pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0011282**
Facility Type	**Industrial**	APS ID	**1011708**
Major / Minor	**Minor**	Authorization ID	**1306110**

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

Applicant and Facility Information

Applicant Name	**Aqua Pennsylvania, Inc.**	Facility Name	**Crum Creek Water Treatment Plant**
Applicant Address	762 W Lancaster Avenue	Facility Address	965 Beatty Road
	Bryn Mawr, PA 19010-3489		Springfield, PA 19064
Applicant Contact	Todd M. Duerr	Facility Contact	Robert Burston
Applicant Phone	(610) 645-1122	Facility Phone	(610) 543-7514
Client ID	309251	Site ID	493382
SIC Code	4941	Municipality	Springfield Township
SIC Description	Trans. & Utilities - Water Supply	County	Delaware
Date Application Received	January 31, 2020	EPA Waived?	Yes
Date Application Accepted	March 30, 2021	If No, Reason	

Purpose of Application: Permit Renewal.

Summary of Review

The PA Department of Environmental Protection (PADEP/Department) received an NPDES permit renewal application from GHD on behalf of Aqua Pennsylvania, Inc. (Aqua/permittee) for Aqua's Crum Creek WTP (facility) on January 31, 2020. This is a minor IWTP without ELG with an average annual design flow of 0.555 MGD (Outfall 002) and 0.094 MGD (Outfall 013). The current permit expired on July 31, 2020. The terms and conditions are automatically extended since the renewal application was received at least 180 days prior to permit expiration date. Renewal NPDES permit under Clean Water Program are not eligible for PDG, per 021-2100-001.

This fact sheet is developed in accordance with 40 CFR §124.56.

Changes in this permit: None

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
√		Reza H. Chowdhury, E.I.T. / Project Manager	November 19, 2021
X		Pravin Patel Pravin C. Patel, P.E. / Environmental Engineer Manager	11/22/2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0.555
Latitude	39º 55' 23.35"	Longitude	-75º 21' 53.16"
Quad Name	Lansdowne	Quad Code	1943
Wastewater Description:	Process wastewater discharge from residuals basin		
Receiving Waters	Crum Creek (WWF)	Stream Code	00692
NHD Com ID	25601315	RMI	8.0
Drainage Area	28.9 mi^2	Yield (cfs/mi^2)	0.276
Q_{7-10} Flow (cfs)	7.99	Q_{7-10} Basis	Please see below
Elevation (ft)	90.08	Slope (ft/ft)	
Watershed No.	3-G	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	CAUSE UNKNOWN, DEWATERING, FLOW REGIME MODIFICATION, SILTATION		
Source(s) of Impairment	URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS		
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)	7.0	Default
Temperature (°C)	25	Default
Hardness (mg/L)	100	Default
Other:		

Nearest Downstream Public Water Supply Intake		None	
PWS Waters		Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Changes Since Last Permit Issuance: None

Drainage Area:
The drainage area upstream of the point of discharge is 28.9 mi^2 according to USGS PA StreamStats, accessible at https://streamstats.usgs.gov/ss/

Stream Flow:
The streamflow at Outfall 002 is corelated to USGS's watershed delineation tool StreamStats (https://streamstats.usgs.gov/ss/). The stream flow retrievals resulted in a Q_{7-10} and Q_{3-10} of 7.99 cfs and 9.93 cfs, respectively, at Outfall 002. The flow calculations are shown below:

Q_{7-10} runoff rate (yield) = 7.99/28.9 = 0.276 cfs/mi^2.
Q_{30-10}: Q_{7-10} = 9.93/7.99 = 1.24:1
Default Q_{1-10}:Q_{7-10} of 0.64 will be used in modeling, if needed.

PWS Intake:
There is no PWS intake from Outfall 002 till the PA-DE border.

Wastewater Characteristics:
There was no discharge reported in the DMR from Outfall 002 in last 12 months. Therefore, a default pH of 7.0 and discharge temperature of 20°C will be used in the modeling.

Background/Ambient Stream Data:
There is no nearby active WQN station from the discharge points. In absence of site-specific data, a default pH of 7.0, temperature of 25°C, and stream hardness of 99 mg/l from application will be used.

303d Listed Streams:
The receiving stream is impaired for siltation and flow regime modification from urban runoff and unknown sources. The permit limits, terms, and conditions were developed in such a way that the discharge from this facility is expected not to contribute to the existing impairment of the receiving stream or the watershed.

Antidegradation (93.4):
The effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

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

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0
Latitude	39º 55' 28.6"	Longitude	-75º 21' 51.76"
Quad Name	Lansdowne	Quad Code	1943
Wastewater Description:	Emergency process wastewater discharge from filter backwash tanks, recycled back to the front of WTP and mixes with raw water.		
Receiving Waters	Crum Creek (WWF)	Stream Code	00692
NHD Com ID	25601315	RMI	8.0

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	003	Design Flow (MGD)	0
Latitude	39º 55' 30"	Longitude	-75º 21' 55"
Quad Name	Lansdowne	Quad Code	1943
Wastewater Description:	Emergency wastewater discharge from filter backwash drain		
Receiving Waters	Crum Creek (WWF)	Stream Code	00692
NHD Com ID	25601315	RMI	8.0

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	004	Design Flow (MGD)	0
Latitude	39º 55' 30"	Longitude	-75º 21' 55"
Quad Name	Lansdowne	Quad Code	1943
Wastewater Description:	Emergency wastewater discharge from two flapper valves for transfer pit overflows		
Receiving Waters	Crum Creek (WWF)	Stream Code	00692
NHD Com ID	25601315	RMI	8.0

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	006	Design Flow (MGD)	0
Latitude	39º 55' 33"	Longitude	-75º 21' 59"
Quad Name	Lansdowne	Quad Code	1943
Wastewater Description:	36” Venturi vault drains-raw water leakage and groundwater from meter pit		
Receiving Waters	Crum Creek (WWF)	Stream Code	00692
NHD Com ID	25601315	RMI	8.0

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	007	Design Flow (MGD)	0
Latitude	39º 55' 32"	Longitude	-75º 21' 59"
Quad Name	Lansdowne	Quad Code	1943
Wastewater Description:	Venturi pit drain		
Receiving Waters	Crum Creek (WWF)	Stream Code	00692
NHD Com ID	25601315	RMI	8.0

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	008	Design Flow (MGD)	0
Latitude	39º 55' 31"	Longitude	-75º 21' 57"
Quad Name	Lansdowne	Quad Code	1943
Wastewater Description:	Sump drainage for elevator pit-used to remove groundwater from pit		
Receiving Waters	Crum Creek (WWF)	Stream Code	00692
NHD Com ID	25601315	RMI	8.0

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	009	Design Flow (MGD)	0
Latitude	39º 55' 36"	Longitude	-75º 21' 52"
Quad Name	Lansdowne	Quad Code	1943
Wastewater Description:	16” groundwater drain-drain groundwater from the area behind the settling basin		
Receiving Waters	Crum Creek (WWF)	Stream Code	00692
NHD Com ID	25601315	RMI	8.0

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	010	Design Flow (MGD)	0
Latitude	39º 55' 34"	Longitude	-75º 22' 0"
Quad Name	Lansdowne	Quad Code	1943
Wastewater Description:	Raw untreated creek water		
Receiving Waters	Crum Creek (WWF)	Stream Code	00692
NHD Com ID	25601315	RMI	8.0

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	011	Design Flow (MGD)	0
Latitude	39º 55' 32"	Longitude	-75º 21' 59"
Quad Name	Lansdowne	Quad Code	1943
Wastewater Description:	Raw untreated creek water		
Receiving Waters	Crum Creek (WWF)	Stream Code	00692
NHD Com ID	25601315	RMI	8.0

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	013	Design Flow (MGD)	.094
Latitude	39º 55' 34"	Longitude	-75º 22' 0"
Quad Name	Lansdowne	Quad Code	1943
Wastewater Description:	Chlorinated drinking water from traveling screen cleaning operations		
Receiving Waters	Crum Creek (WWF)	Stream Code	00692
NHD Com ID	25601315	RMI	8.0
Drainage Area	28.9	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	7.99	Q_{7-10} Basis	Please see page 2
Elevation (ft)		Slope (ft/ft)	
Watershed No.	3-G	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	CAUSE UNKNOWN, DEWATERING, FLOW REGIME MODIFICATION, SILTATION		
Source(s) of Impairment	URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS		
TMDL Status		Name	

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	014	Design Flow (MGD)	0
Latitude	39º 55' 29"	Longitude	-75º 21' 52"
Quad Name	Lansdowne	Quad Code	1943
Wastewater Description:	Groundwater/stormwater drains, groundwater overflow from infiltration trenches near clear wells		
Receiving Waters	Crum Creek (WWF)	Stream Code	00692
NHD Com ID	25601315	RMI	8.0

Treatment Facility Summary

Treatment Facility Name: Crum Creek Water Filtration Plant

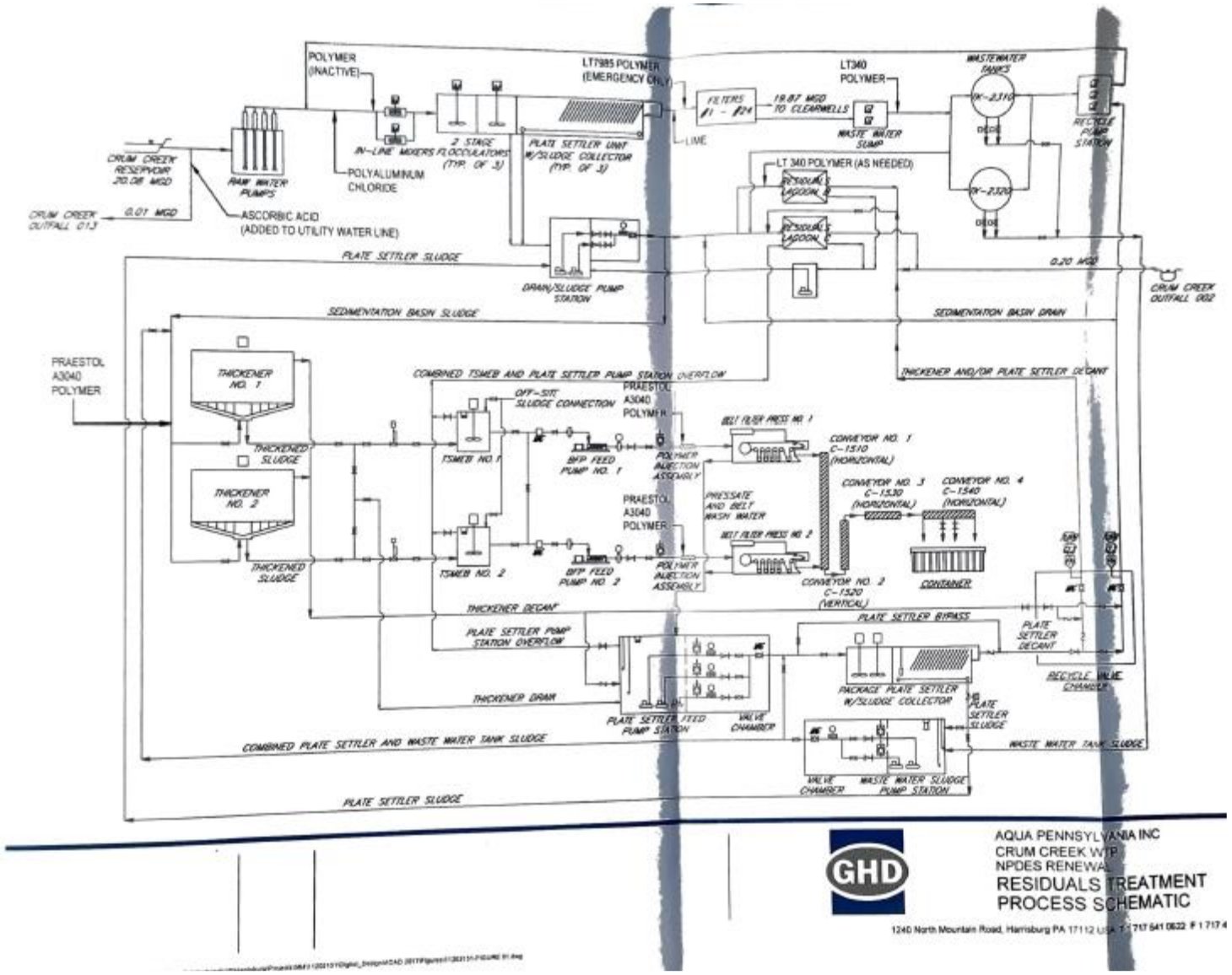
WQM Permit No.	Issuance Date

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial			No Disinfection	

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
		Not Overloaded		

Changes Since Last Permit Issuance: None

Other Comments:
Aqua Pennsylvania, Inc. (Aqua) owns and operates a Water Treatment Plant (WTP) named Crum Creek Water Treatment Plant (Crum Creek WTP) located in Springfield Township, Delaware County, which discharges into the Crum Creek under NPDES permit PA0011282. Aqua requests renewal of its NPDES permit to continue discharge of 0.555 MGD through Outfall 002 and 0.094 MGD through Outfall 013, and through several other outfalls in case of emergency, and stormwater. The WTP withdraws 20 MGD of raw water as a yearly average. Outfall 013 is the only outfall that discharges on continuous basis. All other outfalls are either emergency only or intermittent. There was no discharge from Outfalls 001, 003, 004, 006, 007, 008, 010, and 014 during current permit term (since January 2014). Outfall 002 had only two discharges during the current permit term on June 2017 (0.5 MGD) and November 2017 (0.35 MGD). The process schematic is provided below:



Decant from the thickeners, belt press, and filter wash water tank is typically recycled; however, if necessary it can be discharged through Outfall 002. Prior to discharge through Outfall 013, the cleaning water from traveling screen is dechlorinated using asborbic acid. The following wastewater treatment chemicals are used at the WTP:

Outfall	Chemical name	Purpose	Max usage rate	units
002	Magnafloc LT340 (polymer)	Flocculation	7	Lbs./day
	Praestol A3040	Flocculation	1,814	Lbs./day
013	Ascorbic acid	Dechlorination	2.5	lbs./day

Compliance History

DMR Data for Outfall 013 (from February 1, 2020 to January 31, 2021)

Parameter	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20
Flow (MGD) Average Monthly	0.005	0.005	0.005	0.005	0.005	0.05	0.005	0.005	0.005	0.005	0.005	0.005
Flow (MGD) Daily Maximum	0.005	0.005	0.005	0.005	0.005	0.05	0.006	0.005	0.005	0.006	0.005	0.005
pH (S.U.) Instantaneous Minimum	7.4	7.3	7.3	7.4	7.4	7.3	7.3	7.2	7.2	7.2	7.2	7.2
pH (S.U.) Instantaneous Maximum	7.6	7.8	7.8	7.6	7.6	7.6	7.7	7.7	7.7	7.5	7.5	7.6
TRC (mg/L) Average Monthly	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TRC (mg/L) Instantaneous Maximum	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

There is no reported non-compliance for the last 12 months.

Existing limits

The table below summarizes effluent limitations and monitoring requirements specified in the existing final NPDES permit that was in effect between August 1, 2015 to July 31, 2020.

For Outfall 001:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when Discharging	Estimate
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily when Discharging	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.0	1.2	Daily when Discharging	Grab
Total Suspended Solids	XXX	XXX	XXX	30	60	75	Daily when Discharging	*24-Hr Composite
Total Aluminum	XXX	XXX	XXX	1.24	2.48	3.10	Daily when Discharging	*24-Hr Composite
Total Iron	XXX	XXX	XXX	2.0	4.0	5.0	Daily when Discharging	*24-Hr Composite
Total Manganese	XXX	XXX	XXX	1.0	2.0	2.5	Daily when Discharging	*24-Hr Composite
Chlorodibromomethane	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Dichlorobromomethane	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Chloroform	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab

For Outfall 002:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				**Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when Discharging	Estimate
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily when Discharging	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.0	1.2	Daily when Discharging	Grab

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				**Minimum (2)	Required
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Measurement Frequency	Sample Type
Total Suspended Solids	XXX	XXX	XXX	30	60	75	Daily when Discharging	24-Hr Composite
Total Aluminum	XXX	XXX	XXX	4.0	8.0	10.0	Daily when Discharging	24-Hr Composite
Total Iron	XXX	XXX	XXX	2.0	4.0	5.0	Daily when Discharging	24-Hr Composite
Total Manganese	XXX	XXX	XXX	2.0	4.0	5.0	Daily when Discharging	24-Hr Composite
Acrylamide	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	24-Hr Composite
Chlorodibromomethane	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Dichlorobromomethane	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Chloroform	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Total Dissolved Solids	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	24-Hr Composite

For Outfall 003:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2)	Required
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Hourly when Discharging	Estimate
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	Hourly when Discharging	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.0	1.2	Hourly when Discharging	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Aluminum	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Iron	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Manganese	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab

For Outfall 004:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Hourly when Discharging	Estimate
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	Hourly when Discharging	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.0	1.2	Hourly when Discharging	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Aluminum	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Iron	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Manganese	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab

For Outfall 006, 007, 008, 009, 010, 011, and 014: Not monitored.

For Outfall 013:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly		Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/day	Estimate
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.0	1/day	Grab

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0
Latitude 39º 55' 28.6" **Longitude** -75º 21' 51.76"
Wastewater Description: Emergency process wastewater discharge from filter backwash tanks, recycled back to the front of WTP and mixes with raw water.

Technology-Based Limitations

The industrial wastewaters discharged through Outfall 001 is generated from Filter backwash. DEP's technical guidance no. 362-2183-003 addresses technology-based control requirements along with the following recommended Best Practicable Control Technology Currently Available (BPT) effluent requirements for WTP sludge and filter backwash:

Parameter	Limit (mg/l)	SBC
Suspended Solids	30	Average Monthly
	60	Daily Maximum
Iron, Total	2.0	Average Monthly
	4.0	Daily Maximum
Aluminum, Total	4.0	Average Monthly
	8.0	Daily Maximum
Manganese, Total	1.0	Average Monthly
	2.0	Daily Maximum
Flow	Monitor	Average Monthly
pH	6.0	Minimum
	9.0	Maximum
Total Residual Chlorine	0.5	Average Monthly
	1.0	Daily Maximum

Water Quality-Based Limitations

WQBELs couldn't be determined due to the absence of flow and sample results. The existing parameters with applicable limits/monitoring requirement will be carried over. The final limit applicable to this outfall is:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	IMAX		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when Discharging	Estimate
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily when Discharging	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.0	1.2	Daily when Discharging	Grab
Total Suspended Solids	XXX	XXX	XXX	30	60	75	Daily when Discharging	24-Hr Composite
Total Aluminum	XXX	XXX	XXX	1.24	2.48	3.10	Daily when Discharging	24-Hr Composite
Total Iron	XXX	XXX	XXX	2.0	4.0	5.0	Daily when Discharging	24-Hr Composite
Total Manganese	XXX	XXX	XXX	1.0	2.0	2.5	Daily when Discharging	24-Hr Composite
Chlorodibromomethane	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Dichlorobromomethane	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Chloroform	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab

Development of Effluent Limitations

Outfall No.	002	**Design Flow (MGD)**	0.555
Latitude	39º 55' 23.35"	**Longitude**	-75º 21' 53.16"

Wastewater Description: Process wastewater discharge from residuals basin

Technology-Based Limitations

The industrial wastewaters discharged through Outfall 002 is the process wastewater discharge from residual basin. DEP's technical guidance no. 362-2183-003 addresses technology-based control requirements along with the following recommended Best Practicable Control Technology Currently Available (BPT) effluent requirements for WTP sludge and filter backwash:

Parameter	Limit (mg/l)	SBC
Suspended Solids	30	Average Monthly
	60	Daily Maximum
Iron, Total	2.0	Average Monthly
	4.0	Daily Maximum
Aluminum, Total	4.0	Average Monthly
	8.0	Daily Maximum
Manganese, Total	1.0	Average Monthly
	2.0	Daily Maximum
Flow	Monitor	Average Monthly
pH	6.0	Minimum
	9.0	Maximum
Total Residual Chlorine	0.5	Average Monthly
	1.0	Daily Maximum

Water Quality-Based Limitations

WQBELs couldn't be determined due to the absence of sample results. The existing parameters with applicable limits/monitoring requirement will be carried over. The facility still uses Magnafloc LT340 containing Acrylamide, therefore, existing acrylamide monitoring will be carried over. The final limit applicable to this outfall is:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when Discharging	Estimate
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily when Discharging	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.0	1.2	Daily when Discharging	Grab
Total Suspended Solids	XXX	XXX	XXX	30	60	75	Daily when Discharging	24-Hr Composite
Total Aluminum	XXX	XXX	XXX	4.0	8.0	10.0	Daily when Discharging	24-Hr Composite
Total Iron	XXX	XXX	XXX	2.0	4.0	5.0	Daily when Discharging	24-Hr Composite
Total Manganese	XXX	XXX	XXX	2.0	4.0	5.0	Daily when Discharging	24-Hr Composite
Acrylamide	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	24-Hr Composite
Chlorodibromomethane	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Dichlorobromomethane	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Chloroform	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Total Dissolved Solids	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	24-Hr Composite

Development of Effluent Limitations

Outfall No.	003/004	**Design Flow (MGD)**	0.0
Latitude	39º 55' 30"	**Longitude**	-75º 21' 55"

Wastewater Description: Emergency wastewater discharge from filter backwash drain (003), Emergency wastewater discharge from two flapper valves for transfer pit overflows (004)

There was no discharge from Outfall 003 or 004 since 2014. No sample results available to conduct an RP. The existing monitoring requirements will be carried over for both outfalls. The proposed limits are:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Hourly when Discharging	Estimate
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	Hourly when Discharging	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.0	1.2	Hourly when Discharging	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Aluminum	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Iron	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Manganese	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab

Outfalls 006, 007, 008, 009, and 014: There is currently no monitoring requirement for these outfalls. Outfalls 009 and 014 are stormwater only outfalls. Outfall 009 is representative of Outfall 014. A stormwater sample was collected during a storm event on December 10, 2019 that shows Oil and Grease <5 mg/l, BOD5 <2.0 mg/l, COV <25 mg/l, TSS <1 mg/l, Total Nitrogen <1.1 mg/l, Total Phosphorus 0.11 mg/l, and pH of 7.42 S.U. There is no applicable sector specific stormwater monitoring requirement for potable water treatment facilities (related to NAICS 221310), therefore, no monitoring requirement will be placed for any of these outfalls.

Outfall 010 and 011: These outfall discharges raw untreated creek water. There is currently no monitoring requirement applied to these outfalls. There was no discharge from these outfalls since 2014.

Outfall No.	013	**Design Flow (MGD)**	0.094
Latitude	39° 55’ 34.00”	**Longitude**	75° 22’ 0.00”

Wastewater Description: Chlorinated drinking water from traveling screen cleaning operations

Water Quality-Based Limitations

The following data were used in the attached computer model of the stream:

- Discharge pH 7.57 (median July-Sep, 2021, daily eDMR data)
- Discharge Temperature 69°F (Application data)
- Discharge Hardness 113 mg/l (Application data)
- Stream pH 7.0 (Default)
- Stream Temperature 25°C (Default)
- Stream Hardness 99 mg/l (Application data)

The following two nodes were used in modeling:

Node 1: Outfall 013 at Crum Creek (00692)
Elevation: 90.08 ft (USGS TNM viewer, 11/19/2021)
Drainage Area: 28.8 mi^2 (StreamStat Version 3.0, 11/19/2021)
River Mile Index: 8.0 mile (PA DEP eMapPA)
Low Flow Yield: 0.276 cfs/mi^2

Discharge Flow: 0.094 MGD

Node 2: At the confluence with UNT 00696
Elevation: 73.04 ft (USGS TNM 2.0 viewer, 11/19/2021)
Drainage Area: 31.1 mi^2 (StreamStat Version 3.0, 11/19/2021)
River Mile Index: 6.51 (PA DEP eMapPA)
Low Flow Yield: 0.276 cfs/mi^2
Discharge Flow: 0.00 MGD

Toxics

Based on the available data, PADEP utilizes Toxics Management Spreadsheet (TMS) to (1) evaluate reasonable potential for toxic pollutants to cause or contribute to an excursion above the water quality standards and (2) develop WQBELs for those such toxic pollutants (i.e., 40 CFR § 122.44(d)(1)(i)). It is noteworthy that some of these pollutants that may be reported as "non-detect", but still exceeded the criteria, were determined to be candidates for modeling because the method detection levels used to analyze those pollutants were higher than target QLs and/or the most stringent Chapter 93 criteria. The model then recommended the appropriate action for the Pollutants of Concerns based on the following logic:

1. In general, establish limits in the draft permit where the effluent concentration determined in B.1 or B.2 equals or exceeds 50% of the WQBEL (i.e., RP is demonstrated). Use the average monthly, maximum daily and instantaneous maximum (IMAX) limits for the permit as recommended by the TMS (or, if appropriate, use a multiplier of 2 times the average monthly limit for the maximum daily limit and 2.5 times the average monthly limit for IMAX).

2. For non-conservative pollutants, in general, establish monitoring requirements where the effluent concentration determined in B.1 or B.2 is between 25% - 50% of the WQBEL.

3. For conservative pollutants, in general, establish monitoring requirements where the effluent concentration determined in B.1 or B.2 is between 10% - 50% of the WQBEL.

NOTE 4 – If the effluent concentration determined in B.1 or B.2 is "non-detect" at or below the target quantitation limit (TQL) for the pollutant as specified in the TMS and permit application, the pollutant may be eliminated as a candidate for WQBELs or monitoring requirements unless 1) a more sensitive analytical method is available for the pollutant under 40 CFR Part 136 where the quantitation limit for the method is less than the applicable water quality criterion and 2) a detection at the more sensitive method may lead to a determination that an effluent limitation is necessary, considering available dilution at design conditions.

NOTE 5 – If the effluent concentration determined in B.1 or B.2 is a detection below the TQL but above or equal to the applicable water quality criterion, WQBELs or monitoring may be established for the pollutant.

4. Application managers may, on a site- and pollutant-specific basis, deviate from these guidelines where there is specific rationale that is documented in the fact sheet.

The applicable sample results for Outfall 013 for the pollutants group 1 and 2 were entered into TMS. TMS model resulted in no new limit or monitoring requirements for any input parameter. The final output table is provided below and complete TMS report is provided in the attachment.

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

No. Samples/Month: 4

Model Results 11/19/2021 Page 7

Pollutants	*Mass Limits* AML (lbs/day)	*Mass Limits* MDL (lbs/day)	*Concentration Limits* AML	*Concentration Limits* MDL	*Concentration Limits* IMAX	*Concentration Limits* Units	Governing WQBEL	WQBEL Basis	Comments

TRC:
The attached computer printout utilizes the equation and calculations as presented in the Department's 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID#391-2000-015) for developing chlorine limitations. The attached printout indicates that a water quality limit of 0.5 mg/l would be needed to prevent toxicity concerns at the discharge point for Outfall 013. The Instantaneous Maximum (IMAX) limit is 1.6 mg/l. The existing permit has AML limit of 0.5 mg/l and IMAX limit of 1.0 mg/l. The IMAX is a little more stringent and will be carried over due to anti-backsliding policy.

Additional Considerations
Flow Monitoring
Flow monitoring will remain in the permit and is required by 40 CFR § 122.44(i)(1)(ii).

Anti-Degradation requirements
The effluent limits for this discharge have been developed to ensure the existing in-stream uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High-Quality stream is impacted by this discharge. No Exceptional-Value stream is impacted by this discharge.

Anti-Backsliding Requirements
Unless stated otherwise in this fact sheet, all proposed effluent limits have developed for this permit renewal are at least as stringent as effluent limits developed for the previous permit renewal. Therefore, anti-backsliding provision is not applicable.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Daily when Discharging	Estimate
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Daily when Discharging	Grab
TRC	XXX	XXX	XXX	0.5	1.0	1.2	Daily when Discharging	Grab
TSS	XXX	XXX	XXX	30	60	75	Daily when Discharging	*24-Hr Composite
Total Aluminum	XXX	XXX	XXX	1.24	2.48	3.1	Daily when Discharging	*24-Hr Composite
Total Iron	XXX	XXX	XXX	2.0	4.0	5	Daily when Discharging	*24-Hr Composite
Total Manganese	XXX	XXX	XXX	1.0	2.0	2.5	Daily when Discharging	*24-Hr Composite
Chlorodibromo-methane	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Dichlorobromo-methane	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Chloroform	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab

*If the discharge is less than 24 hours, one composite sample shall be collected during the period of discharge.

Compliance Sampling Location: At 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.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				**Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Daily when Discharging	Estimate
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Daily when Discharging	Grab
TRC	XXX	XXX	XXX	0.5	1.0	1.2	Daily when Discharging	Grab
TSS	XXX	XXX	XXX	30	60	75	Daily when Discharging	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	24-Hr Composite
Total Aluminum	XXX	XXX	XXX	4.0	8.0	10	Daily when Discharging	24-Hr Composite
Total Iron	XXX	XXX	XXX	2.0	4.0	5	Daily when Discharging	24-Hr Composite
Total Manganese	XXX	XXX	XXX	2.0	4.0	5	Daily when Discharging	24-Hr Composite
Acrylamide*	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	24-Hr Composite
Chlorodibromo-methane	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Dichlorobromo-methane	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab
Chloroform	XXX	XXX	XXX	XXX	Report	XXX	Daily when Discharging	Grab

* Acrylamide shall be sampled using EPA method 8270 with a detection limit of 10 µg/L or any other approved test method with equal or greater sensitivity. See Part C.I.Other Requirement No. H.
** If discharge continues more than 24 hours during any single discharge event, sample shall be taken weekly except for TDS.

Compliance Sampling Location: At Outfall 002

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 003, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Hourly when Discharging	Estimate
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Hourly when Discharging	Grab
TRC	XXX	XXX	XXX	0.5	1.0	1.2	Hourly when Discharging	Grab
TSS	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Aluminum	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Iron	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Manganese	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab

Compliance Sampling Location: At Outfall 003

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Hourly when Discharging	Estimate
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Hourly when Discharging	Grab
TRC	XXX	XXX	XXX	0.5	1.0	1.2	Hourly when Discharging	Grab
TSS	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Aluminum	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Iron	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab
Total Manganese	XXX	XXX	XXX	XXX	Report	XXX	Hourly when Discharging	Grab

Compliance Sampling Location: At Outfall 004

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 013, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/day	Estimate
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.0	1/day	Grab

Compliance Sampling Location: At Outfall 013

Other Comments:

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

PA0011282 at Outfall 013

Region ID: PA
Workspace ID: PA20211120000808741000
Clicked Point (Latitude, Longitude): 39.92608, -75.36670
Time: 2021-11-19 19:08:32 -0500

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	28.8	square miles
BSLOPD	Mean basin slope measured in degrees	4.4568	degrees
ROCKDEP	Depth to rock	5	feet
URBAN	Percentage of basin with urban development	39.8305	percent

https://streamstats.usgs.gov/ss/ 11/19/2021

Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	28.8	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	4.4568	degrees	1.7	6.4
ROCKDEP	Depth to Rock	5	feet	4.13	5.21
URBAN	Percent Urban	39.8305	percent	0	89

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

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	13.3	ft^3/s	46	46
30 Day 2 Year Low Flow	16.6	ft^3/s	38	38
7 Day 10 Year Low Flow	7.93	ft^3/s	51	51
30 Day 10 Year Low Flow	9.86	ft^3/s	46	46
90 Day 10 Year Low Flow	14.1	ft^3/s	41	41

Low-Flow Statistics Citations

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

PA0011282 at node 2 for Outfall 013

Region ID: PA
Workspace ID: PA20211120001133960000
Clicked Point (Latitude, Longitude): 39.91377, -75.35816
Time: 2021-11-19 19:11:54 -0500

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	31.1	square miles
BSLOPD	Mean basin slope measured in degrees	4.5261	degrees
ROCKDEP	Depth to rock	5	feet
URBAN	Percentage of basin with urban development	42.5027	percent

Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	31.1	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	4.5261	degrees	1.7	6.4
ROCKDEP	Depth to Rock	5	feet	4.13	5.21
URBAN	Percent Urban	42.5027	percent	0	89

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

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	15.2	ft^3/s	46	46
30 Day 2 Year Low Flow	18.9	ft^3/s	38	38
7 Day 10 Year Low Flow	9.25	ft^3/s	51	51
30 Day 10 Year Low Flow	11.4	ft^3/s	46	46
90 Day 10 Year Low Flow	16.2	ft^3/s	41	41

Low-Flow Statistics Citations

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

TRC_CALC

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

7.99	= Q stream (cfs)	0.5	= CV Daily
0.094	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= 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)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	17.546	1.3.2.iii	WLA cfc =	17.099
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	6.538	5.1d	LTA_cfc =	9.941

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.635	

WLA afc	(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...
	...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...
	...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Aqua Pennsylvania Crum creek WTP** NPDES Permit No.: **PA0011282** Outfall No.: **013**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Chlorinated drinking water**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.094	113	7.57						

					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		284									
	Chloride (PWS)	mg/L		71									
	Bromide	mg/L	<	0.2									
	Sulfate (PWS)	mg/L		12									
	Fluoride (PWS)	mg/L		0.2									
Group 2	Total Aluminum	µg/L		30									
	Total Antimony	µg/L	<	0.3									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		76									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L	<	200									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L		0.47									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L		2									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		11									
	Dissolved Iron	µg/L	<	20									
	Total Iron	µg/L		30									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		55									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L	<	1									
	Total Phenols (Phenolics) (PWS)	µg/L		13									
	Total Selenium	µg/L	<	1									
	Total Silver	µg/L	<	0.2									
	Total Thallium	µg/L	<	1									
	Total Zinc	µg/L		76									
	Total Molybdenum	µg/L	<	1									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Aqua Pennsylvania Crum creek WTP, NPDES Permit No. PA0011282, Outfall 013

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Crum Creek**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	000692	8	90.08	28.8			Yes
End of Reach 1	000692	6.51	73.04	31.1			Yes

$Q_{7\text{-}10}$

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	8	0.276										99	7		
End of Reach 1	6.51	0.276													

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	8														
End of Reach 1	6.51														

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Model Results

Aqua Pennsylvania Crum creek WTP, NPDES Permit No. PA0011282, Outfall 013

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | (●) All ( ) Inputs ( ) Results ( ) Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.469 Analysis Hardness (mg/l): 99.525 Analysis pH: 7.01

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	19,995	
Total Antimony	0	0		0	1,100	1,100	29,325	
Total Arsenic	0	0		0	340	340	9,064	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	559,848	
Total Boron	0	0		0	8,100	8,100	215,941	
Total Cadmium	0	0		0	2.004	2.12	56.6	Chem Translator of 0.944 applied
Hexavalent Chromium	0	0		0	16	16.3	434	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	2,533	
Total Copper	0	0		0	13.379	13.9	372	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	64.248	81.2	2,163	Chem Translator of 0.792 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	43.9	Chem Translator of 0.85 applied
Total Nickel	0	0		0	466.354	467	12,458	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	3.191	3.75	100	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	1,733	
Total Zinc	0	0		0	116.709	119	3,181	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 68.071 PMF: 1 Analysis Hardness (mg/l): 99.252 Analysis pH: 7.01

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	12,246	
Total Arsenic	0	0		0	150	150	8,349	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	228,213	
Total Boron	0	0		0	1,600	1,600	89,059	
Total Cadmium	0	0		0	0.245	0.27	15.0	Chem Translator of 0.909 applied
Hexavalent Chromium	0	0		0	10	10.4	579	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	1,058	
Total Copper	0	0		0	8.898	9.27	516	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	83,493	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.496	3.15	175	Chem Translator of 0.792 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	50.4	Chem Translator of 0.85 applied
Total Nickel	0	0		0	51.677	51.8	2,885	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	278	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	724	
Total Zinc	0	0		0	117.389	119	6,627	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 68.071 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	312	
Total Arsenic	0	0		0	10	10.0	557	
Total Barium	0	0		0	2,400	2,400	133,588	
Total Boron	0	0		0	3,100	3,100	172,551	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	

Dissolved Iron	0	0		0	300	300	16,699	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	55,662	
Total Mercury	0	0		0	0.050	0.05	2.78	
Total Nickel	0	0		0	610	610	33,954	
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	13.4	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ *CRL* CCT (min): 22.399 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	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	0	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	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	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	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

Pollutants	*Mass Limits*		*Concentration Limits*				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			

☑ ***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 Aluminum	12,816	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	133,588	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	89,059	µg/L	Discharge Conc < TQL
Total Cadmium	15.0	µg/L	Discharge Conc < TQL
Hexavalent Chromium	278	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	1,058	µg/L	Discharge Conc < TQL
Total Copper	238	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	16,699	µg/L	Discharge Conc < TQL
Total Iron	83,493	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	175	µg/L	Discharge Conc < TQL
Total Manganese	55,662	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	2.78	µg/L	Discharge Conc < TQL
Total Nickel	2,885	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	278	µg/L	Discharge Conc < TQL
Total Silver	64.1	µg/L	Discharge Conc < TQL
Total Thallium	13.4	µg/L	Discharge Conc < TQL
Total Zinc	2,039	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS