 0.018 MGD, which is the STP's design flow. This statement is confirmed by the application's sampling results, which have historically indicated a concentration of 0.05 mg/l TRC at IMP 205 and 0 mg/l at IMP 405 (IWWTP). This means at design conditions the TRC concentration at Outfall 005 will not approach the average monthly limit of 0.233 mg/l, and would not be detectable at an expected flow-weighted concentration of 2.6 µg/l. Consequently, no TRC limits or monitoring requirements are necessary at Outfall 005. The total residual chlorine evaluation is included as Attachment H.

In order to comply with the proposed WQBELs DEP has previously established monitoring requirements for the pollutants of concern at IMPs 205 and 405 and required Shawville to calculate the final expected concentration at Outfall 005. Since there is no indication that site conditions have changed that would allow Shawville to directly sample Outfall 005, DEP recommends the existing requirements to calculate Outfall 005 concentrations and loadings based on IMP 205 and 405 sample results remain in the permit.

West Branch Susquehanna River Watershed Total Maximum Daily Load ("TMDL")

The West Branch Susquehanna River is impaired for metals and low pH resulting from drainage of abandoned coal mines. To address the impairments, a TMDL was developed for segments in the River's watershed. The TMDL address the three primary metals associated with abandon mine drainage; iron, aluminum, and manganese and acidity and establishes a waste load allocation (WLA) for IMP 405 as follows:

Parameter	**Monthly Avg. Conc. (mg/l)**	**Allowable Load (lbs/day)**
Total Iron	1.8	19.74
Total Manganese	2.1	23.03
Total Aluminum [(1)]	3.7	40.58

[(1)] A more stringent water-quality based limit, for total aluminum (see WQBELs discussion above) is proposed in place of total aluminum WLA.

The TMDL incorrectly states that the, "…Shawville Power Plant has one outfall (405) in the West Branch Watershed." As identified above, 405 is an internal monitoring point for the IWWTP. The WLA should be established at Outfall 005, so that contributions from IMP 205 (STP) can be captured in sampling since metals sampling at IMP 205 performed for the application show detectable amounts in the STP effluent.

Acidity will be addressed by pH limits.

Best Professional Judgment ("BPJ")

The previous renewal established monitoring for total dissolved solids ("TDS") and its main constituents (chloride, bromide, and sulfate). Sample results submitted through eDMR indicate that the facility routinely approaches (>1,000 mg/l) and sometimes exceeds 2,000 mg/l TDS. Accordingly, DEP recommends that the monitoring requirements for TDS and its main constituents remain in the permit.

Chesapeake Bay

Chesapeake Bay considerations are discussed under IMPs 205 and 405.

Anti-Backsliding

Based on monitoring data that was not available during the permit's previous renewal, and in accordance with 40 CFR 122.44(l)(2)(i)((A)(1), monitoring requirements for dissolved iron have been removed and effluent limits for total zinc and total mercury have been slightly relaxed.

IMP No. 205 **Design Flow (MGD)** 0.018
Latitude 41º 4' 0.00" **Longitude** -78º 22' 0.00"
Wastewater Description: Sewage Effluent

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

Water Quality-Based Limitations

A water quality analysis is not appropriate for an internal monitoring point upstream of blending with other waste streams. Water quality-based limits must be applied at the outfall, in this case Outfall 005.

Chesapeake Bay

Per Phase III of the WIP the Shawville Generating Station's sewage treatment plant is considered a Phase V discharge (design flow > 0.002 MGD and < 0.2 MGD) and must conduct, at a minimum, annual monitoring for TN and TP unless two years of nutrient monitoring has already been completed. The previous permit established annual monitoring for TN and TP resulting in four samples collected and submitted through the eDMR system. The results are as follows:

Monitoring Period	TN		TP	
	lbs/day	mg/l	lbs/day	mg/l
2016 (1)	GG	GG	GG	GG
2017 (2)	--	--	--	--
2018	0.89	17.8	0.21	4.2
2019	0.08	19.3	0.01	1.53
2020	1.07	32.2	0.0023	0.07

(1) The 2016 submission used a no data indicator of GG. GG is used if the permit requires sample collection and analysis only under certain conditions and those conditions were not met during the reporting period (e.g., report chlorine results only when chlorination system is used).
(2) No sample results for 2017 could be found in the eDMR system.

Since the permittee has completed more than two years of monitoring, it is proposed to remove TN and TP from IMP 205.

Anti-Backsliding

Based on monitoring data that was not available during the permit's previous renewal, and in accordance with 40 CFR 122.44(l)(2)(i)((A)(1), TN and TP monitoring requirements have been removed from IMP 205.

IMP No. 405 **Design Flow (MGD)** 3.427
Latitude 41º 3' 47.00" **Longitude** -78º 22' 20.00"
Wastewater Description: IW Process Effluent with ELG, IW Process Effluent without ELG, Stormwater

Technology-Based Limitations

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
pH (S.U.) (1)	6.0	Minimum	423.12(b)(1)	95.2(1)
	9.0	IMAX	423.12(b)(1)	95.2(1)
Total PCBs (µg/l) (2)	1.75	IMAX	423.12(b)(2), 423.13(a)	
Total Suspended Solids (3)	30.0	Average Monthly	423.12(b)(3), 423.12(b)(5)	
	100.0	Maximum Daily	423.12(b)(3), 423.12(b)(5)	
Oil and Grease (4)	15.0	Average Monthly	423.12(b)(3), 423.12(b)(5)	95.2(2)
	20.0	Maximum Daily	423.12(b)(3), 423.12(b)(5)	
	30.0	IMAX		95.2(2)
Total Copper (5)	1.0	Average Monthly	423.13(f)	
	1.0	Maximum Daily	423.13(f)	
Total Iron (6)	1.0	Average Monthly	423.12(b)(5)	
	1.0	Maximum Daily	423.12(b)(5)	
	0.5	IMAX	423.12(a)(7), 423.13(d)(1), 423.15(b)(10)(i)	92a.48(b)(1)
Dissolved Iron (7)	7.0	IMAX		95.2(4)

(1) Best practicable control technology (BPT) limitations at § 423.12(b)(1) and industrial waste standards at § 95.2(1) require a discharge pH range between 6.0 and 9.0 for all discharges of industrial wastewater.

(2) BPT limitations at § 423.12(b)(2) and best available technology economically achievable (BAT) limitations at § 423.13(a) explicitly prohibit the discharge of any PCBs from any stream electric power generating station. To effectively demonstrate that the discharge does not contain PCBs, DEP established the recommended quantitation limit ("QL") as an instantaneous maximum limitation of 1.75 µg/l. A narrative limit will continue to be included in Part C of the permit prohibiting the discharge of PCBs.

(3) BPT limitations at § 423.12(b)(3) for low-volume waste and § 423.12(b)(5) for metal cleaning wastes both require an average monthly limitation of 30.0 mg/l and maximum daily limitation of 100.0 mg/l for Total Suspended Solids (TSS). Since both waste streams require the same technology-based limits for TSS it is appropriate to apply them at IMP 405.

(4) BPT limitations at § 423.12(b)(3) for low-volume waste and § 423.12(b)(5) for metal cleaning wastes both require an average monthly limitation of 15.0 mg/l and maximum daily limitation of 20.0 mg/l for Oil and Grease. Additionally, § 95.2(2) requires discharges of industrial wastewater meet 15.0 mg/l average monthly and and 30.0 mg/l instantaneous maximum for Oil and Grease. Since both waste streams require the same technology-based limits for Oil and Grease it is appropriate to apply them at IMP 405.

(5) See Best Professional Judgment section below.

(6) See Best Professional Judgment section below.

(7) Generally, DEP establishes Dissolved Iron limits for an industrial discharge when the concentration approaches the technology limit of 7.0 mg/l. The expected Dissolved Iron concentration at IMP 405 is 0.65 mg/L, or less than 10% of the technology standard. Since the expected concentration will not approach the technology standard, it is not appropriate to establish a dissolved iron effluent limitation at IMP 405.

Water Quality-Based Limitations

A water quality analysis is not appropriate for an internal monitoring point upstream of blending with other waste streams. Water quality limits must be applied at the outfall, in this case Outfall 005.

Best Professional Judgment (BPJ)

BAT for non-chemical metal cleaning wastes, such as those created at the Shawville Station, is “reserved” for future data collection. By reserving BAT limitations the U.S. Environmental Protection Agency (“EPA”) requires DEP to establish limits based on BPJ. As part of this determination, DEP must examine the historical permitting for non-chemical metal cleaning wastes at the Shawville Generating Station, including whether the waste was treated as low volume or metal cleaning waste.

Since DEP has historically considered non-chemical cleaning waste as low-volume waste, an approach identified in the *Technical Guidance for Development of NPDES Permit Requirements, Steam Electric Industry (362-2183-004, 12/97)* and agreed upon with EPA, the Shawville Generating Station was never subject to the metal cleaning waste BPT limitations for total iron and total copper at § 423.12(b)(5). Based on this permitting policy, it is recommended that non-chemical metal cleaning wastes at the Shawville Generating Station remain treated as low-volume wastes and not to establish BPT limitations for metal cleaning wastes in the permit.

Chesapeake Bay

Per Phase II of the WIP the Shawville Generating Station’s IWWTP is considered a non-significant discharge, meaning a cap load for TN and TP has not been assigned to the facility. The WIP requires nutrient monitoring for all non-significant industrial discharges that have a potential to introduce a net TN or TP increase to the load contained within the intake water.

Historically, the Shawville Generating Station has been expected to contribute to an increase in loading of total nitrogen and phosphorus in the West Branch Susquehanna River. Consequently, annual monitoring for TN and TP should continue at IMP 405.

Anti-Backsliding

No limits or monitoring requirements at IMP 405 are proposed to be made less stringent.

IMP No. 605 **Design Flow (MGD)** 2.07
Latitude 41º 4' 7.00" **Longitude** -78º 21' 53.00"
Wastewater Description: Cooling Tower Blowdown

Technology-Based Limitations

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
Total Chromium (1)	0.2	Average Monthly	423.15(a)(10)(i)	
	0.2	Maximum Daily	423.13(d)(1), 423.15(b)(10)(i)	
Total Zinc (2)	1.0	Average Monthly	423.13(d)(1), 423.15(b)(10)(i)	
	1.0	Maximum Daily	423.13(d)(1), 423.15(b)(10)(i)	
Free Available Chlorine (3)	0.2	Average Monthly	423.12(a)(7), 423.13(d)(1), 423.15(b)(10)(i)	92a.48(b)(1)
	0.5	IMAX	423.12(a)(7), 423.13(d)(1), 423.15(b)(10)(i)	92a.48(b)(1)
Total Priority Pollutants (4)	Non-detect	Average Monthly	423.13(d)(1), 423.15(b)(10)(i)	
	Non-detect	Maximum Daily	423.13(d)(1), 423.15(b)(10)(i)	

(1) Since the cooling tower blowdown waste stream is a new source, BAT limitations at § 423.13(d)(1) and new source performance standards (NSPS) at § 423.15(b)(10)(i) for total chromium must be applied. In this case, BPT and NSPS limits are the same.

(2) Since the cooling tower blowdown waste stream is a new source, BAT limitations at § 423.13(d)(1) and NSPS at § 423.15(b)(10)(i) for total zinc must be applied. In this case, BPT and NSPS limits are the same.

(3) Since the cooling tower blowdown waste stream is a new source, BPT limitations at § 423.12(a)(7), BAT limitations at § 423.13(d)(1), and NSPS at § 423.15(a)(10)(i) for free available chlorine (FAC) must be applied. In this case, BPT, BAT, and NSPS all require the same average monthly and IMAX concentrations.

State regulation at § 92a.48(b)(1) does not establish a specific limit but does require a limit for FAC be established if required by an industry-specific ELG.

However, the cooling tower blowdown is dechlorinated prior to blending with other waste streams at the IWWTP. Since there is no reasonable potential for FAC concentrations to approach the above technology-based standards at IMP 605, no FAC limits are proposed.

(4) Since the cooling tower blowdown waste stream is a new source, BAT limitations at § 423.13(d)(1) and NSPS at § 423.15(b)(10)(i) for the 126 priority pollutants must be applied. In this case, BPT and NSPS limits are the same. The permit currently requires Shawville to sample for the priority pollutants or provide calculations demonstrating that the pollutants are not detectable. DEP proposes that these requirements remain in the permit.

Water Quality-Based Limitations

A water quality analysis is not appropriate for an internal monitoring point upstream of blending with other waste streams. Water quality limits must be applied at the outfall, in this case Outfall 005.

Anti-Backsliding

No limits or monitoring requirements for IMP 605 are proposed to be made less stringent.

Outfall No.	009	**Design Flow (MGD)**	n/a
Latitude	41º 4' 6.00"	**Longitude**	-78º 21' 46.00"

Wastewater Description: Cooling Tower Area Stormwater

Technology-Based Limitations

There are no applicable technology-based effluent limitations for industrial stormwater.

Water Quality-Based Limitations

A water quality analysis for a stormwater discharge is not appropriate.

Best Professional Judgment ("BPJ") Limitations

Shawville has requested a no exposure certification for Outfall 009. The application indicates that industrial activity no longer occurs in the outfall's drainage area, and Shawville has requested a no exposure certification. Since there is no industrial activity exposed to stormwater a no exposure certification is appropriate.

Anti-Backsliding

Since the permit's last renewal, site conditions have changed so that the outfall is now eligible for a no exposure certification. Consequently, in accordance with 40 CFR 122.44(l)(2)(i)((A)(1), monitoring requirements for pH, TSS, total copper, total nickel, total zinc, dissolved iron, and oil and grease have been removed from Outfall 001.

Outfall No.	010	**Design Flow (MGD)**	n/a
Latitude	41º 4' 5.00"	**Longitude**	-78º 22' 0.00

Wastewater Description: Office Parking Area Stormwater

Technology-Based Limitations

There are no applicable technology-based effluent limitations for industrial stormwater.

Water Quality-Based Limitations

A water quality analysis for a stormwater discharge is not appropriate.

Best Professional Judgment ("BPJ") Limitations

Shawville has requested a no exposure certification for Outfall 010. The application indicates that industrial activity no longer occurs in the outfall's drainage area, and Shawville has requested a no exposure certification. Since there is no industrial activity exposed to stormwater a no exposure certification is appropriate.

Anti-Backsliding

Since the permit's last renewal, site conditions have changed so that the outfall is now eligible for a no exposure certification. Consequently, in accordance with 40 CFR 122.44(l)(2)(i)((A)(1), monitoring requirements for pH, TSS, total copper, total nickel, total zinc, dissolved iron, and oil and grease have been removed from Outfall 001.

Outfall No.	012	**Design Flow (MGD)**	n/a
Latitude	41º 3' 48.00"	**Longitude**	-78º 22' 20.00"

Wastewater Description: IWWTP Area Stormwater

Technology-Based Limitations

There are no applicable technology-based effluent limitations for industrial stormwater.

Water Quality-Based Limitations

A water quality analysis for a stormwater discharge is not appropriate.

Best Professional Judgment ("BPJ") Limitations

Shawville has requested a no exposure certification for Outfall 012. The application indicates that industrial activity no longer occurs in the outfall's drainage area, and Shawville has requested a no exposure certification. Since there is no industrial activity exposed to stormwater a no exposure certification is appropriate.

Anti-Backsliding

Since the permit's last renewal, site conditions have changed so that the outfall is now eligible for a no exposure certification. Consequently, in accordance with 40 CFR 122.44(l)(2)(i)((A)(1), monitoring requirements for pH, TSS, total copper, total nickel, total zinc, dissolved iron, and oil and grease have been removed from 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" (362-0400-001), SOPs and/or BPJ.

IMP 101, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Aluminum, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Copper, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Iron, Dissolved	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Iron, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Manganese, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Nickel, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Zinc, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab

Compliance Sampling Location: IMP 101

IMP 201, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Aluminum, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Copper, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Iron, Dissolved	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Iron, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Manganese, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Nickel, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Zinc, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab

Compliance Sampling Location: IMP 201

IMP 102, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Aluminum, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Copper, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Iron, Dissolved	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Iron, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Manganese, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Nickel, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab
Zinc, Total	XXX	XXX	XXX	XXX	Report	XXX	When Discharging	Grab

Compliance Sampling Location: IMP 102

Outfall 005, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
Total Dissolved Solids	Report	Report	XXX	Report	Report	XXX	2/month	Calculation
Aluminum, Total (ug/L)	33.6	52.4	XXX	1170.0	1825.0	2924	2/month	Calculation
Chromium, Hexavalent (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	Calculation
Iron, Total	19.74	39.48	XXX	1.80	3.60	4.5	2/month	Calculation
Manganese, Total	23.03	46.06	XXX	2.10	4.20	5.3	2/month	Calculation
Mercury, Total (ug/L)	0.017	0.026	XXX	0.58	0.90	1.45	2/month	Calculation
Sulfate, Total	Report	Report	XXX	Report	Report	XXX	2/month	Calculation
Thallium, Total (ug/L)	0.08	0.12	XXX	2.78	4.34	6.96	2/month	Calculation
Zinc, Total	Report	Report	XXX	Report	Report	XXX	2/month	Calculation
Acrylamide (ug/L)	0.13	0.21	XXX	4.64	7.23	11.6	2/month	Calculation
Chloride	Report	Report	XXX	Report	Report	XXX	2/month	Calculation
Bromide	Report	Report	XXX	Report	Report	XXX	2/month	Calculation

Compliance Sampling Locations: IMPs 205 and 405

IMP 205, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum 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/week	Estimate
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	3.7	XXX	XXX	25.0	XXX	50.0	1/month	Grab
Total Suspended Solids	4.5	XXX	XXX	30.0	XXX	60.0	1/month	Grab
Total Dissolved Solids	Report	Report	XXX	Report	Report	XXX	2/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
Aluminum, Total	Report	Report	XXX	Report	Report	XXX	2/month	Grab
Chromium, Hexavalent (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	Grab
Iron, Total	Report	Report	XXX	Report	Report	XXX	2/month	Grab
Manganese, Total	Report	Report	XXX	Report	Report	XXX	2/month	Grab
Mercury, Total (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	Grab
Sulfate, Total	Report	Report	XXX	Report	Report	XXX	2/month	Grab
Thallium, Total (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	Grab
Zinc, Total	Report	Report	XXX	Report	Report	XXX	2/month	Grab
Acrylamide (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	Grab
Chloride	Report	Report	XXX	Report	Report	XXX	2/month	Grab

IMP 205, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Bromide	Report	Report	XXX	Report	Report	XXX	2/month	Grab

Compliance Sampling Location: IMP 205

IMP 405, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Free Available Chlorine	XXX	XXX	XXX	XXX	XXX	0.00	1/day	Calculation
Total Suspended Solids	325	XXX	XXX	30.0	XXX	50	1/week	24-Hr Composite
Total Dissolved Solids	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Oil and Grease	163	217	XXX	15.0	20.0	30	1/month	Grab
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/year	Grab
Aluminum, Total (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Chromium, Hexavalent (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Iron, Total	Report	Report	XXX	Report	Report	XXX	2/month	Grab
Manganese, Total (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Mercury, Total (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	Grab
Sulfate, Total	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Thallium, Total (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Zinc, Total	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Acrylamide (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	Grab

IMP 405, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Acrylamide (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Chloride	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Bromide	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
PCBs, Total (ug/L)	XXX	XXX	XXX	XXX	XXX	1.75	1/month	Grab

Compliance Sampling Location: IMP 405

IMP 605, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
Chromium, Total	3.45	3.45	XXX	0.2	0.2	XXX	1/week	24-Hr Composite
Zinc, Total	17.26	17.26	XXX	1.0	1.0	XXX	1/week	24-Hr Composite
Priority Pollutants, Total	XXX	Report	XXX	XXX	Report	XXX	1/year	See Permit

Compliance Sampling Location: IMP 605

ATTACHMENT A

FACILITY OVERVIEW

Shawville Generating Station

Facility Overview

ATTACHMENT B

JUNE 21, 2021 EMAIL CORRESPONDENCE

Garner, Derek

From: McClelland, Karen <Karen.McClelland@genon.com>
Sent: Monday, June 21, 2021 10:14 AM
To: Garner, Derek
Cc: Telford, John; Frank, Stephen
Subject: RE: [External] Shawville Generating Station NPDES PA0010031 Permit Renewal Submittal

Hi Derek,

At this time, the station has decided that they will continue to haul sewage out for disposal and have contacted the municipality. The next step is getting the holding tank certified. Shawville has submitted the paperwork for the dye test and the check for certification payment to the township's local engineering firm. They expect to have the holding tank certified by early July. After the certification, the station will have a holding tank permit. They will likely also start using a new haulage contractor at that time.

The system is in long-term protective layup and the station would like to maintain the option of restarting the system, if at some point, staffing would increase to a size allowing sewage to be processed on site. We would request that the IMP 205 would remain in the permit.

The long-term protective layup of the current system is:

- Underground lift station
- Equalization tank that is currently used as the holding tank
- Pneumatic lift pump(shut down)
- Communitor/ grinder (shut down)
- Aeration basin (empty – just a little sludge and rain water in the bottom, blowers shut down)
- Clarifier (empty – just a little sludge and rain water in the bottom)
- Chlorinator/ contact tank – empty and shut down. Chemicals removed
- Dechlorinator – empty. Chemicals removed
- 205 outfall – mechanically plugged.

Thanks,

Karen

GenOn

Karen E. McClelland
Senior Environmental Specialist
Karen.McClelland@GenOn.com
724-877-4462

PLEASE SEND ALL MAIL DIRECTLY TO THE APPLICABLE STATION.

From: Garner, Derek <degarner@pa.gov>
Sent: Wednesday, June 16, 2021 1:45 PM
To: McClelland, Karen <Karen.McClelland@genon.com>
Subject: RE: [External] Shawville Generating Station NPDES PA0010031 Permit Renewal Submittal

Hi Karen,

ATTACHMENT C

JULY 1, 2021 NOTICE OF VIOLATION

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

NOTICE OF VIOLATION

July 1, 2021

John Telford
Safety Specialist
250 Power Plant Drive
Shawville, PA 16873

Re: Effluent Violations
Shawville Generating Station
NPDES Permit No. PA0010031
Bradford Township, Clearfield County

Dear Mr. Telford:

The Department has conducted an administrative review of the discharge monitoring reports submitted in accordance with your above referenced NPDES Permit. This review has revealed effluent results exceeding limitations set forth in Part A of your NPDES Permit. These effluent exceedances, summarized below, constitute violations of your NPDES Permit and Section 307 of the Clean Streams Law, 35 P.S.§ 691.307.

MONITORING END DATE	PARAMETER	SAMPLE VALUE	VIOLATION CONDITION	PERMIT VALUE	UNIT OF MEASURE	STATISTICAL BASE CODE
07/31/2019	Fecal Coliform	> 2419	>	200	CFU/100 ml	Geometric Mean
07/31/2019	Fecal Coliform	< 2419	>	1000	CFU/100 ml	Instantaneous Maximum
08/31/2019	Carbonaceous Biochemical Oxygen Demand (CBOD5)	55.67	>	25	mg/L	Average Monthly
08/31/2019	Carbonaceous Biochemical Oxygen Demand (CBOD5)	161	>	50	mg/L	Instantaneous Maximum
08/31/2019	Fecal Coliform	< 2419	>	1000	CFU/100 ml	Instantaneous Maximum
04/30/2020	Total Suspended Solids	46	>	30	mg/L	Average Monthly
05/31/2020	Total Suspended Solids	76	>	30	mg/L	Average Monthly
05/31/2020	Total Suspended Solids	76	>	60	mg/L	Instantaneous Maximum

The above noted violations constitute unlawful conduct under Section 611 of the Clean Streams Law, 35 P.S. §691.611, and may subject the Permittee to civil penalties pursuant to Section 605 of the Clean Streams Law, 35 P.S. §691.605.

Within 15 days from the date of this notice, the Department requests that you submit a written response to our office explaining the cause of these effluent exceedances and the corrective actions you will take to resolve the violations and come into compliance with your NPDES Permit and the Clean Streams Law.

This Notice of Violation is neither an order nor any other final action of the Department. It neither imposes nor waives any enforcement action available to the Department under any of its statutes. If the Department determines that an enforcement action is appropriate, you will be notified of the action.

Questions concerning this notice may be directed to Anne Hughes at 570.3273781 or me at 570.327.3661 or micjordan@pa.gov.

Sincerely,

Mike Jordan

Mike Jordan
Water Quality Specialist Supervisor
Clean Water Program

cc: Tom Randis
Anne Hughes
Clarissa Alcorn
File

ATTACHMENT D

JUNE 22, 2021 INSPECTION REPORT

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

INDUSTRIAL WASTE COMPLIANCE INSPECTION REPORT

NPDES / WQM Permit No.	Mo/Day/Year	Entry Time	**Exit Time**	Inspection Type	eFACTS Inspection ID
PA0010031	8/28/2019	0945	1200	CEI	2927179

Facility Name: Shawville Generating Station	**Permittee Name:** Shawville Power LLC
Physical Location Address/Directions: 250 Power Plant Drive, Shawville, PA 16873	
Permittee Address: 250 Power Plant Drive, Shawville, PA 16873	Permit Expiration Date: 8/31/2021 Renewal Due Date: 2/28/2021

Municipality:	County:	Type(s) of IW Discharge(s):
Bradford Township	Clearfield	Industrial Waste Water Discharge

Responsible Official: John Telford Title: Safety Specialist	Facility Representative: John Telford Title: Safety Specialist
Business Phone: 814-768-4283 **Cell Phone: 814-496-1936** Email: john.telford@genon.com	Business Phone: 814-768-4283 Email: john.telford@genon.com

24-Hour Emergency Contact Person / Phone / Email:

VIOLATIONS•: [X] Yes ☐ None Identified During Inspection ☐ Pending Results of Sample Analysis

Part A Effluent Violations:
July 2019 Fecal Coliform IMAX <2419 vs 1000 CFU/100ml
July 2019 Fecal Coliform Geo Mean >2419 vs 200 CFU/100ml

☐ continued on page B

Recommendations/Comments:

Person Interviewed:	Date:	Inspector:	Date:
John Telford	8/28/19	Clarissa Alcorn	8/28/19
Signature: emailed on 9/3/2019	Phone No.: 814-496-1936	ig ature;.	Phone No.: 717-678-0404
Title: Safety Specialist		fiie:Water Quality s·pecialist	
Email: john.telford@genon.com		Email: clalcorn@pa.gov	

This document is official notification that a representative of the Department of Environmental Protection inspected the above facility. The findings of this inspection are shown above and on any attached pages. *Any violations which were noted during the inspection are indicated. Violations may also be discovered upon examination of the results of laboratory analyses of the discharge and/or review of Department records.

INDUSTRIAL WASTE COMPLIANCE INSPECTION REPORT

Comments.

I conducted a compliance evaluation inspection at the Shawville Generating Station with Environmental Compliance Specialist John Telford on 8/28/2019. During this inspection the facility was toured, records were reviewed, and outfalls/internal monitoring points were observed. This facility is a former coal-fired steam electric generation facility that was converted to natural gas in 2016.

This site has multiple outfalls. There is an onsite sewage treatment plant (IMP 205), several internal emergency outfalls (IMP 101, 102, & 201), one industrial waste treatment plant outfall (005), and six stormwater outfalls (001, 002, 003, 009, 010, & 012). Outfall 005 (receives flow from Outfalls 205, 405, and 605) was observed and was active at the time of the inspection. Outfall 012 was also active at the time of the inspection. No impact noted at, above, or below the outfalls or to the receiving stream, West Branch Susquehanna River.

The ash landfill and associated retention pond were observed during this inspection. The landfill has not been utilized by the facility for approximately 5 years.

eDMRs are being submitted by the facility on time and complete. DMR data for 7/2019 was closely reviewed and compared to analytical reports at the facility. Data appeared to be consistent with results submitted to the Department. There have been two effluent exceedances reported since the previous inspection (July 2019 Fecal Coliform IMAX <2419 vs 1000 CFU/100ml, July 2019 Fecal Coliform Geo Mean >2419 vs 200 CFU/100ml).

The facility is in the process of updating the PPG Plan. The plant was converted to natural gas in 2016; this current revision will reflect the changes associated with that transition. Last revision to the plan occurred in 2015, prior to the transition. Employee training is conducted on a monthly, rolling basis and kept track of electronically.

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INDUSTRIAL WASTE COMPLIANCE INSPECTION REPORT

Facility Description & Regulated Activities

Industrial Activity: Gas Fired Steam Electric Station
SIC/ NAICS Code(s):

Wastewater/contaminant source(s):

Planned changes in production and/or industrial activities since last insp: [2] N/A

Changes in treatment and/or to facility since last insp: [2] N/A

Changes in wastewater quantity or quality since last insp: D new pollutants D Increased flow or cone. [2] N/A

Sanitary discharge to: [2] On-site STP, outfall/permit#: 205 D with IWW D Onlot D Public sewer D Other:

Sewage Compliance Inspection Report attached: D Yes D No D Separate inspection conducted

Removed substances: D Treatment sludge D Backwash solids D Screenings D Spent mat'l/media D Other:

Hauling/Disposal to: by: per permit# (Part C I. B.)

Facility/Activities Notes:

Compliance & Enforcement History 0 N/A

Schedule in Permit: 0 Yes D N/A In compliance with schedule: 0 Yes D No D could not confirm

Violations: Last 12 months or since last inspection: [2] Yes ☐ No ☐ N/O

Enforcement Actions: Last 12 months or since last CEI: ☐ Yes 0 No ☐ N/O

Legal Agreement: **Consent Order & Agreement, Consent Decree or Order executed:** ☐ Yes ☐ No ☐ N/O 0 N/A

Date executed: Obligation(s) due next: Date due:

In compliance with legal agreement: D Yes D No D could not confirm

Compliance & Enforcement Notes:

Monitoring

Influent/Intake sampling location & observations: **(NPDES Permit Part A I WQM Permit)** ☐ N/O 0 N/A

Effluent Discharge sampling location: 605, 405 After all treatment: [2] Yes D No ☐ N/O ☐ NIA

Instream sampling location(s) & observations: ☐ N/O ☐ NIA

Sample Collection: D Manually [2] Auto sampler, T: , controlled by: 0 Flow meter D Other

Type: D Grab D 8-hour comp [2] 24-hour comp D Other Min. aliquot 2100 ml: D Yes D No D N/O

Composites: 0 Flow proportional D Time proportional D Not proportional

Sample location, collection, frequency, measurements representative of the monitored activity: [2] Yes D No D N/O

Sample Handling & Analysis: Properly preserved during collection, storage and shipping: D Yes D No D N/O

Storage temperatures recorded using NIST traceable thermometer: D Yes D No D N/O

Analyzed within the required holding time: D Yes D No D N/O

Parameters analyzed, test methods, sample frequencies & types in accordance with permit: D Yes D No D N/O

Monitoring systems: 0 SCADA D PLC D Continuous meter for Calibrated: ☐ Yes ☐ No ☐ N/O ☐ N/A

On-site Analysis: [2] pH ☐ DO [2] TRC ☐ T D NPDES parameters D Process control ☐ N/O ☐ NIA

Meters calibrated: pH: [2] Yes ☐ No ☐ N/O ☐ N/A DO: ☐ Yes ☐ No ☐ N/O [2] N/A

pH buffers current: [2] Yes D No D N/O TRC meter checked against standards: [2] Yes ☐ No ☐ N/O ☐ N/A

On-site Laboratory: 0 Registered/Accredited-by-Rule or D Accredited

Lab Supervisor (accredited labs): Lab ID: 17-01511 ☐ N/A

Accredited parameters: ☐ N/A

Contract Laboratory & City: Mahaffey Laboratory, Cuiwensville, PA Lab ID: 17-00213 ☐ N/A

Parameters analyzed: TSS, Metals, FC, CBOD5, etc.

Monitoring Notes:

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INDUSTRIAL WASTE COMPLIANCE INSPECTION REPORT

Recordkeeping (NPDES Permit Part A/ WQM Permit)

Monitoring Records: Retained on-site/ Up to date: rz:I Yes D No D N/0

Required info recorded: collector, location, sample date/time, analyst, method/QL, results: rz:I Yes D No D N/0

Data are consistent with data from monitoring system(s) and as reported on the DMR: rz:I Yes D No D N/0

On-Site Logs: Daily operations log: [g] Yes D No: D N/0 Records reviewed/ parameters confirmed on site: TSS, CBOD5 Up-to-date: rz:I Yes D No D N/0 D NIA

Includes: rz:J Visual observations [g} Process adjustments rz:I Problems and concerns

Routine maintenance log: rz:J Yes D No D N/0 Repair log: rz:I Yes D No D N/0

Records, Reports, Logs available: [g) Yes D No Retained (3 years): rz:J Yes D No D N/0

Permit(s) at the facility: rz:I Yes D No D N/0

Permit terms and conditions reviewed by responsible official and/or facility representative: rz:I Yes D No D N/0

Recordkeeping Notes:

Reporting (NPDES Permit Part A/ WQM Permit)

Monitoring Regorts: ODMR rz:J eDMR Prepared correctly: rz:I Yes D No D N/0 On time: rz:I Yes D No D N/0

D Supplemental Reports & Forms Includes all results: rz:I Yes D No D N/0

Annual Report: Date received: Monitoring period reviewed: mon(s)/yr: 7/2019 Parameters assessed: TSS, CBOD5 On time: 0 Yes O No D N/0 rz:I NIA

Notifications to DEP: Date reviewed: Report complete & acceptable: D Yes D No D N/0 rz:I NIA

Planned changes/alterations to production/process reported: D Yes D No rz:J N/A

Planned changes/alterations to treatment reported: D Yes D No rz:J N/A

Incident reported: D Yes D No rz:J N/A

Other required notifications: D Yes D No rz:J N/A

Reporting Notes:

Flow Measurement (NPDES Permit Part A/ WQM Permit)

Location(s): Discharge Effluent measured after all withdrawals: rz:I Yes D No D N/0 D N/A

System/Device(s): D Full Pipe D Flume, uniform flow, free of debris/deposits: D Yes D No D N/0

rz:J Weir, clean with nappe space: D Yes D No rz:J N/0

Meter: rz:J Ultrasonic D Transducer D Magnetic 0 Bubbler D Float D Other:

Inspected: rz:I Daily D Weekly D Other: Location: 405,205,605 Maximum meter range: MGD

Recorder: D Totalizer 0 Daily Chart 0 7-Day Chart rz:J SCADA/Electronic D Other:

Capable of recording design flow: rz:J Yes D No Calibration Range:

Meter/Recorder Operable: rz:I Yes D No Maintained (meter, clean & clear): rz:J Yes D No D N/0

Issues with measurement/ recording: D Yes: rz:J No D N/0

Calibration freguency: D Semi-annual rz:J Annual D Other: Date of last calibration: 9/1/2018

Flow Measurement Notes:

INDUSTRIAL WASTE COMPLIANCE INSPECTION REPORT

Chemical Additives

(NPDES Permit Parts B & C / WQM Permit) 0 N/A

Production/grocess chemical additives used for cleaning disinfection, maintenance: [8l Yes O No O N/O 0 NIA

Name(s), purpose:

Chemical Additives Usage form submitted: [8l Yes 0 No O N/O

[8l Chemical Additives Usage form attached

Additive(s) in use approved: [8l Yes 0 No O N/O

New chemicals & changes to product name or formulations submitted & approved: 0 Yes O No O N/O [8l N/A

Chemical additive usage restricted to maximum rate: [8l Yes O No O N/O 0 N/A

Chemical Additives Notes:

Treatment Units/Equipment & Treatment Chemicals

(NPDES Permit Part B / **WQM** Permit) 0 N/A

As-built drawings on-site: [8l Yes D No D N/O

Units/Equipment per permit: [8l Yes D No D N/O

Treatment chemicals used: [8l Yes D No D N/O D NIA

Treatment chemicals authorized: [8l Yes D No D N/O

Treatment Unit or Eauinment	Total	On-Line	Not Onerable	Date Inoperable/ Date Expected to Return to Service	Observations/Comments Chemical/s\ Used & Purnose
STP EQ Tank	1	1	-		
Aeration Tank	1	1	-		Bar Screen/Comminutor at Influent
Clarifier	1	1	-		
Chlorination/Contact Tank	1	1	-		Liquid hypochlorite
Dechlor	1	1	-		tablet; Outfall 205 to 005
Sludge Holding Tank	1	1	-		
Stormwater Outfalls	6	6	-		Outfalls 001, 002, 003, 009, 010, & 012
Settling Pond Emergnecy Overflow	1	-	-		Outfall 101
Leachate Pumphouse Emergency Overflow	1	-	-		Outfall 102
Ash Pond Emergency Overflow	1	-	-		Outfall 201
IW Treatment Well	1	1	-		Lime added
Final Waste Treatment pH Adjusment, Mixers	1	1	-		
Clarifier	1	1	-		
CO2 adjustment	1	1	-		
Outfall 405	1	1	-		to Outfall 005

Treatment Unit/ Equipment Notes:

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INDUSTRIAL WASTE COMPLIANCE INSPECTION REPORT

Operations & Maintenance: Treatment Plant/ Equipment 0 N/A

O&M Manuals: Available: [8:1 Yes O No O N/0

Staff Schedule: [8:1 24/7 D Weekday hours: to___ D Weekend/Holiday hours: to ___

Plant check schedule:

Certified 0Qerator: Required: [8:1 Yes D No On staff: [8:1 Yes D No ☐NIA

Stand-by Power: [8:1 Emergency generator [8:1 Dual power feed ☐ Other:

Exercise frequency: **Exercised under load:** D Yes D No D N/0

Maintenance frequency: System operable: D Yes D No D N/0

Alarm System: [8:1 Auto Dialer [8:1 SCADA 0 PLC ☐ Other: ☐ NIA

Test frequency: Alarm triggers: Operable: D Yes D No D N/0

Maintenance: **Major repair/ replacement since last inspection:** ☐Yes [8:1 No D N/0

Repairs: Spare parts inventory available: [8:1 Yes No N/0

Replacements: Standby units available & ready: ☐Yes [8:1 No ☐ N/0

Treatment Plant/Unit ByQass: Since last inspection: D Yes [8:1 No ☐ N/0 Reported to DEP: ☐Yes ONo [8:1 N/A

Unit(s) bypassed: **Cause/reason:** Discharge to:

O&M Treatment Plant Notes:

Treatment Processes & Process Control 0 N/A

Treatment Processes: D Biological [8:1 Physical [8:1 Chemical D Other:

Description:

Solids Management: Annual production:

Discharge: [8:1 Continuous D Intermittent D Seasonal Design Flow: MGD

0 Batch, #/day: **duration each:** **volume each:**

Frequency: Hours/day: Days/week:

Parameter / Test / **Measurement**	Test or Check **Frenuencv**	Test Result/ Findina	**Comments**

Process & Control Notes:

INDUSTRIAL WASTE COMPLIANCE INSPECTION REPORT

Effluent/ Receiving Water Evaluation

Outfall #: 005 Stream: West Branch Susquehanna River

Effluent Type(s): Treated Effluent
Permit Flow, MGD:

DEP Sample Collection: D Yes 12] No
DEP Collector#:
Sample Date / Time: --- /
Sample Location:

Field Measurements:	Upstream	Outfall	**Downstream**
Flow, MGD			
pH, S.U.			
Conductivity, µmhos/cm			
Dissolved Oxygen, mg/L			
Total Residual Chlorine, mg/L			
Temperature, °C			

Outfall Observations: Effluent clear, no impact noted — D Not Observed

Upstream Observations: No impact noted — D Not Observed

Downstream Observations: No impact noted — D Not Observed

Outfall #: 205/405/605 Stream: West Branch Susqehanna River via Outfall 005

Effluent Type(s): Sewage/lW Effluent, Slowdown
Permit Flow, MGD:

DEP Sample Collection: D Yes 12] No
DEP Collector#:
Sample Date / Time: __ __/ __ __
Sample Location:

Field Measurements:	Upstream	Outfall	**Downstream**
Flow, MGD			
pH, S.U.			
Conductivity, µmhos/cm			
Dissolved Oxygen, mg/L			
Total Residual Chlorine, mg/L			
Temperature °C			

Outfall Observations: No impact noted — D Not Observed

Upstream Observations: No impact noted — D Not Observed

Downstream Observations: No impact noted — D Not Observed

Outfall#: 012 Stream: West Branch Susquehanna River via Outfall 005

Effluent Type(s): Stormwater
Permit Flow, MGD:

DEP Sample Collection: D Yes 12] No
DEP Collector#:
Sample Date / Time: __ __/ __ __
Sample Location:

Field Measurements:	Upstream	Outfall	**Downstream**
Flow, MGD			
pH, S.U.			
Conductivity, µmhos/cm			
Dissolved Oxygen, mg/L			
Total Residual Chlorine, mg/L			
Temperature °C			

Outfall Observations: Effluent clear, no impact noted — D Not Observed

Upstream Observations: No impact noted — D Not Observed

Downstream Observations: No impact noted — D Not Observed

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

INDUSTRIAL WASTE COMPLIANCE INSPECTION REPORT

Cooling Water Module ☐ *NIA*

Cooling Water Source: [g} Surface water D Groundwater D Reuse D Public water supply

Intake or ambient monitoring required: D Yes 18] No

Intake/influent field measurement - parameters & results: 18] None taken ☐

Controls: D None 18] Bar screen D Traveling screen D Pumps D Fish handling system D Other:

Cooling Water Slstem: 18] Tower D Pond D Heat exchanger D Other ☐

D Reused as process water D Other:

Treatment to control: 18] Fouling **[g} Corrosion** 18] Scale 18] Microbiologic D Other condition: 0 N/A

D Chemical addition D Other treatment:

D Filtration Type: D Separator D Screen filter D Disc filter D Sand filter

Seasonal Use: Cooling Water: Days per year: **Duration:** Frequency: 18] N/A

Treatment: Days per year: **Duration:** **Frequency:** 18] N/A

# of Outfalls:

Wastewaters: **Discharges to:**	Storm drain	Sanitary **sewer**	Waterway	Other:	Outfall#
D Non-contact cooling water	☐	☐	☐		
D Contact cooling water	☐	☐	☐		
D Cooling system condensate	☐	☐	☐		
D Other heat exchanger:	☐	☐	☐		
18] Cooling tower blowdown	☐	☐	☐	WWTP-405	605
D Boiler blowdown	☐	☐	☐		
D Scrubber water	☐	☐	☐		

NCCW / CCW Description:

Discharge observations: Cooling water recirculated D Not Observed

Cooling Systems Notes:

Also complete pages: A, B, C, D, G Others, as applicable/needed: E-Chem/Treatment, F-O&M, N-PPC, O&P&Q-BMP, R&S-Photos	YES	NO	NIA	Unable to Determine
Cooling water intake structures are operational, operating properly, and maintained	18]	☐	☐	☐
Screenings properly handled and disposed of	18]	☐	☐	☐
Cooling water systems are operational, operating properly, and maintained	18]	☐	☐	☐
Blowdown procedure developed and implemented	18]	☐	☐	☐
Treatment units or equipment operational and maintained [Page E, if needed]	18]	☐	☐	☐
All chemical additives and treatment chemicals identified and approved [Page E, if needed]	18]	☐	☐	☐
Drift controlled, minimized or eliminated	18]	☐	☐	☐
PPC or other plan available Date last updated: 2015 **[use Page L, if needed]**	18]	☐	☐	☐
Plan used since last inspection. Date of incident:	☐	☐	18]	☐
Current staff trained in spill prevention and response Date of last training: 2018 - continuous	18]	☐	☐	☐
Chemical storage & handling methods minimize potential pollution incidents	18]	☐	☐	☐

ATTACHMENT E

OUTFALL 005 CONCENTRATION CALCULATIONS

IMP 405: 3.44 MGD
IMP 205: 0.018 MGD

POLLUTANT GROUP 1	IMP 405				IMP 205			Outfall 005
	Application		eDMR	Permit	Application		Permit	
BOD_5 (mg/L)		5				16	25	5.10
COD (mg/L)		17				62		17.23
TOC (mg/L)		5.5				9.12		5.52
TSS (mg/L)		11				22	30	11.10
Ammonia-Nitrogen (mg/L)		9.2				13.1		9.22
Temperature (Winter) (°F)								
Temperature (Summer) (°F)								
pH – Minimum (S.U.)		6.7				7.3	6	
pH – Maximum (S.U.)		8.9		9		7.3	9	
Fecal Coliform (No./100 mL)						40.4	2000	
Oil and Grease (mg/L)	<	5		15		4.3		14.94
TRC (mg/L)	<	0.01				0.05	0.5	0.01
Total Phosphorus (mg/L)		0.07				2.7		0.08
TKN (mg/L)		9.6				18.2		9.64
Nitrite + Nitrate-Nitrogen (mg/L)		2.4				2.58		2.40
Total Dissolved Solids (mg/L)		1835				314		1827.08
Color (Pt-Co Units)		5				25		5.10
Bromide (mg/L)		7.1		3.71	<	0.05		3.69
Chloride (mg/L)		80.7		49.54				49.28
Sulfate (mg/L)		1285		836		94.6		832.14
Sulfide (mg/L)	<	0.05			<	0.05		0.05
Surfactants (mg/L)		0.02			<	2		0.03
Fluoride (mg/L)		0.2			<	0.05		0.20
Total Hardness (mg/L)		809				127		805.45

IMP 405: 3.427 MGD
IMP 205: 0.018 MGD

POLLUTANT GROUP 2 Metals	IMP 405			IMP 205			Combined @ 005	
	Application		eDMR	Application		eDMR		Permit Limit @ 005
Aluminum, Total (µg/L)		538	350		78		348.58	1100
Antimony, Total (µg/L)		1.3					1.29	
Arsenic, Total (µg/L)	<	10					9.95	
Barium, Total (µg/L)		73			36		72.81	
Beryllium, Total (µg/L)	<	0.5					0.50	
Boron, Total (µg/L)		538			588		538.26	
Cadmium, Total (µg/L)	<	0.1					0.10	
Chromium, Total (µg/L)	<	10					9.95	
Chromium, Hexavalent (µg/L)	<	10					9.95	
Cobalt, Total (µg/L)		3		<	2		2.99	
Copper, Total (µg/L)	<	5					4.97	
Cyanide, Total (µg/L)		27					26.86	
Iron, Total (µg/L)		797			1190		799.05	1800
Iron, Dissolved (µg/L)		708			1250		710.83	
Lead, Total (µg/L)		0.3					0.30	
Manganese, Total (µg/L)		187			166		186.89	2100
Mercury, Total (µg/L)		8.2					8.16	
Molybdenum, Total (µg/L)		44		<	10		43.82	
Nickel, Total (µg/L)		6					5.97	
Phenols, Total (µg/L)	<	10					9.95	
Selenium, Total (µg/L)		4.2					4.18	
Silver, Total (µg/L)	<	2					1.99	
Thallium, Total (µg/L)		10	7				6.96	
Zinc, Total (µg/L)		8					7.96	300

IMP 405: 3.427 MGD
IMP 205: 0.018 MGD

POLLUTANT GROUP 3 Volatiles	IMP 405			IMP 205			Outfall 005
	Application		Permit	Application		Permit	
Acrolein (µg/L)	<	1					1.0
Acrylamide (µg/L)	<						0.0
Acrylonitrile (µg/L)	<	0.5					0.5
Benzene (µg/L)	<	0.2					0.2
Bromoform (µg/L)	<	0.2					0.2
Carbon Tetrachloride (µg/L)	<	0.2					0.2
Chlorobenzene (µg/L)	<	0.2					0.2
Chlorodibromo-methane (µg/L)	<	0.4					0.4
Chloroethane (µg/L)	<	0.2					0.2
2-Chloroethylvinyl Ether (µg/L)	<	0.5					0.5
Chloroform (µg/L)	<	0.2					0.2
Dichlorobromo-methane (µg/L)	<	0.2					0.2
1,1-Dichloro-ethane (µg/L)	<	0.2					0.2
1,2-Dichloro-ethane (µg/L)	<	0.2					0.2
1,1-Dichloro-ethylene (µg/L)	<	0.2					0.2
1,2 Dichloropropane (µg/L)	<	0.2					0.2
1,3-Dichloro-propylene (µg/L)	<	0.2					0.2
Ethylbenzene (µg/L)	<	0.2					0.2
Methyl Bromide (µg/L)	<	0.5					0.5
Methyl Chloride (µg/L)	<	0.2					0.2
Methylene Chloride (µg/L)	<	0.2					0.2
1,1,2,2-Tetrachloroethane (µg/L)	<	0.2					0.2
Tetrachloro-ethylene (µg/L)	<	0.2					0.2
Toluene (µg/L)	<	0.2					0.2
1,2-Trans-Dichloroethylene (µg/L)	<	0.5					0.5
1,1,1-Trichloro-ethane (µg/L)	<	0.2					0.2
1,1,2-Trichloro-ethane (µg/L)	<	0.5					0.5
Trichloro-ethylene (µg/L)	<	0.2					0.2
Vinyl Chloride (µg/L)	<	0.2					0.2

IMP 405: 3.427 MGD
IMP 205: 0.018 MGD

POLLUTANT GROUP 4 Acid Compounds	IMP 405			IMP 205			Outfall 005
	Application		Permit	Application		Permit	
2-Chlorophenol (µg/L)	<	5.2					5.2
2,4-Dichloro-phenol (µg/L)	<	5.2					5.2
2,4-Dimethyl-phenol (µg/L)	<	5.2					5.2
4,6-Dinitro-o-Cresol (µg/L)	<	5.2					5.2
2,4-Dinitro-phenol (µg/L)	<	5.2					5.2
2-Nitrophenol (µg/L)	<	5.2					5.2
4-Nitrophenol (µg/L)	<	5.2					5.2
P-Chloro-m-Cresol (µg/L)	<	5.2					5.2
Pentachloro-phenol (µg/L)	<	5.2					5.2
Phenol (µg/L)	<	5.2					5.2
2,4,6-Trichloro-phenol (µg/L)	<	5.2					5.2

IMP 405: 3.427 MGD
IMP 205: 0.018 MGD

POLLUTANT GROUP 5 Base Compounds	IMP 405			IMP 205			Outfall 005
	Application		Permit	Application		Permit	
Acenaphthene (µg/L)	<	5.2					5.2
Acenaphthylene (µg/L)	<	5.2					5.2
Anthracene (µg/L)	<	5.2					5.2
Benzidine (µg/L)	<	5.2					5.2
Benzo(*a*)Anthracene (µg/L)	<	5.2					5.2
Benzo(*a*)Pyrene (µg/L)	<	5.2					5.2
3,4-Benzo-fluoranthene (µg/L)	<	5.2					5.2
Benzo(*ghi*)Perylene (µg/L)	<	5.2					5.2
Benzo(*k*)Fluoranthene (µg/L)	<	5.2					5.2
Bis(2-*Chloro-ethoxy*)Methane (µg/L)	<	5.2					5.2
Bis(*2-Chloro-ethyl)* Ether (µg/L)	<	5.2					5.2
Bis(*2-Chloro-isopropyl)* Ether (µg/L)	<	5.2					5.2
Bis(*2-Ethyl-hexyl*)Phthalate (µg/L)		3.9					3.9
4-Bromophenyl Phenyl Ether (µg/L)	<	5.2					5.2
Butyl Benzyl Phthalate (µg/L)	<	5.2					5.2
2-Chloronaphthalene (µg/L)	<	5.2					5.2
4-Chlorophenyl Phenyl Ether (µg/L)	<	5.2					5.2
Chrysene (µg/L)	<	5.2					5.2
Dibenzo(*a,h*)Anthracene (µg/L)	<	5.2					5.2
1,2-Dichlorobenzene (µg/L)	<	5.2					5.2
1,3- Dichlorobenzene (µg/L)	<	5.2					5.2
1,4- Dichlorobenzene (µg/L)	<	5.2					5.2
3,3'-Dichlorobenzidine (µg/L)	<	5.2					5.2
Diethyl Phthalate (µg/L)	<	5.2					5.2
Dimethyl Phthalate (µg/L)	<	5.2					5.2
Di-n-Butyl Phthalate (µg/L)	<	5.2					5.2
2,4-Dinitrotoluene (µg/L)	<	5.2					5.2
2,6-Dinitrotoluene (µg/L)	<	5.2					5.2
1,4-Dioxane (µg/L)	<	5.2					5.2
Di-n-Octyl Phthalate (µg/L)	<	5.2					5.2
1,2-Diphenylhydrazine (as *Azobenzene)* (µg/L)	<	5.2					5.2
Fluoranthene (µg/L)	<	5.2					5.2
Fluorene (µg/L)	<	5.2					5.2
Hexachlorobenzene (µg/L)	<	5.2					5.2
Hexechlorobutadiene (µg/L)	<	5.2					5.2
Hexachlorocyclopentadiene (µg/L)	<	5.2					5.2
Hexachloroethane (µg/L)	<	5.2					5.2
Indeno(*1,2,3-cd)* Pyrene (µg/L)	<	5.2					5.2
Isophorone (µg/L)	<	2.1					2.1
Naphthalene (µg/L)	<	5.2					5.2
Nitrobenzene (µg/L)	<	5.2					5.2
N-Nitroso-di-methylamine (µg/L)	<	5.2					5.2
N-Nitroso-di-n-p-propylamine (µg/L)	<	5.2					5.2
N-Nitroso-di-n-phenylamine (µg/L)	<	10					9.9
Phenanthrene (µg/L)	<	5.2					5.2
Pyrene (µg/L)	<	5.2					5.2
1,2,4-Trichlorobenzene (µg/L)	<	5.2					5.2

ATTACHMENT F

WQM 7.0 v1.1 INPUT/OUTPUT DATA

DFLOW Results

All available data from Apr 1, 1991 through Mar 31, 2021 are included in analysis.

Gage	Period	Days in Record	Zero/Missing	1B3	Percentile	Excur per 3 yr	1Q10	Percentile	Excur per 3 yr	1Qy Type	xQy	Percentile	Harmonic	Percentile
01541303 - West Branch Susquehanna River at Hyde, PA	1990/04/01 - 2021/04/01	11,323	0/0	63.8	0.12%	0.87	60.9	0.00%	0	1Q6	61.8	0.00%	3.16E+02	32.31%
Gage	**Period**	**Days in Record**	**Zero/Missing**	**1B3**	**Percentile**	**Excur per 3 yr**	**7Q10**	**Percentile**	**Excur per 3 yr**	**7Qy Type**	**xQy**	**Percentile**	**Harmonic**	**Percentile**
01541303 - West Branch Susquehanna River at Hyde, PA	1990/04/01 - 2021/04/01	11,323	0/0	63.8	0.12%	0.87	63.4	0.10%	0.58	7Q8	63.6	0.11%	3.16E+02	32.31%
Gage	**Period**	**Days in Record**	**Zero/Missing**	**1B3**	**Percentile**	**Excur per 3 yr**	**30Q10**	**Percentile**	**Excur per 3 yr**	**30Qy Type**	**xQy**	**Percentile**	**Harmonic**	**Percentile**
01541303 - West Branch Susquehanna River at Hyde, PA	1990/04/01 - 2021/04/01	11,323	0/0	63.8	0.12%	0.87	73.5	1.19%	3.97	> 31 years	N/A	N/A	3.16E+02	32.31%

USGS
science for a changing world

Prepared in cooperation with the Pennsylvania Department of Environmental Protection

Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania

Open-File Report 2011-1070

U.S. Department of the Interior
U.S. Geological Survey

Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

[Latitude and Longitude in decimal degrees; mi^2, square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi^2)	Regulated[1]
01541303	West Branch Susquehanna River at Hyde, Pa.	41.005	-78.457	474	Y
01541308	Bradley Run near Ashville, Pa.	40.509	-78.584	6.77	N
01541500	Clearfield Creek at Dimeling, Pa.	40.972	-78.406	371	Y
01542000	Moshannon Creek at Osceola Mills, Pa.	40.850	-78.268	68.8	N
01542500	WB Susquehanna River at Karthaus, Pa.	41.118	-78.109	1,462	Y
01542810	Waldy Run near Emporium, Pa.	41.579	-78.293	5.24	N
01543000	Driftwood Branch Sinnemahoning Creek at Sterling Run, Pa.	41.413	-78.197	272	N
01543500	Sinnemahoning Creek at Sinnemahoning, Pa.	41.317	-78.103	685	N
01544000	First Fork Sinnemahoning Creek near Sinnemahoning, Pa.	41.402	-78.024	245	Y
01544500	Kettle Creek at Cross Fork, Pa.	41.476	-77.826	136	N
01545000	Kettle Creek near Westport, Pa.	41.320	-77.874	233	Y
01545500	West Branch Susquehanna River at Renovo, Pa.	41.325	-77.751	2,975	Y
01545600	Young Womans Creek near Renovo, Pa.	41.390	-77.691	46.2	N
01546000	North Bald Eagle Creek at Milesburg, Pa.	40.942	-77.794	119	N
01546400	Spring Creek at Houserville, Pa.	40.834	-77.828	58.5	N
01546500	Spring Creek near Axemann, Pa.	40.890	-77.794	87.2	N
01547100	Spring Creek at Milesburg, Pa.	40.932	-77.786	142	N
01547200	Bald Eagle Creek below Spring Creek at Milesburg, Pa.	40.943	-77.786	265	N
01547500	Bald Eagle Creek at Blanchard, Pa.	41.052	-77.604	339	Y
01547700	Marsh Creek at Blanchard, Pa.	41.060	-77.606	44.1	N
01547800	South Fork Beech Creek near Snow Shoe, Pa.	41.024	-77.904	12.2	N
01547950	Beech Creek at Monument, Pa.	41.112	-77.702	152	N
01548005	Bald Eagle Creek near Beech Creek Station, Pa.	41.081	-77.549	562	Y
01548500	Pine Creek at Cedar Run, Pa.	41.522	-77.447	604	N
01549000	Pine Creek near Waterville, Pa.	41.313	-77.379	750	N
01549500	Blockhouse Creek near English Center, Pa.	41.474	-77.231	37.7	N
01549700	Pine Creek below Little Pine Creek near Waterville, Pa.	41.274	-77.324	944	Y
01550000	Lycoming Creek near Trout Run, Pa.	41.418	-77.033	173	N
01551500	WB Susquehanna River at Williamsport, Pa.	41.236	-76.997	5,682	Y
01552000	Loyalsock Creek at Loyalsockville, Pa.	41.325	-76.912	435	N
01552500	Muncy Creek near Sonestown, Pa.	41.357	-76.535	23.8	N
01553130	Sand Spring Run near White Deer, Pa.	41.059	-77.077	4.93	N
01553500	West Branch Susquehanna River at Lewisburg, Pa.	40.968	-76.876	6,847	Y
01553700	Chillisquaque Creek at Washingtonville, Pa.	41.062	-76.680	51.3	N
01554000	Susquehanna River at Sunbury, Pa.	40.835	-76.827	18,300	Y
01554500	Shamokin Creek near Shamokin, Pa.	40.810	-76.584	54.2	N
01555000	Penns Creek at Penns Creek, Pa.	40.867	-77.048	301	N
01555500	East Mahantango Creek near Dalmatia, Pa.	40.611	-76.912	162	N
01556000	Frankstown Branch Juniata River at Williamsburg, Pa.	40.463	-78.200	291	N
01557500	Bald Eagle Creek at Tyrone, Pa.	40.684	-78.234	44.1	N
01558000	Little Juniata River at Spruce Creek, Pa.	40.613	-78.141	220	N
01559000	Juniata River at Huntingdon, Pa.	40.485	-78.019	816	LF
01559500	Standing Stone Creek near Huntingdon, Pa.	40.524	-77.971	128	N
01559700	Sulphur Springs Creek near Manns Choice, Pa.	39.978	-78.619	5.28	N
01560000	Dunning Creek at Belden, Pa.	40.072	-78.493	172	N

Table 2. Selected low-flow statistics for streamgage locations in and near Pennsylvania.—Continued

[ft³/s; cubic feet per second; —, statistic not computed; <, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	1-day, 10-year (ft³/s)	7-day, 10-year (ft³/s)	7-day, 2-year (ft³/s)	30-day, 10-year (ft³/s)	30-day, 2-year (ft³/s)	90-day, 10-year (ft³/s)
01530500	1940–2008	69	5.0	6.1	11.0	7.6	13	9.0
01531000	[2]1981–2008	28	138	147	237	169	296	203
01531000	[3]1905–1979	68	86.3	97.0	175	116	219	161
01531500	[2]1981–2008	28	550	592	1,030	733	1,340	952
01531500	[3]1915–1979	65	539	571	990	675	1,230	928
01532000	1915–2008	94	2.2	2.8	9.7	4.6	14.4	9.4
01532850	1967–1979	13	.1	.2	.4	.3	.8	.7
01533400	[2]1981–2008	28	602	648	1,110	790	1,430	1,060
01533500	1942–1958	17	.4	.6	1.5	.8	2.0	1.7
01533950	1962–1978	17	.2	.3	1.0	.6	1.4	1.0
01534000	1915–2008	94	15.2	17.3	35.9	24.2	51.0	38.7
01534300	1960–2008	49	1.1	1.7	5.1	2.8	7.6	4.8
01534500	[2]1961–2008	48	16.7	18.8	29.2	21.9	35.8	27.6
01534500	[3]1941–1959	19	18.8	23.0	33.3	25.6	39.2	34.9
01536000	[2]1961–2008	48	28.7	32.7	51.7	40.8	68.1	54.3
01536000	[3]1940–1959	20	77.8	93.9	119	105	138	124
01536500	[2]1981–2008	28	828	872	1,450	1,030	1,830	1,350
01536500	[3]1901–1979	79	778	811	1,350	927	1,640	1,260
01537000	1943–1993	51	1.3	2.0	4.9	3.1	6.4	4.7
01537500	1941–1990	50	.2	.3	1.9	.5	3.1	1.6
01538000	1921–2008	88	3.1	3.6	7.1	5.0	9.3	7.5
01539000	1940–2008	69	15.4	16.8	36.8	21.1	51.1	36.8
01539500	1942–1958	17	.1	.3	1.4	1.0	3.3	2.3
01540200	1965–1981	17	0	0	.3	.1	.3	.1
01540500	[2]1981–2008	28	1,080	1,120	1,870	1,320	2,330	1,690
01540500	[3]1906–1979	74	927	978	1,660	1,160	2,050	1,590
01541000	1915–2008	94	25.3	27.9	50.7	35.3	66.6	49.6
01541200	[2]1967–2008	40	34.6	45.2	66.0	63.1	100	92.4
01541200	[3]1957–1965	9	22.9	24.7	44.7	27.7	58.2	36.4
01541303	1980–2008	29	53.4	58.5	94.0	74.4	123	102
01541308	1969–1979	11	1.3	1.3	1.9	1.6	2.4	2.1
01541500	[2]1962–2008	47	39.0	41.9	66.5	51.9	86.3	70.6
01541500	[3]1915–1960	46	14.9	21.3	41.9	28.5	55.0	42.9
01542000	1942–1993	52	8.1	9.1	14.8	11.3	17.8	14.6
01542500	[2]1967–2008	33	216	235	326	285	435	402
01542500	[3]1941–1965	20	—	131	189	152	243	221
01542810	1966–2008	43	.1	.1	.3	.2	.5	.3
01543000	1915–2008	94	2.9	4.2	16.0	9.6	27.4	19.2
01543500	1940–2008	69	10.7	14.5	44.9	26.6	74.9	50.5
01544000	[2]1957–2008	52	3.3	6.9	19.0	11.2	31.1	19.0
01544500	1942–2008	67	4.2	4.9	12.5	7.5	17.4	11.7
01545000	[2]1964–2008	45	6.8	8.2	21.2	12.0	32.7	20.7
01545500	[2]1963–2008	46	217	238	446	306	629	428
01545500	[3]1909–1961	53	125	141	278	190	387	296
01545600	1966–2008	43	1.2	1.5	4.4	2.4	6.7	4.2

Table 3. Selected base-flow statistics for streamgage locations in and near Pennsylvania.—Continued

[ft^3/s; cubic feet per second; —, statistic not computed]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	10-year base flow (ft^3/s)	25-year base flow (ft^3/s)	50-year base flow (ft^3/s)
01530500	1940–2008	69	30.2	25.8	23.3
01531000	[2]1981–2008	28	—	—	—
01531000	[3]1905–1979	68	758	657	598
01531500	[2]1981–2008	28	3,830	3,300	2,990
01531500	[3]1915–1979	65	3,730	3,220	2,900
01532000	1915–2008	94	89.5	75.0	66.4
01532850	1967–1979	13	3.6	3.5	3.4
01533400	[2]1981–2008	28	3,270	2,320	1,800
01533500	1942–1958	17	16.0	14.3	13.3
01533950	1962–1978	17	5.6	4.7	4.1
01534000	1915–2008	94	183	155	139
01534300	1960–2008	49	29.5	25.9	23.7
01534500	[2]1961–2008	48	92.6	79.7	72.0
01534500	[3]1941–1959	19	99.6	88.8	82.1
01536000	[2]1961–2008	48	168	144	130
01536000	[3]1940–1959	20	261	231	213
01536500	[2]1981–2008	28	5,120	4,340	3,880
01536500	[3]1901–1979	79	4,880	4,220	3,820
01537000	1943–1993	51	15.5	13.5	12.3
01537500	1941–1990	50	6.8	5.6	4.9
01538000	1921–2008	88	28.4	24.6	22.3
01539000	1940–2008	69	165	120	93.5
01539500	1942–1958	17	28.4	26.7	25.8
01540200	1965–1981	17	.9	.8	.6
01540500	[2]1981–2008	28	4,750	3,480	2,780
01540500	[3]1906–1979	74	5,230	4,190	3,560
01541000	1915–2008	94	191	165	150
01541200	[2]1967–2008	40	242	214	198
01541200	[3]1957–1965	9	236	223	217
01541303	1980–2008	29	329	289	264
01541308	1969–1979	11	6.3	5.7	5.3
01541500	[2]1962–2008	47	233	208	194
01541500	[3]1915–1960	46	194	164	146
01542000	1942–1993	52	54.8	49.7	46.7
01542500	[2]1967–2008	33	1,100	1,030	980
01542500	[3]1941–1965	20	985	902	853
01542810	1966–2008	43	3.0	2.7	2.5

01543000	1915–2008	94	142	122	110
01543500	1940–2008	69	474	415	380
01544000	[2]1957–2008	52	120	102	91.5
01544500	1942–2008	67	86.1	76.5	70.9
01545000	[2]1964–2008	45	133	115	105
01545500	[2]1963–2008	46	1,860	1,640	1,510
01545500	[3]1909–1961	53	1,680	1,350	1,150
01545600	1966–2008	43	28.0	24.0	21.6

Table 4. Selected flood-flow statistics for streamgage locations in and near Pennsylvania.—Continued

[ft^3/s; cubic feet per second; --, statistic not computed]

Streamgage number	Period of record used in analysis[1]	Number of years of systematic record	Number of years used in analysis	Historical peak(s) used in analysis	50-percent annual exceedance (ft^3/s)	20-percent annual exceedance (ft^3/s)
01495000	1932–2008	75	75		2,850	4,720
01496000	1949–1999	36	51	1999	1,520	2,510
01496200	1967–1999	26	33	1999	1,040	2,060
01500000	[2]1950–2008	59	59		1,810	2,210
01518000	1980–2008	29	29		5,640	6,330
01518700	1980–2008	29	29		6,610	7,920
01520000	1980–2008	29	29		4,440	5,340
01520500	[2]1980–2008	29	29		10,500	12,300
01521500	[2]1940–2008	69	69		692	858
01523500	[2]1949–2008	60	60		1,390	2,090
01524500	1943–2008	66	66		3,110	4,600
01526500	[2]1979–2008	30	30		21,300	27,600
01527500	1939–45, 2002–08	15	70	1972	2,770	3,520
01529000	1937–1982	46	46		755	1,280
01529950	[2]1979–2008	30	30		30,200	39,600
01530332	1988–2008	21	21		32,900	43,600
01530500	[2]1990–2008	18	18		2,050	2,810
01531000	[2]1980–2008	29	29		38,100	51,500
01531500	1893–2008	115	115		103,000	139,000
01533400	[2]1980–2008	29	29		111,000	151,000
01533500	1941–1958	18	18		2,020	4,330
01534300	1960–2008	49	49		778	963
01534500	1960–2008	49	49		2,430	3,910
01536000	1960–2008	49	49		6,320	10,500
01536500	1900–2008	109	109		121,000	165,000
01537000	1942–1993	52	52		1,050	1,710
01537500	1940–1990	51	51		512	968
01540500	1905–2008	104	104		126,000	171,000
01541200	1966–2008	43	43		4,770	5,620
01541303	1979–2008	30	30		5,680	6,690
01541308	1968–1979	12	12		296	460
01541500	1961–2008	48	48		6,170	8,900
01542500	1961–2008	48	48		19,400	29,400
01544000	1956–2008	53	53		4,910	6,130
01545000	1962–2008	47	47		4,700	5,650
01545500	[3]1908–1961	63	73		60,000	90,600
01547500	1971–2008	38	38		2,870	3,560
01548005	[2]1970–2008	39	39		5,210	7,920
01548005	[3]1910–1969	58	58		10,100	14,300
01551500	[2]1962–2008	46	46		81,300	122,000
01551500	[3]1900–1961	67	73		97,900	139,000
01553500	[2]1967–2008	42	42		89,000	134,000
01553500	[3]1940–1966	27	31	1936	112,000	159,000
01554000	1938–2008	71	71		211,000	295,000
01554500	1940–1993	54	54		894	1,410

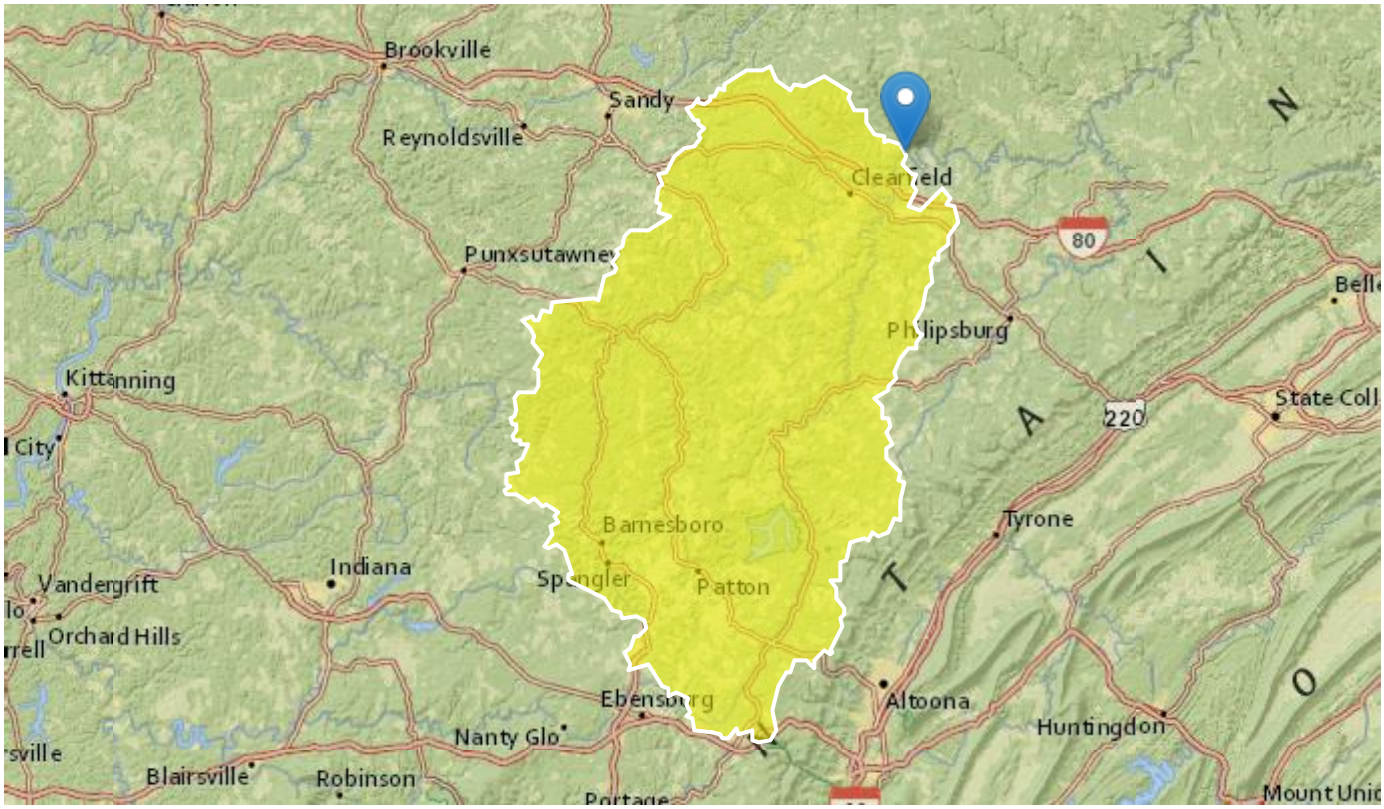
Table 5. Selected mean-flow and flow-duration statistics for streamgage locations in and near Pennsylvania.—Continued

[ft^2/s; cubic feet per second; --, statistic not computed; <, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	Mean annual flow (ft^2/s)	Harmonic mean (ft^2/s)	99-percent exceedance (ft^2/s)	95-percent exceedance (ft^2/s)	90-percent exceedance (ft^2/s)	85-percent exceedance (ft^2/s)	80-percent exceedance (ft^2/s)
01529950	[2]1979–2008	29	2,160	584	128	178	226	274	335
01530500	1939–2008	70	87.2	27.2	6.7	9.8	13.0	15.0	17.0
01531000	[2]1980–2008	28	2,780	745	158	225	289	353	432
01531000	[3]1904–1979	75	2,570	545	104	158	210	271	335
01531500	[2]1980–2008	28	11,100	3,540	710	1,000	1,320	1,720	2,230
01531500	[3]1914–1979	65	10,700	3,110	574	923	1,250	1,580	1,920
01532000	1914–2008	94	291	36.3	3.6	8.9	14.0	21.0	30.0
01532850	1966–1979	13	10.2	1.7	.2	.4	.6	.9	1.2
01533400	[2]1980–2008	28	12,500	3,900	790	1,100	1,480	1,900	2,440
01533500	1941–1958	17	47.2	6.3	.5	1.5	2.3	3.2	4.6
01533950	1961–1978	17	17.3	3.1	.3	.9	1.4	1.9	2.3
01534000	1914–2008	94	555	131	21.0	35.0	51.0	66.0	85.0
01534300	1959–2008	49	74.9	17.9	2.3	4.8	7.3	10.6	14.7
01534500	[2]1960–2008	48	207	83.7	19.9	29.0	35.9	43.9	52.9
01534500	[3]1940–1959	19	206	92.1	24.6	33.9	42.1	49.3	56.7
01536000	[2]1960–2008	48	457	158	34.0	49.9	65.8	82.0	99.8
01536000	[3]1939–1959	20	566	283	95.8	120	139	158	176
01536500	[2]1980–2008	28	14,400	4,840	997	1,390	1,830	2,370	3,090
01536500	[3]1900–1979	79	13,500	4,170	837	1,250	1,670	2,100	2,590
01537000	1942–1993	51	41.1	12.9	2.4	4.1	5.6	7.1	8.6
01537500	1940–1990	50	18.7	3.3	.2	1.2	2.3	3.4	4.4
01538000	1920–2008	88	65.9	22.8	4.5	6.7	9.1	12.0	14.0
01539000	1939–2008	69	485	134	19.0	35.0	54.0	76.0	100
01539500	1941–1958	17	85.3	7.0	.4	1.6	3.8	6.5	9.6
01540200	1964–1981	17	2.2	.6	<.1	.1	.2	.4	.5
01540500	[2]1980–2008	28	16,200	5,890	1,290	1,770	2,300	2,920	3,700
01540500	[3]1909–1979	74	15,300	5,080	1,020	1,580	2,080	2,600	3,190
01541000	1914–2008	94	557	159	29.0	48.0	63.0	80.0	99.0
01541200	[2]1968–2008	40	687	245	50.4	74.8	100	128	156
01541200	[3]1956–1965	9	594	149	26.6	41.3	56.2	70.2	86.0
01541303	1979–2008	29	875	311	67.8	90.3	118	155	199
01541308	1968–1979	11	12.9	5.4	1.4	2.0	2.5	3.0	3.6
01541500	[2]1961–2008	47	593	210	44.9	65.3	83.3	104	129
01541500	[3]1914–1960	46	576	139	23.0	41.0	54.0	68.0	86.0
01542000	1941–1993	52	111	42.8	10.2	14.2	18.1	21.9	26.6
01542500	[2]1966–2008	34	2,560	--	241	345	448	562	684
01542500	[3]1940–1965	20	2,450	858	147	200	250	310	400
01542810	1965–2008	43	8.8	1.1	.1	.2	.4	.6	.9
01543000	1914–2008	94	456	65.0	6.8	17.0	26.0	38.0	52.0
01543500	1939–2008	69	1,150	193	22.0	44.0	71.0	105	152
01544000	[2]1956–2008	52	410	69.4	8.2	17.9	28.1	40.2	56.1
01545000	[2]1963–2008	45	379	78.2	10.0	19.0	30.6	44.1	59.7
01545500	[2]1962–2008	46	5,040	1,570	270	423	585	778	1,040
01545500	[3]1908–1961	53	4,950	1,080	160	279	408	546	702
01545600	1965–2008	43	74.1	16.6	2.0	3.8	6.2	9.1	13.0

Shawville Generating Station

Region ID: PA
Workspace ID: PA20210728142834763000
Clicked Point (Latitude, Longitude): 41.06906, -78.36475
Time: 2021-07-28 10:28:52 -0400



Drainage Area at Outfall 005

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	7.4722	degrees
BSLOPDRAW	Unadjusted basin slope, in degrees	7.6914	degrees
BSLPDRPA20	Unadjusted basin slope, in degrees, from PA v1	7.8791	degrees
CARBON	Percentage of area of carbonate rock	0	percent

Parameter Code	Parameter Description	Value	Unit
CENTROXA83	X coordinate of the centroid, in NAD_1983_Albers, meters	-50284.234	meters
CENTROYA83	Basin centroid horizontal (y) location in NAD 1983 Albers	201941.3173	meters
DRN	Drainage quality index from STATSGO	3.6	dimensionless
DRNAREA	Area that drains to a point on a stream	930	square miles
ELEV	Mean Basin Elevation	1709	feet
ELEVMAX	Maximum basin elevation	2622	feet
FOREST	Percentage of area covered by forest	79.1299	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	0	percent
IMPNLCD01	Percentage of impervious area determined from NLCD 2001 impervious dataset	0.7609	percent
LC01DEV	Percentage of land-use from NLCD 2001 classes 21-24	7.7724	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	7.9187	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.8423	percent
LONG_OUT	Longitude of Basin Outlet	-78.364779	degrees
MAXTEMP	Mean annual maximum air temperature over basin area from PRISM 1971-2000 800-m grid	57.3	degrees F
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	-30654.0063	meters
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	229791.3593	meters
PRECIP	Mean Annual Precipitation	43	inches
ROCKDEP	Depth to rock	4.5	feet
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0.73	percent
STRDEN	Stream Density -- total length of streams divided by drainage area	1.82	miles per square mile

Parameter Code	Parameter Description	Value	Unit
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	1691.21	miles
URBAN	Percentage of basin with urban development	2.1204	percent

Application Version: 4.6.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

Low-Flow (Q_{7-10}) Calculation

Facility: **Shawville Generating Station**
NPDES Permit No. **PA0010031**

Gage Information		Outfall Information	
Drainage Area:	**474** mi^2	Drainage Area:	**930** mi^2
Q_{7-10}:	**63.4** cfs	Q_{7-10}:	**124.39** cfs
LFY:	**0.1338** cfsm		

Downstream Locations

RMI:	**162.84**	RMI:	**161.16**
Drainage Area:	**972** mi^2	Drainage Area:	**980** mi^2
Q_{7-10}:	**130.01** cfs	Q_{7-10}:	**131.08** cfs
RMI:	**158.13**	RMI:	
Drainage Area:	**988** mi^2	Drainage Area:	mi^2
Q_{7-10}:	**132.15** cfs	Q_{7-10}:	cfs
RMI:		RMI:	
Drainage Area:	mi^2	Drainage Area:	mi^2
Q_{7-10}:	cfs	Q_{7-10}:	cfs
RMI:		RMI:	
Drainage Area:	mi^2	Drainage Area:	mi^2
Q_{7-10}:	cfs	Q_{7-10}:	cfs

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
10D	18668	WEST BRANCH SUSQUEHANNA RI	**164.150**	1037.00	930.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.126	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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
NRG Outfall 005	PA0010031	3.4450	3.4450	3.4450	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	5.10	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	11.10	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
10D	18668	WEST BRANCH SUSQUEHANNA RI	**162.840**	1036.00	972.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.126	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	20.00	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	0.00	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

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
10D	18668	WEST BRANCH SUSQUEHANNA RI	**161.160**	1035.00	980.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.126	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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 (ºC)	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

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
10D	18668	WEST BRANCH SUSQUEHANNA RI	**158.130**	1020.00	988.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.126	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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

SWP Basin	Stream Code	Stream Name
10D	18668	WEST BRANCH 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 (ºC)	Analysis pH
Q7-10 Flow												
164.150	117.18	0.00	117.18	5.3294	0.00014	1.168	200.45	171.58	0.52	0.153	25.00	7.00
162.840	122.47	0.00	122.47	5.3294	0.00011	1.179	206.5	175.14	0.52	0.196	20.21	7.00
161.160	123.48	0.00	123.48	5.3294	0.00094	1.128	193.06	171.2	0.59	0.313	20.25	7.00
Q1-10 Flow												
164.150	112.49	0.00	112.49	5.3294	0.00014	NA	NA	NA	0.51	0.156	25.00	7.00
162.840	117.57	0.00	117.57	5.3294	0.00011	NA	NA	NA	0.51	0.200	20.22	7.00
161.160	118.54	0.00	118.54	5.3294	0.00094	NA	NA	NA	0.58	0.320	20.25	7.00
Q30-10 Flow												
164.150	135.93	0.00	135.93	5.3294	0.00014	NA	NA	NA	0.57	0.141	25.00	7.00
162.840	142.07	0.00	142.07	5.3294	0.00011	NA	NA	NA	0.57	0.181	20.18	7.00
161.160	143.24	0.00	143.24	5.3294	0.00094	NA	NA	NA	0.64	0.289	20.22	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.96	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.16	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
10D	18668	WEST BRANCH 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
164.150	NRG Outfall 005	11.07	22.2	11.07	22.2	0	0
162.840		NA	NA	16.46	NA	NA	NA
161.160		NA	NA	16.41	NA	NA	NA

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
164.150	NRG Outfall 005	1.37	11.1	1.37	11.1	0	0
162.840		NA	NA	1.87	NA	NA	NA
161.160		NA	NA	1.86	NA	NA	NA

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
164.15	NRG Outfall 005	5.1	5.1	11.1	11.1	3	3	0	0
162.84		NA	NA	NA	NA	NA	NA	NA	NA
161.16		NA	NA	NA	NA	NA	NA	NA	NA

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
10D	18668	WEST BRANCH SUSQUEHANNA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
164.150	3.445	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
200.452	1.168	171.581	0.523
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.13	0.137	0.48	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.015	0.397	Tsivoglou	6
Reach Travel Time (days)			
0.153			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.015	2.13	0.48	7.54
0.031	2.12	0.47	7.54
0.046	2.12	0.46	7.54
0.061	2.11	0.45	7.54
0.077	2.11	0.45	7.54
0.092	2.10	0.44	7.54
0.107	2.10	0.43	7.54
0.122	2.09	0.43	7.54
0.138	2.08	0.42	7.54
0.153	2.08	0.41	7.54

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
162.840	3.445	20.209	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
206.501	1.179	175.142	0.525
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.08	0.101	0.40	0.711
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.568	0.277	Tsivoglou	6
Reach Travel Time (days)			
0.196			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.020	2.07	0.39	7.54
0.039	2.07	0.38	7.52
0.059	2.06	0.38	7.50
0.078	2.06	0.37	7.48
0.098	2.06	0.37	7.46
0.117	2.05	0.36	7.44
0.137	2.05	0.36	7.42
0.156	2.04	0.35	7.40
0.176	2.04	0.35	7.38
0.196	2.04	0.34	7.36

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
10D	18668	WEST BRANCH SUSQUEHANNA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
161.160	3.445	20.246	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
193.064	1.128	171.203	0.592
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.03	0.055	0.34	0.713
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.369	2.603	Tsivoglou	6
Reach Travel Time (days)			
0.313			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.031	2.03	0.33	7.47
0.063	2.03	0.33	7.56
0.094	2.02	0.32	7.64
0.125	2.02	0.31	7.72
0.156	2.02	0.31	7.80
0.188	2.01	0.30	7.87
0.219	2.01	0.29	7.93
0.250	2.01	0.29	7.99
0.282	2.00	0.28	8.04
0.313	2.00	0.27	8.10

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
10D	18668	WEST BRANCH 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)
164.150	NRG Outfall 005	PA0010031	3.445	CBOD5	5.1		
				NH3-N	11.1	22.2	
				Dissolved Oxygen			3

ATTACHMENT G

TOXICS MANAGEMENT SPREADSHEET INPUT/OUTPUT DATA

Discharge Information

Instructions | Discharge | Stream

Facility: **Shawville Generating Station** NPDES Permit No.: **PA0010031** Outfall No.: **005**

Evaluation Type **Major Sewage / Industrial Waste** Wastewater Description: **Industrial Waste**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
3.445	805	7						

					0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
	Discharge Pollutant	Units	Max Discharge Conc		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		1827		316							
	Chloride (PWS)	mg/L		49.28		10							
	Bromide	mg/L		3.69		0.1							
	Sulfate (PWS)	mg/L		832		200							
	Fluoride (PWS)	mg/L		0.2		0.1							
Group 2	Total Aluminum	µg/L		1100		47.4							
	Total Antimony	µg/L		1.29									
	Total Arsenic	µg/L	<	9.95									
	Total Barium	µg/L		73		40.3							
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L		538.26									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L	<	9.95		0.7							
	Hexavalent Chromium	µg/L	<	9.95		0.6							
	Total Cobalt	µg/L		2.99		0.5							
	Total Copper	µg/L	<	4.97		0.8							
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		27									
	Dissolved Iron	µg/L		152									
	Total Iron	µg/L		1800		140							
	Total Lead	µg/L		0.3									
	Total Manganese	µg/L		2100		40							
	Total Mercury	µg/L		8.16									
	Total Nickel	µg/L		5.97		4.3							
	Total Phenols (Phenolics) (PWS)	µg/L	<	9.95									
	Total Selenium	µg/L		4.18									
	Total Silver	µg/L	<	1.99									
	Total Thallium	µg/L		6.96									
	Total Zinc	µg/L		300		3.4							
	Total Molybdenum	µg/L		57.7									
	Acrolein	µg/L	<	1									
	Acrylamide	µg/L	<	5000									
	Acrylonitrile	µg/L	<	0.5									
	Benzene	µg/L	<	0.2									
	Bromoform	µg/L	<	0.5									

Group 3	Carbon Tetrachloride	µg/L	<	0.2									
	Chlorobenzene	µg/L	<	0.2									
	Chlorodibromomethane	µg/L	<	0.4									
	Chloroethane	µg/L	<	0.2									
	2-Chloroethyl Vinyl Ether	µg/L	<	0.4									
	Chloroform	µg/L		0.7									
	Dichlorobromomethane	µg/L	<	0.2									
	1,1-Dichloroethane	µg/L	<	0.2									
	1,2-Dichloroethane	µg/L	<	0.2									
	1,1-Dichloroethylene	µg/L	<	0.2									
	1,2-Dichloropropane	µg/L	<	0.2									
	1,3-Dichloropropylene	µg/L	<	0.2									
	1,4-Dioxane	µg/L	<	0.1									
	Ethylbenzene	µg/L	<	0.2									
	Methyl Bromide	µg/L	<	0.5									
	Methyl Chloride	µg/L	<	0.5									
	Methylene Chloride	µg/L	<	0.4									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.2									
	Tetrachloroethylene	µg/L	<	0.4									
	Toluene	µg/L	<	0.2									
	1,2-trans-Dichloroethylene	µg/L	<	0.5									
	1,1,1-Trichloroethane	µg/L	<	0.2									
	1,1,2-Trichloroethane	µg/L	<	0.5									
	Trichloroethylene	µg/L	<	0.2									
	Vinyl Chloride	µg/L	<	0.2									
Group 4	2-Chlorophenol	µg/L	<	0.2									
	2,4-Dichlorophenol	µg/L	<	0.2									
	2,4-Dimethylphenol	µg/L	<	0.2									
	4,6-Dinitro-o-Cresol	µg/L	<	1.01									
	2,4-Dinitrophenol	µg/L	<	1.01									
	2-Nitrophenol	µg/L	<	0.51									
	4-Nitrophenol	µg/L	<	0.51									
	p-Chloro-m-Cresol	µg/L	<	0.2									
	Pentachlorophenol	µg/L	<	0.51									
	Phenol	µg/L	<	0.2									
	2,4,6-Trichlorophenol	µg/L	<	0.2									
Group 5	Acenaphthene	µg/L	<	0.1									
	Acenaphthylene	µg/L	<	0.1									
	Anthracene	µg/L	<	0.1									
	Benzidine	µg/L	<	0.1									
	Benzo(a)Anthracene	µg/L	<	0.51									
	Benzo(a)Pyrene	µg/L	<	0.1									
	3,4-Benzofluoranthene	µg/L	<	0.1									
	Benzo(ghi)Perylene	µg/L	<	0.1									
	Benzo(k)Fluoranthene	µg/L	<	0.1									
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.1									
	Bis(2-Chloroethyl)Ether	µg/L	<	0.1									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.1									
	Bis(2-Ethylhexyl)Phthalate	µg/L		2.2									
	4-Bromophenyl Phenyl Ether	µg/L	<	0.1									
	Butyl Benzyl Phthalate	µg/L	<	1.01									
	2-Chloronaphthalene	µg/L	<	0.1									
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.1									
	Chrysene	µg/L	<	0.1									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.1									
	1,2-Dichlorobenzene	µg/L	<	0.2									
	1,3-Dichlorobenzene	µg/L	<	0.2									
	1,4-Dichlorobenzene	µg/L	<	0.2									
	3,3-Dichlorobenzidine	µg/L	<	0.51									
	Diethyl Phthalate	µg/L	<	1.01									
	Dimethyl Phthalate	µg/L	<	1.01									
	Di-n-Butyl Phthalate	µg/L	<	1.01									
	2,4-Dinitrotoluene	µg/L		0.6									

	2,6-Dinitrotoluene	µg/L	<	0.2									
	Di-n-Octyl Phthalate	µg/L	<	1.01									
	1,2-Diphenylhydrazine	µg/L	<	0.1									
	Fluoranthene	µg/L	<	0.1									
	Fluorene	µg/L	<	0.1									
	Hexachlorobenzene	µg/L	<	0.1									
	Hexachlorobutadiene	µg/L	<	0.1									
	Hexachlorocyclopentadiene	µg/L	<	0.51									
	Hexachloroethane	µg/L	<	0.1									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.1									
	Isophorone	µg/L	<	0.2									
	Naphthalene	µg/L	<	0.1									
	Nitrobenzene	µg/L	<	0.1									
	n-Nitrosodimethylamine	µg/L	<	0.1									
	n-Nitrosodi-n-Propylamine	µg/L	<	0.1									
	n-Nitrosodiphenylamine	µg/L	<	0.1									
	Phenanthrene	µg/L	<	0.1									
	Pyrene	µg/L	<	0.1									
	1,2,4-Trichlorobenzene	µg/L	<	0.1									
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

Stream / Surface Water Information

Shawville Generating Station, NPDES Permit No. PA0010031, Outfall 005

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **West Branch Susquehanna River**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	018668	164.15	1037	930			Yes
End of Reach 1	018668	162.84	1036	972			Yes

Q ***7-10***

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	164.15	0.1338										220	7		
End of Reach 1	162.84	0.1338										220	7		

Q ***h***

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	164.15														
End of Reach 1	162.84														

Model Results

Shawville Generating Station, NPDES Permit No. PA0010031, Outfall 005

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.066 Analysis Hardness (mg/l): 451.21 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	316000	0		0	N/A	N/A	N/A	
Chloride (PWS)	10000	0		0	N/A	N/A	N/A	
Sulfate (PWS)	200000	0		0	N/A	N/A	N/A	
Fluoride (PWS)	100	0		0	N/A	N/A	N/A	
Total Aluminum	47.4	0		0	750	750	1,825	
Total Antimony	0	0		0	1,100	1,100	2,783	
Total Arsenic	0	0		0	340	340	860	Chem Translator of 1 applied
Total Barium	40.3	0		0	21,000	21,000	53,071	
Total Boron	0	0		0	8,100	8,100	20,494	
Total Cadmium	0	0		0	8.694	9.87	25.0	Chem Translator of 0.881 applied
Total Chromium (III)	0.7	0		0	1957.195	6,194	15,670	Chem Translator of 0.316 applied
Hexavalent Chromium	0.6	0		0	16	16.3	40.3	Chem Translator of 0.982 applied
Total Cobalt	0.5	0		0	95	95.0	240	
Total Copper	0.8	0		0	55.581	57.9	145	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	140	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	317.640	556	1,406	Chem Translator of 0.571 applied
Total Manganese	40	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	4.17	Chem Translator of 0.85 applied
Total Nickel	4.3	0		0	1675.222	1,679	4,240	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	42.949	50.5	128	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	164	
Total Zinc	3.4	0		0	420.062	430	1,082	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	7.59	

Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	650	650	1,645	
Benzene	0	0		0	640	640	1,619	
Bromoform	0	0		0	1,800	1,800	4,554	
Carbon Tetrachloride	0	0		0	2,800	2,800	7,084	
Chlorobenzene	0	0		0	1,200	1,200	3,036	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	45,542	
Chloroform	0	0		0	1,900	1,900	4,807	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	37,952	
1,1-Dichloroethylene	0	0		0	7,500	7,500	18,976	
1,2-Dichloropropane	0	0		0	11,000	11,000	27,831	
1,3-Dichloropropylene	0	0		0	310	310	784	
Ethylbenzene	0	0		0	2,900	2,900	7,337	
Methyl Bromide	0	0		0	550	550	1,392	
Methyl Chloride	0	0		0	28,000	28,000	70,843	
Methylene Chloride	0	0		0	12,000	12,000	30,361	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	2,530	
Tetrachloroethylene	0	0		0	700	700	1,771	
Toluene	0	0		0	1,700	1,700	4,301	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	17,205	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	7,590	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	8,602	
Trichloroethylene	0	0		0	2,300	2,300	5,819	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,417	
2,4-Dichlorophenol	0	0		0	1,700	1,700	4,301	
2,4-Dimethylphenol	0	0		0	660	660	1,670	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	202	
2,4-Dinitrophenol	0	0		0	660	660	1,670	
2-Nitrophenol	0	0		0	8,000	8,000	20,241	
4-Nitrophenol	0	0		0	2,300	2,300	5,819	
p-Chloro-m-Cresol	0	0		0	160	160	405	
Pentachlorophenol	0	0		0	8.723	8.72	22.1	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	1,164	
Acenaphthene	0	0		0	83	83.0	210	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	759	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.27	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	75,904	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	11,386	

4-Bromophenyl Phenyl Ether	0	0		0	270	270	683	
Butyl Benzyl Phthalate	0	0		0	140	140	354	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	2,075	
1,3-Dichlorobenzene	0	0		0	350	350	886	
1,4-Dichlorobenzene	0	0		0	730	730	1,847	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	10,120	
Dimethyl Phthalate	0	0		0	2,500	2,500	6,325	
Di-n-Butyl Phthalate	0	0		0	110	110	278	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	4,048	
2,6-Dinitrotoluene	0	0		0	990	990	2,505	
1,2-Diphenylhydrazine	0	0		0	15	15.0	38.0	
Fluoranthene	0	0		0	200	200	506	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	10	10.0	25.3	
Hexachlorocyclopentadiene	0	0		0	5	5.0	12.7	
Hexachloroethane	0	0		0	60	60.0	152	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	25,301	
Naphthalene	0	0		0	140	140	354	
Nitrobenzene	0	0		0	4,000	4,000	10,120	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	43,012	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	759	
Phenanthrene	0	0		0	5	5.0	12.7	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	329	

☑ ***CFC*** CCT (min): 720 PMF: 0.454 Analysis Hardness (mg/l): 270.43 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	316000	0		0	N/A	N/A	N/A	
Chloride (PWS)	10000	0		0	N/A	N/A	N/A	
Sulfate (PWS)	200000	0		0	N/A	N/A	N/A	
Fluoride (PWS)	100	0		0	N/A	N/A	N/A	
Total Aluminum	47.4	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	2,552	
Total Arsenic	0	0		0	150	150	1,740	Chem Translator of 1 applied
Total Barium	40.3	0		0	4,100	4,100	47,137	
Total Boron	0	0		0	1,600	1,600	18,562	
Total Cadmium	0	0		0	0.491	0.57	6.56	Chem Translator of 0.867 applied
Total Chromium (III)	0.7	0		0	167.399	195	2,251	Chem Translator of 0.86 applied

Hexavalent Chromium	0.6	0		0	10	10.4	114	Chem Translator of 0.962 applied
Total Cobalt	0.5	0		0	19	19.0	215	
Total Copper	0.8	0		0	20.955	21.8	245	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	140	0		0	1,500	1,500	33,254	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	7.293	11.3	131	Chem Translator of 0.646 applied
Total Manganese	40	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	10.5	Chem Translator of 0.85 applied
Total Nickel	4.3	0		0	120.662	121	1,358	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	57.9	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	151	
Total Zinc	3.4	0		0	274.454	278	3,193	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	34.8	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	130	130	1,508	
Benzene	0	0		0	130	130	1,508	
Bromoform	0	0		0	370	370	4,292	
Carbon Tetrachloride	0	0		0	560	560	6,497	
Chlorobenzene	0	0		0	240	240	2,784	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	40,603	
Chloroform	0	0		0	390	390	4,524	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	35,963	
1,1-Dichloroethylene	0	0		0	1,500	1,500	17,401	
1,2-Dichloropropane	0	0		0	2,200	2,200	25,522	
1,3-Dichloropropylene	0	0		0	61	61.0	708	
Ethylbenzene	0	0		0	580	580	6,729	
Methyl Bromide	0	0		0	110	110	1,276	
Methyl Chloride	0	0		0	5,500	5,500	63,805	
Methylene Chloride	0	0		0	2,400	2,400	27,842	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	2,436	
Tetrachloroethylene	0	0		0	140	140	1,624	
Toluene	0	0		0	330	330	3,828	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	16,241	
1,1,1-Trichloroethane	0	0		0	610	610	7,077	
1,1,2-Trichloroethane	0	0		0	680	680	7,889	
Trichloroethylene	0	0		0	450	450	5,220	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	1,276	
2,4-Dichlorophenol	0	0		0	340	340	3,944	
2,4-Dimethylphenol	0	0		0	130	130	1,508	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	186	

2,4-Dinitrophenol	0	0		0	130	130	1,508	
2-Nitrophenol	0	0		0	1,600	1,600	18,562	
4-Nitrophenol	0	0		0	470	470	5,452	
p-Chloro-m-Cresol	0	0		0	500	500	5,800	
Pentachlorophenol	0	0		0	6.693	6.69	77.6	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	1,056	
Acenaphthene	0	0		0	17	17.0	197	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	684	
Benzo(a)Anthracene	0	0		0	0.1	0.1	1.16	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	69,606	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	10,557	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	626	
Butyl Benzyl Phthalate	0	0		0	35	35.0	406	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	1,856	
1,3-Dichlorobenzene	0	0		0	69	69.0	800	
1,4-Dichlorobenzene	0	0		0	150	150	1,740	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	9,281	
Dimethyl Phthalate	0	0		0	500	500	5,800	
Di-n-Butyl Phthalate	0	0		0	21	21.0	244	
2,4-Dinitrotoluene	0	0		0	320	320	3,712	
2,6-Dinitrotoluene	0	0		0	200	200	2,320	
1,2-Diphenylhydrazine	0	0		0	3	3.0	34.8	
Fluoranthene	0	0		0	40	40.0	464	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	2	2.0	23.2	
Hexachlorocyclopentadiene	0	0		0	1	1.0	11.6	
Hexachloroethane	0	0		0	12	12.0	139	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	24,362	
Naphthalene	0	0		0	43	43.0	499	
Nitrobenzene	0	0		0	810	810	9,397	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	39,443	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	684	

Phenanthrene	0	0		0	1	1.0	11.6	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	302	

☑ ***THH*** CCT (min): 720 PMF: 0.454 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	316000	0		0	500,000	500,000	N/A	
Chloride (PWS)	10000	0		0	250,000	250,000	N/A	
Sulfate (PWS)	200000	0		0	250,000	250,000	N/A	
Fluoride (PWS)	100	0		0	2,000	2,000	N/A	
Total Aluminum	47.4	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	65.0	
Total Arsenic	0	0		0	10	10.0	116	
Total Barium	40.3	0		0	2,400	2,400	27,415	
Total Boron	0	0		0	3,100	3,100	35,963	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0.7	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0.6	0		0	N/A	N/A	N/A	
Total Cobalt	0.5	0		0	N/A	N/A	N/A	
Total Copper	0.8	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	3,480	
Total Iron	140	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	40	0		0	1,000	1,000	11,177	
Total Mercury	0	0		0	0.050	0.05	0.58	
Total Nickel	4.3	0		0	610	610	7,031	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	2.78	
Total Zinc	3.4	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	34.8	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	1,160	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	

1,1-Dichloroethylene	0	0		0	33	33.0	383	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	68	68.0	789	
Methyl Bromide	0	0		0	100	100.0	1,160	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	661	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	1,160	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	116,010	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	30	30.0	348	
2,4-Dichlorophenol	0	0		0	10	10.0	116	
2,4-Dimethylphenol	0	0		0	100	100.0	1,160	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	23.2	
2,4-Dinitrophenol	0	0		0	10	10.0	116	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	46,404	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	812	
Anthracene	0	0		0	300	300	3,480	
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	2,320	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	1.16	
2-Chloronaphthalene	0	0		0	800	800	9,281	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	1,000	1,000	11,601	
1,3-Dichlorobenzene	0	0		0	7	7.0	81.2	
1,4-Dichlorobenzene	0	0		0	300	300	3,480	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	

Diethyl Phthalate	0	0		0	600	600	6,961	
Dimethyl Phthalate	0	0		0	2,000	2,000	23,202	
Di-n-Butyl Phthalate	0	0		0	20	20.0	232	
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	20	20.0	232	
Fluorene	0	0		0	50	50.0	580	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	4	4.0	46.4	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	34	34.0	394	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	116	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	232	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.81	

☑ ***CRL*** CCT (min): 720 PMF: 0.691 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	316000	0		0	N/A	N/A	N/A	
Chloride (PWS)	10000	0		0	N/A	N/A	N/A	
Sulfate (PWS)	200000	0		0	N/A	N/A	N/A	
Fluoride (PWS)	100	0		0	N/A	N/A	N/A	
Total Aluminum	47.4	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	40.3	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0.7	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0.6	0		0	N/A	N/A	N/A	
Total Cobalt	0.5	0		0	N/A	N/A	N/A	
Total Copper	0.8	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	140	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	40	0		0	N/A	N/A	N/A	

Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	4.3	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	3.4	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylamide	0	0		0	0.07	0.07	4.64	
Acrylonitrile	0	0		0	0.06	0.06	3.97	
Benzene	0	0		0	0.58	0.58	38.4	
Bromoform	0	0		0	7	7.0	464	
Carbon Tetrachloride	0	0		0	0.4	0.4	26.5	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	53.0	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	378	
Dichlorobromomethane	0	0		0	0.95	0.95	62.9	
1,2-Dichloroethane	0	0		0	9.9	9.9	656	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	59.6	
1,3-Dichloropropylene	0	0		0	0.27	0.27	17.9	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	1,325	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	13.2	
Tetrachloroethylene	0	0		0	10	10.0	662	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.55	0.55	36.4	
Trichloroethylene	0	0		0	0.6	0.6	39.7	
Vinyl Chloride	0	0		0	0.02	0.02	1.32	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	1.99	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	99.4	

Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.0001	0.0001	0.007	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.066	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.007	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.066	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.66	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	1.99	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	21.2	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	7.95	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.007	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	3.31	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	3.31	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	3.31	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	1.99	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.005	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.66	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	6.62	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.066	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.046	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.33	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	219	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

	Mass Limits		Concentration Limits						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	33.6	52.4	1,170	1,825	2,924	µg/L	1,170	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Hexavalent Chromium	Report	Report	Report	Report	Report	µg/L	25.8	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Manganese	Report	Report	Report	Report	Report	µg/L	11,177	THH	Discharge Conc > 10% WQBEL (no RP)
Total Mercury	0.017	0.026	0.58	0.9	1.45	µg/L	0.58	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Thallium	0.08	0.12	2.78	4.34	6.96	µg/L	2.78	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	693	AFC	Discharge Conc > 10% WQBEL (no RP)
Acrylamide	0.13	0.21	4.64	7.23	11.6	µg/L	4.64	CRL	Discharge Conc ≥ 50% WQBEL (RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Antimony	65.0	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	116	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	27,415	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	13,136	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	6.56	µg/L	Discharge Conc < TQL
Total Chromium (III)	2,251	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	154	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	93.1	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	3,480	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	33,254	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	131	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	1,358	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	57.9	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	81.9	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	4.87	µg/L	Discharge Conc < TQL
Acrylonitrile	3.97	µg/L	Discharge Conc < TQL
Benzene	38.4	µg/L	Discharge Conc < TQL

Bromoform	464	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	26.5	µg/L	Discharge Conc < TQL
Chlorobenzene	1,160	µg/L	Discharge Conc < TQL
Chlorodibromomethane	53.0	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	29,191	µg/L	Discharge Conc < TQL
Chloroform	378	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	62.9	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	656	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	383	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	59.6	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	17.9	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	789	µg/L	Discharge Conc < TQL
Methyl Bromide	892	µg/L	Discharge Conc < TQL
Methyl Chloride	45,408	µg/L	Discharge Conc < TQL
Methylene Chloride	1,325	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	13.2	µg/L	Discharge Conc < TQL
Tetrachloroethylene	662	µg/L	Discharge Conc < TQL
Toluene	661	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	1,160	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	4,865	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	36.4	µg/L	Discharge Conc < TQL
Trichloroethylene	39.7	µg/L	Discharge Conc < TQL
Vinyl Chloride	1.32	µg/L	Discharge Conc < TQL
2-Chlorophenol	348	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	116	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	1,070	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	23.2	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	116	µg/L	Discharge Conc < TQL
2-Nitrophenol	12,974	µg/L	Discharge Conc < TQL
4-Nitrophenol	3,730	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	259	µg/L	Discharge Conc < TQL
Pentachlorophenol	1.99	µg/L	Discharge Conc < TQL
Phenol	46,404	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	99.4	µg/L	Discharge Conc < TQL
Acenaphthene	135	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	3,480	µg/L	Discharge Conc < TQL
Benzidine	0.007	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.066	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.007	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.066	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS

Benzo(k)Fluoranthene	0.66	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	1.99	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	2,320	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	21.2	µg/L	Discharge Conc ≤ 25% WQBEL
4-Bromophenyl Phenyl Ether	438	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	1.16	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	9,281	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	7.95	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.007	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	1,330	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	81.2	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	1,184	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	3.31	µg/L	Discharge Conc < TQL
Diethyl Phthalate	6,487	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	4,054	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	178	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	3.31	µg/L	Discharge Conc ≤ 25% WQBEL
2,6-Dinitrotoluene	3.31	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	1.99	µg/L	Discharge Conc < TQL
Fluoranthene	232	µg/L	Discharge Conc < TQL
Fluorene	580	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.005	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.66	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	8.11	µg/L	Discharge Conc < TQL
Hexachloroethane	6.62	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.066	µg/L	Discharge Conc < TQL
Isophorone	394	µg/L	Discharge Conc < TQL
Naphthalene	227	µg/L	Discharge Conc < TQL
Nitrobenzene	116	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.046	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.33	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	219	µg/L	Discharge Conc < TQL
Phenanthrene	8.11	µg/L	Discharge Conc < TQL
Pyrene	232	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.81	µg/L	Discharge Conc < TQL

ATTACHMENT H

TOTAL RESIDUAL CHLORINE EVALUATION

TRC EVALUATION

Input appropriate values in B4:B8 and E4:E7

124	= Q stream (cfs)	0.5	= CV Daily
3.445	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.066	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	0.454	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.509	1.3.2.iii	WLA cfc = 3.296
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.190	5.1d	LTA_cfc = 1.916

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.233	AFC
		INST MAX LIMIT (mg/l) =	0.763	

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)