Pennsylvania Department of Environmental Protection

Southeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0011274**
Facility Type	**Industrial**	APS ID	**1127850**
Major / Minor	**Minor**	Authorization ID	**1510374**

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

Applicant and Facility Information

Applicant Name	**Aqua PA Inc.**	Facility Name	**Neshaminy Falls Water Treatment Plant**
Applicant Address	762 W Lancaster Avenue	Facility Address	2520 W Lincoln Highway
	Bryn Mawr, PA 19010-3402		Oakford, PA 19047
Applicant Contact	Curt Steffy	Facility Contact	Thomas Walton
Applicant Phone	(610) 645-1122	Facility Phone	(215) 757-7565
Client ID	309251	Site ID	446375
SIC Code	4941	Municipality	Middletown Township
SIC Description	Trans. & Utilities - Water Supply	County	Bucks
Date Application Received	December 17, 2024	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: NPDES permit renewal.

Summary of Review

The Pa Department of Environmental Protection (PADEP/Department) received an NPDES permit renewal application from GHD, Inc. (consultant) on December 17, 2024, on behalf of Aqua PA Inc. (permittee) for Permittee's Neshaminy Falls Water Treatment Plant (facility). This is a Minor IW facility without ELG (MIIW1) located in Middletown Township, Bucks County. The discharges are in Neshaminy Creek, a WWF/MF, in state watershed 2-F. The existing permit will expire on June 30, 2025. The terms and conditions of the permit were automatically extended since the renewal application was received at least 180 days prior to the permit expiration date. Renewal NPDES permit applications under Clean Water program are not covered by DEP's PDG, per 021-2100-001.

Changes to existing permit: Added: PFOA, PFOS, HFPO-DA, and PFBS. New Outfall 005 added. Removed: TDS

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		Reza H. Chowdhury, E.I.T. / Project Manager	December 23, 2024
X		Pravin Patel Pravin C. Patel, P.E. / Environmental Engineer Manager	12/30/2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	.425
Latitude	40º 8' 45"	Longitude	-74º 57' 9.0"
Quad Name	Langhorne	Quad Code	1746
Wastewater Description:	Treated filter backwash water from lagoons and belt filter presses (Maintenance and Emergency only)		
Receiving Waters	Neshaminy Creek (WWF, MF)	Stream Code	02484
NHD Com ID	25480850	RMI	8.2800
Drainage Area	214 mi^2	Yield (cfs/mi^2)	0.06
Q_{7-10} Flow (cfs)	12.84	Q_{7-10} Basis	Please see below
Elevation (ft)	25.44	Slope (ft/ft)	
Watershed No.	2-F	Chapter 93 Class.	WWF, MF
Existing Use	**WWF, MF**	Existing Use Qualifier	Ch. 93
Exceptions to Use	WWF, MF	Exceptions to Criteria	Add Tur_1
Assessment Status	Impaired		
Cause(s) of Impairment	NUTRIENTS, ORGANIC ENRICHMENT, PATHOGENS, SILTATION		
Source(s) of Impairment	MUNICIPAL POINT SOURCE DISCHARGES, MUNICIPAL POINT SOURCE DISCHARGES, SOURCE UNKNOWN, SOURCE UNKNOWN		
TMDL Status	Final, 04/09/2003	Name	Neshaminy Creek

Background/Ambient Data		Data Source
pH (SU)	8.1	WQN0121, median Jul-Sep, 1999-2019
Temperature (°F)	24	WQN0121, median Jul-Sep, 1999-2018
Hardness (mg/L)	140.5	WQN0121, median Jul-Sep, 1999-2019
Other:		

Nearest Downstream Public Water Supply Intake		Philadelphia Water Department	
PWS Waters	Delaware River	Flow at Intake (cfs)	
PWS RMI	35.36	Distance from Outfall (mi)	14.68

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	0.216
Latitude	40º 8' 53"	Longitude	-74º 57' 22"
Quad Name	Langhorne	Quad Code	1746
Wastewater Description:	Wastewater discharge from leaf screen at Neshaminy Creek Intake (Chlorinated drinking water)		

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	0
Latitude	40º 9' 2"	Longitude	-74º 57' 21"
Quad Name	Langhorne	Quad Code	1746
Wastewater Description:	Stormwater/leachate from Residual Waste storage (Monofill Land)		

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	005	Design Flow (MGD)	0
Latitude	40º 9' 6"	Longitude	-74º 57' 20"
Quad Name	Langhorne	Quad Code	1746
Wastewater Description:	Stormwater/leachate from Residual Waste storage (Monofill Land)		

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	.364
Latitude	40º 8' 47"	Longitude	-74º 56' 57"
Quad Name	Langhorne	Quad Code	1746
Wastewater Description:	Treated filter backwash from lagoons and belt presses		
Receiving Waters	Neshaminy Creek (WWF, MF)	Stream Code	02484
NHD Com ID	25480850	RMI	8.2900
Drainage Area	214 mi^2	Yield (cfs/mi^2)	0.06
Q_{7-10} Flow (cfs)	12.84	Q_{7-10} Basis	Please see below
Elevation (ft)	23.79	Slope (ft/ft)	
Watershed No.	2-F	Chapter 93 Class.	WWF, MF
Existing Use	**WWF, MF**	Existing Use Qualifier	Ch. 93
Exceptions to Use	WWF, MF	Exceptions to Criteria	Add Tur_1
Assessment Status	Impaired		
Cause(s) of Impairment	NUTRIENTS, ORGANIC ENRICHMENT, PATHOGENS, SILTATION		
Source(s) of Impairment	MUNICIPAL POINT SOURCE DISCHARGES, MUNICIPAL POINT SOURCE DISCHARGES, SOURCE UNKNOWN, SOURCE UNKNOWN		
TMDL Status	Final	Name	Neshaminy Creek

Background/Ambient Data		Data Source
pH (SU)	8.1	WQN0121, median Jul-Sep, 1999-2019
Temperature (°C)	24	WQN0121, median Jul-Sep, 1999-2018
Hardness (mg/L)	140.5	WQN0121, median Jul-Sep, 1999-2019

Nearest Downstream Public Water Supply Intake		Philadelphia Water Department	
PWS Waters	Delaware River	Flow at Intake (cfs)	
PWS RMI	35.36	Distance from Outfall (mi)	14.27

Changes Since Last Permit Issuance: Outfall 005 is proposed as a new outfall that'll receive

Drainage Area:
The discharge from Outfalls 001 and 002 are into Neshaminy Creek at RMI 8.29 and 8.7, respectively. The drainage area upstream of the points of discharge is 214 mi^2 according to USGS PA StreamStats, accessible at https://streamstats.usgs.gov/ss/

Stream Flow:
The nearest USGS Streamgage is 01465500 on Neshaminy Creek near Langhorne, PA which is approximately 2.77 miles upstream of Outfall 001 at RMI 11.06. Recent stream flow retrievals resulted in a Q_{7-10}, Q_{1-10}, and Q_{30-10} of 12.7 cfs, 9.0 cfs, and 17.3 cfs, respectively, at this gage for record period of 1936-2008. These values were obtained from the latest USGS streamflow report (1).

(1) Stuckey, M.H., Roland, M.A., 2011, Selected streamflow statistics for streamgage locations in and near Pennsylvania: U.S. Geological Survey Scientific Investigations Report 2011-1070, 9p, 22p.

The drainage area is reported to be 210 mi^2 at the gage station. The drainage area at Outfall 001 is found to be 214 mi^2 from USGS StreamStats Version 3.0, accessed on January 23, 2020. The flow calculations are shown below:

Q_{7-10} runoff rate (yield) = 12.7/210 = 0.06 cfs/mi^2.
Q_{30-10}: Q_{7-10} = 17.3/12.7 = 1.362:1
Q_{1-10}: Q_{7-10} = 9.0/12.7 = 0.709:1
Q_{7-10} = 0.06*214 = 12.84 cfs

PWS Intake:
The nearest downstream public water supply is Philadelphia Water Department on Delaware River at RMI 35.36. It is approximately 14.27 miles downstream of Outfall 001. Due to the distance, dilution, and effluent limits the discharge is not expected to impact the water supply. The distance is calculated as below:

+ Discharge Point RMI at Neshaminy Creek (02484) ---------- 8.29 mile
+ RMI at Delaware River (00002) at confluence with Neshaminy Creek ---------- 41.34 mile
- RMI at PWS intake ---------- 35.36 mile

Total = 14.27 mile

Wastewater Characteristics:
A median pH of 7.37 S.U. during December 1 2023 through November 30, 2024 from daily eDMR, a default discharge temperature of 20^0C, and total hardness of 166 mg/l from application will be used for modeling, if needed.

Background/Ambient Stream Data:
The Water Quality Network station WQN0121 is located approximately 2.77 miles upstream of Outfall 001. Historical data were analyzed for Stream Temperature, pH, and Total Hardness for July through September for the years 1999-2018/2019. The analysis indicated a median temperature, pH, and total hardness of 24 °C, 8.1 S.U. and 140.5 mg/l, respectively.

303d Listed Streams:
The discharge from this facility is in Neshaminy Creek at 8.29 RMI in state watershed 2-F which is aquatic life impaired for Organic Enrichment/Low D.O., Siltation, Nutrients from Municipal Point Source. It is also Recreational Use impaired due to Pathogens from unknown source while attaining its fish consumption use. 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.

Neshaminy Creek Watershed Total Maximum Daily Load (TMDL):
A TMDL for Neshaminy Creek Watershed was finalized on April 9, 2003 which was revised on December 2003. The Neshaminy Creek is located in state watershed 2-F, in Bucks and Montgomery Counties. It has approximately 418.3 miles of streams. Since 1996, 203.3 miles of these streams have been included on Pennsylvania's 303(d) list of streams having aquatic life use impairments. The watershed as a whole is very much a point source-dominated system. On an annual basis, the municipal wastewater treatment plants in the watershed contribute about 25% of the total phosphorus load. During critical low-flow periods, effluent discharges comprise over 90% of the total stream flow in many reaches. Upland erosion from developing areas and agriculture, and streambank erosion are other major sources of phosphorus, as well as sediment. However, in September 6, 2007, the nutrients portion of the TMDL was withdrawn by PADEP and approved by USEPA on January 31, 2008. No sediment WLA was assigned for this facility other than urban BMPs.

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.

Treatment Facility Summary				
Treatment Facility Name: Neshaminy Falls Water Treatment Plant				
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: Outfall 005 is added.

Other Comments:
Aqua owns and operates a Water Treatment Plant named Neshaminy Falls Water Treatment Plant (Plant) located in Middletown Township, Bucks County which discharges under the NPDES permit number PA0011274. Aqua requests renewal of the NPDES permit for a discharge of 0.519 MGD of treated filter backwash water from lagoons and belt presses, through Outfall 001. The plant also discharges through Outfall 002 (maintenance and emergency only), 003 (chlorinated wastewater discharge from leaf screen at Neshaminy Creek intake), and 004 (Stormwater/leachate from residual waste storage/Monofill land.) According to the permit renewal application, filter backwash water from the water treatment plant is clarified in two onsite lagoons and then discharged through Outfall 001. Sludge from the plate settler unit in the flocculators is thickened and then dewatered using two belt filter presses. Filtrate from the belt filter presses can also be discharged through Outfall 001. Average flow during production/operation is 0.187 MGD and maximum flow during production/operation 0.298 MGD.

The permittee is currently constructing an additional residual waste fill area, designated as Cell 3, on the monofill property. Two stormwater management basins will be constructed downgradient of the Cell 3 site. These stormwater basins will have a drainage outfall to the Neshaminy Creek, which will be designated as Outfall 005. Outfall 005 is designed similar to existing Outfall 004 in that discharge from the stormwater basins is unlikely to occur. The bottom of Cell 3 has an elevation of 75 feet, and the top of the embankment downgradient of Cell 3 has an elevation of 96 feet. Cell 3 is designed to be filled to an elevation of 172 feet over a 220-year lifespan. This equates to a fill rate of approximately 0.44 feet per year. At this rate, it would take over 47 years for the fill level to reach the embankment elevation of 96 feet. Therefore, no discharge is expected from Outfall 005 in the foreseeable future. No discharge has been recorded at Outfall 004, which has a similar design, in over 10 years. Construction of Cell 3 and the stormwater basins will be completed by end of this year. The earliest Aqua would start dumping residuals into Cell 3 would be Q1 of 2025. A Solid Waste Management permit/major amendment was issued on July 15, 2024 to authorize the new Cell 3 construction/operation.

Water is drawn from Neshaminy Creek into the plant's intake chamber through two 24-inch influent lines. The influent flows through the debris screens and into Raw Well. The debris screen/traveling screens are periodically backwashed and the backwash water flows to the existing retention basin. Effluent from traveling screen chamber is sent to raw well which has 3 pumps. Alum, chlorine, sulfuric acid, lime, and PAC are added at the discharge pipe from pumps that goes to the flocculation tank. The flocculation tanks are two stage flocculators. The effluent from the second stage flows to the up-flow clarifiers. The up-flow clarifiers have a plate settler at an angle to settle out the floc particles. There are a chain and flight auger screw sludge collectors that remove the sludge from the bottom. Sludge is wasted to the residuals pump pit for approximately 2 hours per day from each up-flow clarifier. Sludge is pumped to the 2 sludge thickeners from the sludge pump pit. Polymer is injected to the sludge before it enters the thickeners. Thickened sludge from clarifiers is sent to sludge equalization basins, which will also receive sludge from Bristol WTP in future, and pumped through sludge pumps to belt filter presses after polymer is added. Pressed sludges are lifted through screw conveyors and dumped into dump truck. Supernatant from the thickeners and belt filter presses are sent to recycle pump station from where it is pumped to head of the water plant or recycle to wastewater transfer pit and discharge through Outfall 001. Supernatant from plate settlers is sent to gravity filters after polymer, PAC, lime, chlorine, sulfur dioxide, and ammonia addition. Filtrates from gravity filter goes to clear well. Filter backwash water is sent to wash water transfer pit. Wastewater from transfer pit is pumped to the lagoons through two pumps, from where it is discharged through Outfall 001 and 002 (emergency/maintenance only.)

Per the PADEP's inspection report dated September 28, 2016, the facility consists of the following treatment units:

1. Up-flow clarifiers
2. Eight filters
3. Two sludge thickeners
4. Two belt filter presses
5. Two wastewater lagoons
6. Two influent screens
7. One screen lagoon

Chemicals Used: Per application data, Sulfur Dioxide (dechlorination) at 1360 lbs./month, Praestol DW 340 (flocculation) at 30 lbs./month, and Praestol A 3040 LTR (flocculation) at 2000 lbs./month rate.

There are no proposed upgrades to this facility within the next five years.

Compliance History	
Summary of Inspections:	**09/08/2022:** CEI conducted. No violation observed during the inspection. The effluent appeared clear. **10/09/2020:** CEI conducted. Violation noted: Lagoon #2 was actively discharging to outfall 001 during the inspection. The sludge level was approximately 2-8 inches from the surface of the effluent and was above the surface in several locations. These conditions represent a failure to properly operate and maintain the wastewater treatment lagoon and are in violation of NPDES permit PA0011274.

Compliance History

DMR Data for Outfall 001 (from November 1, 2023 to October 31, 2024)

Parameter	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23
Flow (MGD) Average Monthly	0.184	0.187	0.182	0.178	0.181	0.185	0.18	0.176	0.179	0.175	0.185	0.182
Flow (MGD) Daily Maximum	0.229	0.293	0.229	0.227	0.229	0.244	0.298	0.235	0.286	0.214	0.274	0.225
pH (S.U.) IMIN	7.2	7.28	7.22	7.25	7.14	7.12	7.01	7.02	7.07	7.02	6.88	7.08
pH (S.U.) IMAX	7.49	7.53	7.44	7.47	7.48	7.35	7.33	7.4	7.49	7.27	7.18	7.44
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) IMAX	0.02	0.01	0.04	0.04	0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TSS (lbs/day) Average Monthly	6	5	4	3	< 3	5	5	< 4	5	7	6	10
TSS (lbs/day) Daily Maximum	9	8	6	9	7	8	11	12	6	17	13	26
TSS (mg/L) Average Monthly	3.8	3.4	3	2.2	< 2.3	3.2	2.6	< 3.4	3.3	4.7	4	7
TSS (mg/L) Daily Maximum	6.5	6	4	5.2	4.8	5.6	4.5	10	4.7	10	7.2	20
Total Dissolved Solids (mg/L) Daily Maximum		297			288			312			298	
Total Phosphorus (lbs/day) Average Monthly	< 0.07	< 0.08	< 0.09	0.07	< 0.09	< 0.1	< 0.09	< 0.07	< 0.09	< 0.07	< 0.09	< 0.08
Total Phosphorus (lbs/day) Daily Maximum	< 0.09	0.09	0.1	0.09	0.1	0.2	< 0.1	0.09	0.1	< 0.09	0.1	0.1
Total Phosphorus (mg/L) Average Monthly	< 0.05	< 0.06	< 0.06	0.05	< 0.06	< 0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.06	< 0.05
Total Phosphorus (mg/L) Daily Maximum	0.05	0.07	0.08	0.05	0.08	0.09	< 0.05	0.05	0.08	< 0.05	0.07	0.06
Total Aluminum (lbs/day) Average Monthly	0.5	0.6	0.8	0.4	0.5	0.5	0.4	0.4	0.5	0.5	0.7	0.5
Total Aluminum (lbs/day) Daily Maximum	0.8	0.9	1.0	0.7	0.8	0.6	0.5	0.4	0.8	1.0	1.0	0.9

Total Aluminum (mg/L) Average Monthly	0.35	0.44	0.53	0.31	0.33	0.33	0.22	0.25	0.34	0.36	0.43	0.32
Total Aluminum (mg/L) Daily Maximum	0.54	0.63	0.72	0.39	0.42	0.39	0.26	0.27	0.44	0.58	0.76	0.47
Total Iron (lbs/day) Average Monthly	< 0.1	< 0.1	< 0.2	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1	< 0.2	< 0.1	< 0.2	< 0.2
Total Iron (lbs/day) Daily Maximum	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Total Iron (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Iron (mg/L) Daily Maximum	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Manganese (lbs/day) Average Monthly	0.1	0.1	0.1	0.2	0.1	0.2	0.08	0.06	0.1	0.1	0.09	0.07
Total Manganese (lbs/day) Daily Maximum	0.2	0.2	0.1	0.6	0.2	0.5	0.1	0.07	0.2	0.1	0.09	0.1
Total Manganese (mg/L) Average Monthly	0.09	0.07	0.07	0.13	0.09	0.14	0.05	0.04	0.09	0.07	0.06	0.04
Total Manganese (mg/L) Daily Maximum	0.14	0.1	0.1	0.34	0.15	0.24	0.06	0.04	0.19	0.1	0.07	0.06

DMR Data for Outfall 003 (from November 1, 2023 to October 31, 2024)

Parameter	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23
TRC (mg/L) Average Monthly	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.1	< 0.01	< 0.01	< 0.03	< 0.01	< 0.04
TRC (mg/L) IMAX	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.25	< 0.01	< 0.01	0.1	< 0.01	0.15

Existing Effluent Limitations and Monitoring Requirements

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	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.11	XXX	0.34	1/day	Grab
Total Suspended Solids	58	117	XXX	30	60	75	1/week	8-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	8-Hr Composite
Total Phosphorus	1.9	3.9	XXX	1.0	2.0	2.5	1/week	8-Hr Composite
Aluminum, Total	1.6	3.2	XXX	0.82	1.64	2.05	1/week	8-Hr Composite
Iron, Total	Report	Report	XXX	2.0	4.0	5	1/week	8-Hr Composite
Manganese, Total	1.9	3.9	XXX	1.0	2.0	2.5	1/week	8-Hr Composite

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	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when Discharging	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Daily when Discharging	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.11	XXX	0.34	Daily when Discharging	Grab
Total Suspended Solids	58	117	XXX	30	60	75	Daily when Discharging	8-Hr Composite
Total Phosphorus	1.9	3.9	XXX	1.0	2.0	2.5	Daily when Discharging	8-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Aluminum, Total	1.6	3.2	XXX	0.82	1.64	2.05	Daily when Discharging	8-Hr Composite
Iron, Total	Report	Report	XXX	2.0	4.0	5	Daily when Discharging	8-Hr Composite
Manganese, Total	1.9	3.9	XXX	1.0	2.0	2.5	Daily when Discharging	8-Hr Composite

For Outfall 003:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.0	1/week	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	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Monthly When Discharging	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Monthly When Discharging	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.2	Monthly When Discharging	Grab
Total Suspended Solids	XXX	XXX	XXX	30	60	75	Monthly When Discharging	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	Report	XXX	Monthly When Discharging	8-Hr Composite
Aluminum, Total	XXX	XXX	XXX	4.0	8.0	10	Monthly When Discharging	8-Hr Composite
Iron, Total	XXX	XXX	XXX	2.0	4.0	5	Monthly When Discharging	8-Hr Composite
Manganese, Total	XXX	XXX	XXX	1.0	2.0	2.5	Monthly When Discharging	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.519
Latitude 40º 8' 47" **Longitude** -74º 56' 57"
Wastewater Description: Filter backwash water from lagoons and belt presses

Technology-Based Limitations

The industrial wastewaters discharged through Outfall 001 is generated from Filter backwash and belt filter press filtrate. 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

DEP's SOP no. BCW-PMT-037 recommends the average monthly flow during production or operation as a design flow in water quality modeling unless a different flow is determined to be more representative of site-specific conditions. The volume of effluent discharged from facilities such as water treatment plants is heavily depended upon the quality of source water as more backwashing is needed to maintain acceptable filter performance if the intake water quality is poor. Past five-year effluent flow data were analyzed. The average of the data was 0.1815 MGD with the 90th percentile of 0.191 MGD and daily maximum of 0.376 MGD. The long-term average flow value of 0.1815 MGD will be used in the water quality modeling.

WQM 7.0

Since the facility injects ammonia prior to filtration, the WQM 7.0 was utilized. The following data were used in the attached computer model of the stream:

- Discharge pH 7.37 (90th percentile, Dec 1 2023-Nov 30, 2024)
- Discharge Temperature 20°C (Default data)
- Discharge Hardness 166 mg/l (Application data)
- Stream pH 8.1 (WQN0121, median Jul-Sep, 1999-2019)
- Stream Temperature 24°C (WQN0121, median Jul-Sep, 1999-2018)
- Stream Hardness 140.5 mg/l (WQN0121, median Jul-Sep, 1999-2019)

The following three nodes were used in modeling:

Node 1: Outfall 001 at Neshaminy Creek (02484)
Elevation: 25.44 ft (USGS TNM viewer, 02/25/2020)
Drainage Area: 214 mi^2 (StreamStat Version 3.0, 01/23/2020)
River Mile Index: 8.28 mile (PA DEP eMapPA)
Low Flow Yield: 0.06 cfs/mi^2
Discharge Flow: 0.1815 MGD

Node 2: At the confluence with UNT 02508

Elevation:	20.6 ft (USGS TNM 2.0 viewer, 02/25/2020)
Drainage Area:	217 mi^2 (StreamStat Version 3.0, 01/23/2020)
River Mile Index:	7.175 (PA DEP eMapPA)
Low Flow Yield:	0.06 cfs/mi^2
Discharge Flow:	0.00 MGD

NH_3-N

The WQM 7.0 suggested NH_3-N limit of 25 mg/l as average monthly and 50 mg/l as instantaneous maximum limit during summer to protect water quality standards. The existing permit doesn't have NH3-N limits. The application data indicated an average discharge concentration of 0.07 mg/l which is much lower compared to model suggested value. Therefore, it is determined that NH3-N is not a pollutant of concern and no limits/monitoring requirements will be placed in this permit term. This determination will be re-evaluated during the next permit term.

$CBOD_5$:

The WQM 7.0 model suggests a monthly average $CBOD_5$ limit of 25 mg/l. The existing permit doesn't have CBOD5 limits. The application data indicated an average BOD5 discharge concentration of <2.17 mg/l which is much lower than the suggested value by the model. Therefore, it is determined that CBOD5 is not a pollutant of concern and no limits/monitoring requirements will be applied in this renewal. This determination will be re-evaluated during the next permit term.

Total Residual Chlorine

Chlorine is used for source water disinfection, injected at the headworks, after flocculation, and after filtration. Since chlorine is introduced prior to flocculation/sedimentation and filtration, residual chlorine is expected to be present in the effluent discharged via Outfall 001. Accordingly, Total Residual Chlorine (TRC) effluent concentrations must be monitored and regulated per 25 Pa Code §92a.48(b). DEP's TRC_CALC worksheet was utilized to determine if existing TBELs are still appropriate at discharge flow of 0.1815 MGD. The spreadsheet indicated an average monthly and IMAX limit of 0.5 mg/l and 1.6 mg/l. The BPT IMAX limit is 1.0 mg/l which is more stringent compared to WQBEL. The existing permit has an average monthly and IMAX limit of 0.11 mg/l and 0.34 mg/l, respectively. Since none of the exceptions are applicable, backsliding is not allowed, and the existing limits will be carried over in this renewal.

Toxics

General Discussion on Toxics Management Spreadsheet (TMS)

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 as stated in PADEP's SOP titled *"Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers (DEP SOP No.: BCW-PMT-037, Revised May 20, 2021)"*:

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.

Maximum sample results of a given pollutant is the input of the model if the sample size is less than 10. For pollutants with sample size ≥ 10, PADEP utilizes TOXCONC to calculate Average Monthly Effluent Concentration (AMEC) and Coefficient of Variation (CoV) to refine the model input. The statistical methodologies used in this spreadsheet are taken from EPA's *TSD for Water Quality-based Toxics Control, Appendix E* and are consistent with PADEP's technical guidance 391-2000-024. The pollutants are modeled through TMS and output from the TMS is provided below:

☑ ***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

The current permit has limits for Total Aluminum, Total Iron, and Total Manganese. The Total Aluminum was WQBEL and Total Iron and Manganese were BPT limits. Since there's no RP demonstrated for Total Aluminum, BPT limits will be applied. Mass limits are adjusted accordingly.

Additional Considerations

Flow Monitoring

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

Total Dissolved Solids (TDS) and its constituents:

PADEP has determined that they have sufficient data over the past 7 years of implementing the special monitoring logic for Sulfate, Chloride, and Bromide and a monitoring is no longer needed. Existing TDS quarterly monitoring will be removed.

Total Phosphorus:

The maximum reported Total Phosphorus concentration was 0.09 mg/l and mass was 0.2 lbs./day. The long term monthly average concentration is <0.05 mg/l. Therefore, the existing limits of 1.0 mg/l as average monthly, 2.0 mg/l as daily maximum, and 2.5 mg/l as IMAX will be carried over in this renewal.

Total Nitrogen:

The maximum reported Total Nitrogen (calculated as sum of TKN and Nitrate-Nitrite-Nitrogen) was <3.28 lbs./day which is less than the threshold value as specified in BCW-PMT-032. Therefore, no TN limit or monitoring requirement will be added in this permit term.

PFOA, PFOS, HFPO-DA and PFBS:

The sample results for these pollutants show that three out of four were detected. When sample results show detected values, per SOP BCW-PMT-001 (revised February 5, 2024), a PFAS Reduction condition will be added in the Part C of the permit. A quarterly monitoring will be added in the Part A of the permit with the following footnote:

"The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in 4 consecutive monitoring periods indicate non-detect results at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittees must enter a No Discharge Indicator (NODI) Code of "GG" on DMRs."

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.

Development of Effluent Limitations

Outfall No.	002	**Design Flow (MGD)**	0.0
Latitude	40º 8' 45"	**Longitude**	-74º 57' 9"
Wastewater Description:	Treated filter backwash water from lagoons and belt presses (maintenance and emergency only)		

Other comments: The average flow through Outfall 002 is 0.425 MGD which combines the flow from belt filter press (0.155 MGD) and filter backwash water (0.27 MGD). It is recommended that the proposed limitations for Outfall 001 will be applied to Outfall 002 in this renewal, since the characteristics of the waste stream is the same as for Outfall 001.

Development of Effluent Limitations

Outfall No.	003	**Design Flow (MGD)**	0.0
Latitude	40º 8' 53"	**Longitude**	-74º 57' 22"
Wastewater Description:	Wastewater discharge from leaf screen at Neshaminy Creek intake (chlorinated drinking water)		

Other comments: The backwash water from the leaf screen at Neshaminy Creek intake is first discharged to the existing retention basin from where it overflows to the creek. Treated, chlorinated, potable water is used for backwash. Therefore, the existing BPT limitations for TRC are applicable. The existing limitations are BPT limits which will be carried over in this renewal. Part C Special Condition E related to TRC limits at this outfall will remain in the permit.

Development of Effluent Limitations

Outfall No.	004	**Design Flow (MGD)**	0.0
Latitude	40º 9' 2"	**Longitude**	-74º 57' 21"
Wastewater Description:	Stormwater/leachate from Residual Waste Storage (Monofill land)		

Other comments: This outfall receives stormwater and leachate from residual waste storage/Monofill land. The monofill is still active, however, there is no flow reported from this outfall since December 2014. Since the discharge through this outfall has a potential of causing pollution to the receiving stream, the existing limitations will be carried over when such discharge occurs.

Development of Effluent Limitations

Outfall No.	005	**Design Flow (MGD)**	0.0
Latitude	40º 9' 6"	**Longitude**	-74º 57' 20"
Wastewater Description:	Stormwater/leachate from Residual Waste Storage (Monofill land)		

Other comments: This outfall will receive stormwater and leachate from the proposed Cell 3 residual waste storage/Monofill land. Since the characteristics of this discharge will be the same as for Outfall 004, the limits/monitoring requirements of Outfall 004 will be applied to Outfall 005.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) 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	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
TRC	XXX	XXX	XXX	0.11	XXX	0.34	1/day	Grab
TSS	58	117	XXX	30	60	75	1/week	8-Hr Composite
Total Phosphorus	1.9	3.9	XXX	1.0	2.0	2.5	1/week	8-Hr Composite
Total Aluminum	6.05	12.11	XXX	4.0	8.0	XXX	1/week	8-Hr Composite
Total Iron	Report	Report	XXX	2.0	4.0	5	1/week	8-Hr Composite
Total Manganese	1.9	3.9	XXX	1.0	2.0	2.5	1/week	8-Hr Composite
PFOA (ug/L)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
PFOS (ug/L)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
PFBS (ug/L)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
HFPO-DA (ug/L)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab

Compliance Sampling Location: At Outfall 001

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

Outfall 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	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Daily when Discharging	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Daily when Discharging	Grab
TRC	XXX	XXX	XXX	0.11	XXX	0.34	Daily when Discharging	Grab
TSS	58	117	XXX	30	60	75	Daily when Discharging	8-Hr Composite
Total Phosphorus	1.9	3.9	XXX	1.0	2.0	2.5	Daily when Discharging	8-Hr Composite
Total Aluminum	6.05	12.11	XXX	4.0	8.0	XXX	1/week	8-Hr Composite
Total Iron	Report	Report	XXX	2.0	4.0	5	1/week	8-Hr Composite
Total Manganese	1.9	3.9	XXX	1.0	2.0	2.5	1/week	8-Hr Composite
PFOA (ug/L)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
PFOS (ug/L)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
PFBS (ug/L)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
HFPO-DA (ug/L)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab

Compliance Sampling Location: At Outfall 002

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

Outfall 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	Maximum	Instant. Maximum		
TRC	XXX	XXX	XXX	0.5	XXX	1.0	1/week	Grab

Compliance Sampling Location: At Outfall 003

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (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	Monthly When Discharging	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Monthly When Discharging	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.2	Monthly When Discharging	Grab
TSS	XXX	XXX	XXX	30	60	75	Monthly When Discharging	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	Report	XXX	Monthly When Discharging	8-Hr Composite
Total Aluminum	XXX	XXX	XXX	4.0	8.0	10	Monthly When Discharging	8-Hr Composite
Total Iron	XXX	XXX	XXX	2.0	4.0	5	Monthly When Discharging	8-Hr Composite
Total Manganese	XXX	XXX	XXX	1.0	2.0	2.5	Monthly When Discharging	8-Hr Composite

Compliance Sampling Location: At Outfall 004

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

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

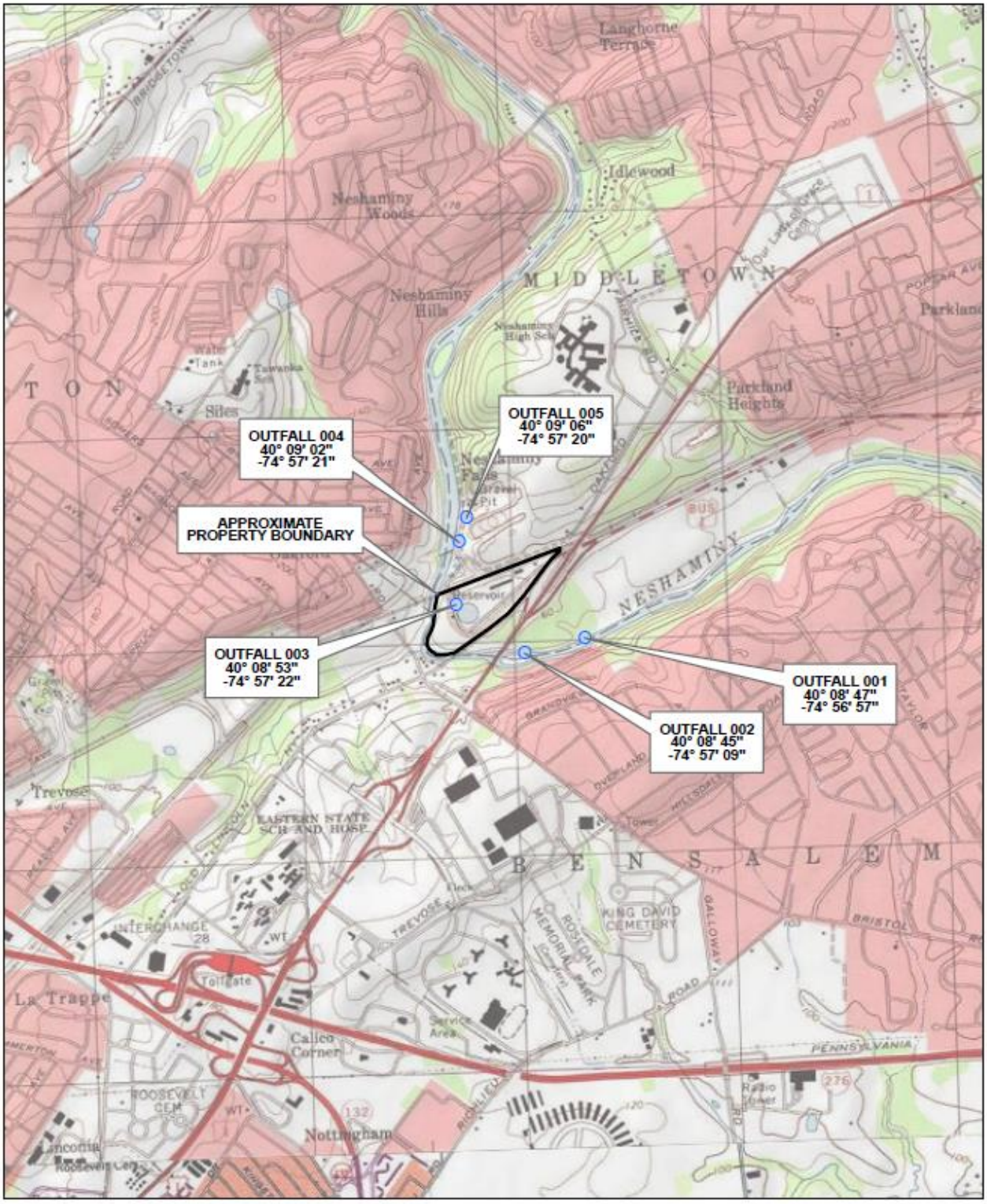
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Monthly When Discharging	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Monthly When Discharging	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.2	Monthly When Discharging	Grab
TSS	XXX	XXX	XXX	30	60	75	Monthly When Discharging	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	Report	XXX	Monthly When Discharging	8-Hr Composite
Total Aluminum	XXX	XXX	XXX	4.0	8.0	10	Monthly When Discharging	8-Hr Composite
Total Iron	XXX	XXX	XXX	2.0	4.0	5	Monthly When Discharging	8-Hr Composite
Total Manganese	XXX	XXX	XXX	1.0	2.0	2.5	Monthly When Discharging	8-Hr Composite

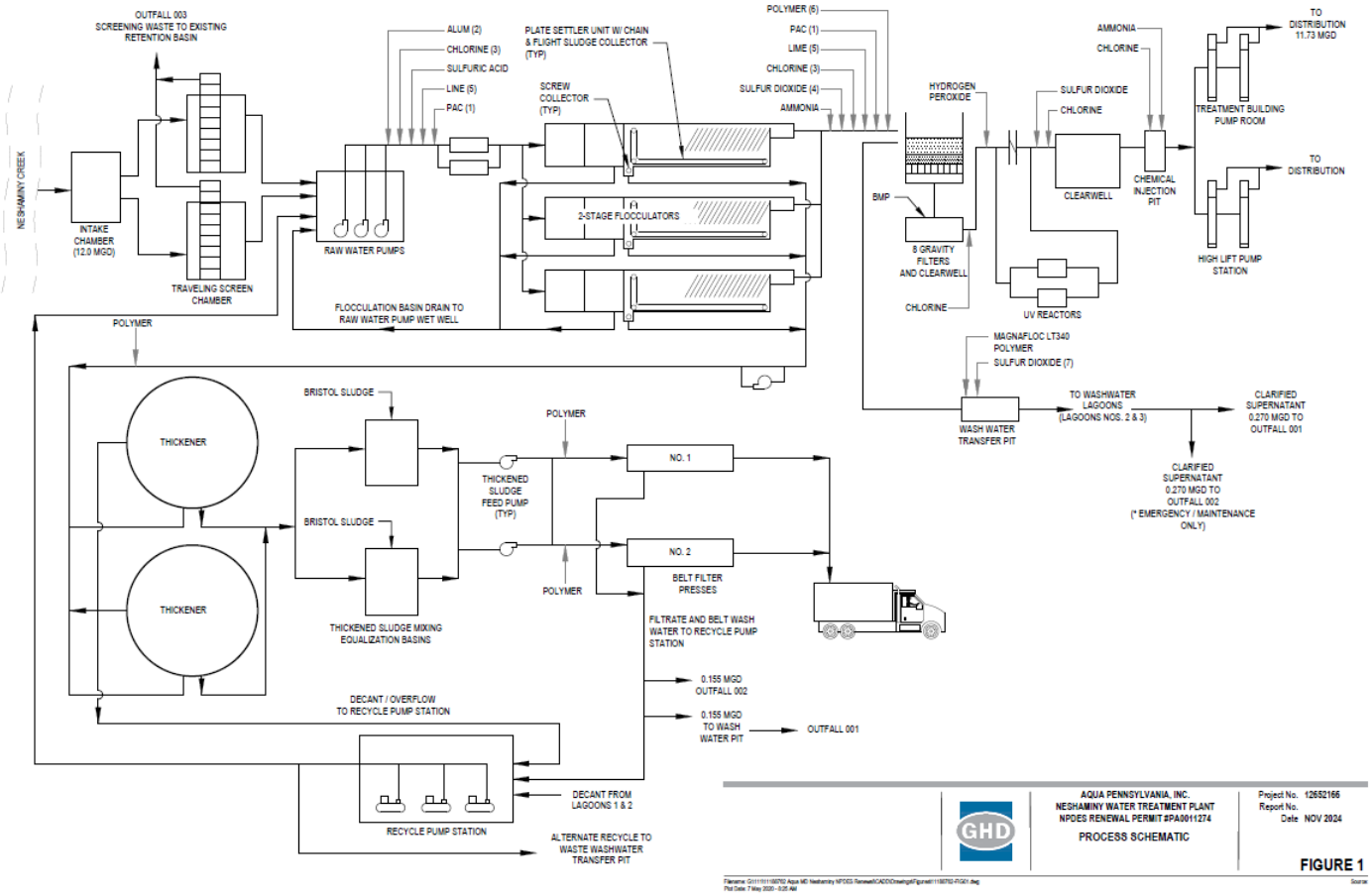
Compliance Sampling Location: At Outfall 005

Other Comments: None

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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: BCW-PMT-001
☐	Other:

Locational Map and Flow Diagrams




OUTFALL 003
SCREENING WASTE TO EXISTING RETENTION BASIN
NESHAMINY CREEK
INTAKE CHAMBER (12.0 MGD)
TRAVELING SCREEN CHAMBER
RAW WATER PUMPS
ALUM (2)
CHLORINE (3)
SULFURIC ACID
LIME (5)
PAC (1)
PLATE SETTLER UNIT W/ CHAIN & FLIGHT SLUDGE COLLECTOR (TYP)
SCREW COLLECTOR (TYP)
2-STAGE FLOCCULATORS
FLOCCULATION BASIN DRAIN TO RAW WATER PUMP WET WELL
POLYMER (6)
PAC (1)
LIME (5)
CHLORINE (3)
SULFUR DIOXIDE (4)
AMMONIA
HYDROGEN PEROXIDE
BMP
8 GRAVITY FILTERS AND CLEARWELL
CHLORINE
UV REACTORS
SULFUR DIOXIDE
CHLORINE
CLEARWELL
AMMONIA
CHLORINE
CHEMICAL INJECTION PIT
TREATMENT BUILDING PUMP ROOM
TO DISTRIBUTION 11.73 MGD
TO DISTRIBUTION
HIGH LIFT PUMP STATION
MAGNAFLOC LT340 POLYMER
SULFUR DIOXIDE (7)
WASH WATER TRANSFER PIT
TO WASHWATER LAGOONS (LAGOONS NOS. 2 & 3)
CLARIFIED SUPERNATANT 0.270 MGD TO OUTFALL 001
CLARIFIED SUPERNATANT 0.270 MGD TO OUTFALL 002 (* EMERGENCY / MAINTENANCE ONLY)
POLYMER
THICKENER
THICKENER
BRISTOL SLUDGE
BRISTOL SLUDGE
THICKENED SLUDGE MIXING EQUALIZATION BASINS
THICKENED SLUDGE FEED PUMP (TYP)
POLYMER
POLYMER
NO. 1
NO. 2
BELT FILTER PRESSES
FILTRATE AND BELT WASH WATER TO RECYCLE PUMP STATION
0.155 MGD OUTFALL 002
0.155 MGD TO WASH WATER PIT
OUTFALL 001
DECANT / OVERFLOW TO RECYCLE PUMP STATION
DECANT FROM LAGOONS 1 & 2
RECYCLE PUMP STATION
ALTERNATE RECYCLE TO WASTE WASHWATER TRANSFER PIT
GHD
AQUA PENNSYLVANIA, INC.
NESHAMINY WATER TREATMENT PLANT
NPDES RENEWAL PERMIT #PA0011274
PROCESS SCHEMATIC
Project No. 12652166
Report No.
Date NOV 2024
FIGURE 1

USGS PA StreamStats

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; mi², square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi²)	Regulated[1]
01439500	Bush Kill at Shoemakers, Pa.	41.088	-75.038	117	N
01440000	Flat Brook near Flatbrookville, N.J.	41.106	-74.953	64.0	N
01440200	Delaware River near Delaware Water Gap, Pa.	41.013	-75.086	3,850	Y
01440400	Brodhead Creek near Analomink, Pa.	41.085	-75.215	65.9	N
01441000	McMichael Creek near Stroudsburg, Pa.	40.979	-75.201	65.3	N
01442500	Brodhead Creek at Minisink Hills, Pa.	40.999	-75.143	259	N
01443280	East Branch Paulins Kill near Lafayette, N.J.	41.076	-74.695	13.0	N
01443500	Paulins Kill at Blairstown, N.J.	40.981	-74.953	126	N
01443900	Yards Creek near Blairstown, N.J.	40.981	-75.039	5.34	N
01445000	Pequest River at Huntsville, N.J.	40.981	-74.776	31.0	N
01445500	Pequest River at Pequest, N.J.	40.831	-74.978	106	N
01446000	Beaver Brook near Belvidere, N.J.	40.843	-75.046	36.7	N
01446500	Delaware River at Belvidere, N.J.	40.826	-75.083	4,535	Y
01446600	Martins Creek near East Bangor, Pa.	40.900	-75.202	10.4	N
01447500	Lehigh River at Stoddartsville, Pa.	41.130	-75.625	91.7	N
01447680	Tunkhannock Creek near Long Pond, Pa.	41.065	-75.522	20.0	LF
01447720	Tobyhanna Creek near Blakeslee, Pa.	41.085	-75.605	118	LF
01447800	Lehigh River below Francis E Walter Res near White Haven, Pa.	41.105	-75.732	290	Y
01448000	Lehigh River at Tannery, Pa.	41.040	-75.761	322	N
01448500	Dilldown Creek near Long Pond, Pa.	41.036	-75.543	2.39	N
01449000	Lehigh River at Lehighton, Pa.	40.829	-75.705	591	Y
01449360	Pohopoco Creek at Kresgeville, Pa.	40.898	-75.502	49.9	N
01449800	Pohopoco Creek below Beltzville Dam near Parryville, Pa.	40.846	-75.646	96.4	Y
01450500	Aquashicola Creek at Palmerton, Pa.	40.806	-75.598	76.7	N
01451000	Lehigh River at Walnutport, Pa.	40.757	-75.603	889	Y
01451500	Little Lehigh Creek near Allentown, Pa.	40.582	-75.483	80.8	N
01451650	Little Lehigh Creek at Tenth St. Br. at Allentown, Pa.	40.596	-75.474	98.2	N
01451800	Jordan Creek near Schnecksville, Pa.	40.662	-75.627	53.0	N
01452000	Jordan Creek at Allentown, Pa.	40.623	-75.482	75.8	N
01452500	Monocacy Creek at Bethlehem, Pa.	40.641	-75.379	44.5	N
01453000	Lehigh River at Bethlehem, Pa.	40.615	-75.379	1,279	Y
01454700	Lehigh River at Glendon, Pa.	40.669	-75.236	1,359	Y
01455160	Brass Castle Creek near Washington, N.J.	40.765	-75.018	2.34	N
01455500	Musconetcong River at outlet of Lake Hopatcong, N.J.	40.917	-74.666	25.3	N
01457000	Musconetcong River near Bloomsbury, N.J.	40.672	-75.061	141	N
01459500	Tohickon Creek near Pipersville, Pa.	40.434	-75.117	97.4	Y
01463500	Delaware River at Trenton, N.J.	40.222	-74.778	6,780	Y
01463620	Assunpink Creek near Clarksville, N.J.	40.270	-74.672	34.3	N
01464000	Assunpink Creek at Trenton, N.J.	40.224	-74.749	90.6	N
01464500	Crosswicks Creek at Extonville, N.J.	40.137	-74.6	81.5	N
01464645	NB Neshaminy Creek bl Lake Galena nr New Britain, Pa.	40.312	-75.207	16.2	Y
01464720	NB Neshaminy Creek at Chalfont, Pa.	40.288	-75.204	31.5	Y
01465000	Neshaminy Creek at Rushland, Pa.	40.255	-75.033	134	N
01465500	Neshaminy Creek near Langhorne, Pa.	40.174	-74.957	210	N
01465770	Poquessing Creek at Trevose Road, Phila., Pa.	40.132	-74.994	5.08	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)
01453000	[3]1904–1927	18	237	312	447	378	546	472
01454700	1968–2005	38	471	510	745	600	902	760
01455500	1930–2008	52	0	.4	7.8	—	—	6.0
01457000	1905–2008	89	40.6	45.6	70.5	52.2	81.7	62.5
01459500	[2]1975–2008	34	1.9	2.1	4.1	2.9	7.1	5.7
01459500	[3]1937–1973	37	.4	.9	2.1	1.3	3.6	2.9
01463500	1914–2008	95	1,540	1,720	2,700	1,960	3,120	2,430
01463620	1974–2008	19	2.4	2.7	7.6	4.8	10.6	8.6
01464000	1925–2008	84	9.4	14.2	25.7	18.7	34.2	29.3
01464500	1942–2008	65	16.4	18.9	34.0	24.4	42.3	37.3
01464645	1987–2008	22	3.3	3.6	12.3	4.4	13.6	5.4
01464720	1992–2008	17	3.0	3.6	5.8	4.5	7.3	6.2
01465000	1886–1934	28	—	3.4	10.1	4.9	15.0	12.9
01465500	1936–2008	73	9.0	12.7	26.4	17.3	37.4	28.6
01465770	1966–1982	16	.3	.4	1.2	.8	1.7	1.7
01465798	1967–2008	42	1.0	1.2	3.6	3.0	6.8	7.9
01465850	1963–2008	19	5.2	8.5	13.2	12.1	19.5	17.1
01466500	1955–2008	54	.8	.8	1.1	.9	1.2	.9
01467000	1923–2008	86	26.2	34.2	51.8	41.6	63.2	53.2
01467042	1966–1981	16	8.6	9.3	16.8	11.3	21.5	17.0
01467048	1967–2008	42	10.7	12.1	18.9	16.6	27.2	26.6
01467050	1967–1981	15	.3	.4	.8	.7	1.3	1.6
01467081	1969–2008	38	2.4	2.9	4.1	3.9	6.0	6.3
01467086	1967–1988	23	3.3	4.4	6.9	6.6	9.9	10.4
01467087	1984–2008	25	1.6	2.1	6.1	4.8	10.1	12.0
01467089	1968–1982	15	4.8	6.6	9.6	10.3	16.0	20.1
01467150	1965–2008	44	3.9	5.4	10.1	7.3	13.2	11.5
01467500	1945–1969	25	14.6	17.2	24.5	19.8	28.5	23.4
01468500	1949–2008	40	40.8	44.5	70.6	52.1	82.4	65.0
01469500	1921–2008	88	4.8	5.5	10.9	7.3	14.4	10.1
01470500	1949–2008	60	69.2	82.3	137	102	164	133
01470756	1974–1995	22	14.8	16.7	30.5	23.4	43.9	35.5
01470779	1976–2008	33	21.9	24.6	39.3	29.4	45.2	34.8
01470853	1984–2005	22	.2	.4	1.2	.8	1.6	1.1
01470960	[2]1980–2008	29	29.4	31.8	52.4	47.0	74.7	66.3
01470960	[3]1967–1978	12	32.7	38.2	74.0	47.6	88.3	59.5
01471000	[2]1980–2008	29	36.9	43.4	69.4	58.9	93.9	81.0
01471000	[3]1952–1978	27	41.8	47.6	77.1	55.3	91.2	68.6
01471510	[2]1980–2008	29	222	244	347	274	422	340
01471510	[3]1916–1930	10	142	173	279	206	337	245
01471875	1995–2008	14	10.9	11.8	21.2	14.1	25.3	19.0
01471980	1976–2004	29	16.5	17.8	29.2	21.7	34.9	29.7
01472000	[2]1980–2008	29	276	301	432	349	527	453
01472000	[3]1929–1978	50	228	258	411	298	486	374
01472157	1970–2008	39	9.5	10.2	17.2	12.5	21.8	17.0

PA0011274 at Outfall 001

Region ID: PA
Workspace ID: PA20200123132729074000
Clicked Point (Latitude, Longitude): 40.14580, -74.95090
Time: 2020-01-23 08:27:47 -0500

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	214	square miles
BSLOPD	Mean basin slope measured in degrees	2.5	degrees
ROCKDEP	Depth to rock	4.3	feet
URBAN	Percentage of basin with urban development	28	percent

Low-Flow Statistics Parameters[Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	214	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	2.5	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.3	feet	4.13	5.21
URBAN	Percent Urban	28	percent	0	89

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

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

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	21.2	ft^3/s	46	46
30 Day 2 Year Low Flow	32.5	ft^3/s	38	38
7 Day 10 Year Low Flow	9.35	ft^3/s	51	51
30 Day 10 Year Low Flow	14.4	ft^3/s	46	46
90 Day 10 Year Low Flow	29.8	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/)

PA0011274 at node 2

Region ID: PA
Workspace ID: PA20200123133322256000
Clicked Point (Latitude, Longitude): 40.15352, -74.93126
Time: 2020-01-23 08:33:39 -0500

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	217	square miles
BSLOPD	Mean basin slope measured in degrees	2.6	degrees
ROCKDEP	Depth to rock	4.3	feet
URBAN	Percentage of basin with urban development	29	percent

Low-Flow Statistics Parameters[Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	217	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	2.6	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.3	feet	4.13	5.21
URBAN	Percent Urban	29	percent	0	89

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

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

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	22.9	ft^3/s	46	46
30 Day 2 Year Low Flow	34.8	ft^3/s	38	38
7 Day 10 Year Low Flow	10.3	ft^3/s	51	51
30 Day 10 Year Low Flow	15.8	ft^3/s	46	46
90 Day 10 Year Low Flow	31.8	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/)

WQM 7.0

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
02F	2484	NESHAMINY CREEK	8.280	25.44	214.00	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	0.060	0.00	0.00	0.000	0.000	0.0	0.00	0.00	24.00	8.10	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
Neshaminy Falls	PA0011274	0.1815	0.1815	0.1815	0.000	20.00	7.37

Parameter Data

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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
02F	2484	NESHAMINY CREEK	7.175	20.60	217.00	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	0.060	0.00	0.00	0.000	0.000	0.0	0.00	0.00	24.00	8.10	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

Friday, December 27, 2024 Version 1.1 Page 2 of 2

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	0.709	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.362	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
02F	2484	NESHAMINY CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
8.280	12.84	0.00	12.84	.2808	0.00083	.862	64.8	75.2	0.23	0.287	23.91	8.06
Q1-10 Flow												
8.280	9.10	0.00	9.10	.2808	0.00083	NA	NA	NA	0.19	0.347	23.88	8.05
Q30-10 Flow												
8.280	17.49	0.00	17.49	.2808	0.00083	NA	NA	NA	0.28	0.242	23.94	8.07

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
02F	2484	NESHAMINY CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
8.280	Neshaminy Falls	2.59	50	2.59	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
8.280	Neshaminy Falls	.54	25	.54	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
8.28	Neshaminy Falls	25	25	25	25	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
02F	2484	NESHAMINY CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
8.280	0.182	23.914	8.061
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
64.799	0.862	75.198	0.235
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.49	0.263	0.53	0.946
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.174	1.460	Tsivoglou	5
Reach Travel Time (days)			
0.287			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.029	2.47	0.52	7.68
0.057	2.45	0.51	7.68
0.086	2.43	0.49	7.68
0.115	2.40	0.48	7.68
0.144	2.38	0.47	7.68
0.172	2.36	0.45	7.68
0.201	2.34	0.44	7.68
0.230	2.32	0.43	7.65
0.259	2.30	0.42	7.61
0.287	2.28	0.41	7.56

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
02F	2484	NESHAMINY CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
8.280	Neshaminy Falls	PA0011274	0.182	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

TMS

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: Neshaminy Falls WTP NPDES Permit No.: PA0011274 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Treatd filter backwash

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
0.1815	166	7.37						

						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	Strea m CV	Fate Coeff	FOS	Criteri a Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L												
	Chloride (PWS)	mg/L												
	Bromide	mg/L												
	Sulfate (PWS)	mg/L												
	Fluoride (PWS)	mg/L												
Group 2	Total Aluminum	µg/L		0.35										
	Total Antimony	µg/L		0.8										
	Total Arsenic	µg/L		2										
	Total Barium	µg/L		106										
	Total Beryllium	µg/L	<	1										
	Total Boron	µg/L	<	200										
	Total Cadmium	µg/L	<	0.2										
	Total Chromium (III)	µg/L		1.4										
	Hexavalent Chromium	µg/L												
	Total Cobalt	µg/L		0.7										
	Total Copper	µg/L		5										
	Free Cyanide	µg/L												
	Total Cyanide	µg/L	<	10										
	Dissolved Iron	µg/L	<	20										
	Total Iron	µg/L	<	0.099										
	Total Lead	µg/L	<	1										
	Total Manganese	µg/L		0.079										
	Total Mercury	µg/L	<	0.2										
	Total Nickel	µg/L		3.5										
	Total Phenols (Phenolics) (PWS)	µg/L	<	2										
	Total Selenium	µg/L	<	1										
	Total Silver	µg/L	<	0.4										
	Total Thallium	µg/L	<	0.3										
	Total Zinc	µg/L		24										
	Total Molybdenum	µg/L		4										
	Acrolein	µg/L	<											
	Acrylamide	µg/L	<											
	Acrylonitrile	µg/L	<											
	Benzene	µg/L	<											
	Bromoform	µg/L	<											
	Carbon Tetrachloride	µg/L	<											

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

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

Discharge Information 12/27/2024 Page 3

Stream / Surface Water Information

Neshaminy Falls WTP, NPDES Permit No. PA0011274, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: Neshaminy 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	002484	8.28	25.44	214			Yes
End of Reach 1	002484	7.175	20.6	217			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	8.28	0.06										140.5	8.1		
End of Reach 1	7.175	0.06										140.5	8.1		

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	8.28														
End of Reach 1	7.175														

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

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ *AFC* CCT (min): 15 PMF: 0.250 Analysis Hardness (mg/l): 142.55 Analysis pH: 7.97

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	750	750	9,338	
Total Antimony	0	0		0	1,100	1,100	13,696	
Total Arsenic	0	0		0	340	340	4,233	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	261,470	
Total Boron	0	0		0	8,100	8,100	100,853	
Total Cadmium	0	0		0	2.842	3.06	38.1	Chem Translator of 0.929 applied
Total Chromium (III)	0	0		0	761.709	2,410	30,013	Chem Translator of 0.316 applied
Total Cobalt	0	0		0	95	95.0	1,183	
Total Copper	0	0		0	18.769	19.6	243	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	94.792	128	1,596	Chem Translator of 0.739 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	20.5	Chem Translator of 0.85 applied
Total Nickel	0	0		0	631.998	633	7,885	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	5.919	6.96	86.7	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	809	
Total Zinc	0	0		0	158.236	162	2,015	Chem Translator of 0.978 applied

☑ *CFC* CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 141.05 Analysis pH: 8.06

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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	10,281	

Total Arsenic	0	0		0	150	150	7,009	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	191,592	
Total Boron	0	0		0	1,600	1,600	74,767	
Total Cadmium	0	0		0	0.312	0.35	16.3	Chem Translator of 0.895 applied
Total Chromium (III)	0	0		0	98.227	114	5,337	Chem Translator of 0.86 applied
Total Cobalt	0	0		0	19	19.0	888	
Total Copper	0	0		0	12.015	12.5	585	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	70,095	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.652	4.93	230	Chem Translator of 0.741 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	42.3	Chem Translator of 0.85 applied
Total Nickel	0	0		0	69.569	69.8	3,261	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	233	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	607	
Total Zinc	0	0		0	158.105	160	7,493	Chem Translator of 0.986 applied

☑ *THH* CCT (min): ###### 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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	262	
Total Arsenic	0	0		0	10	10.0	467	
Total Barium	0	0		0	2,400	2,400	112,151	
Total Boron	0	0		0	3,100	3,100	144,862	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	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	14,019	
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	46,730	
Total Mercury	0	0		0	0.050	0.05	2.34	
Total Nickel	0	0		0	610	610	28,505	
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	11.2	
Total Zinc	0	0		0	N/A	N/A	N/A	

☐ *CRL* CCT (min): 82.499 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 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	
Total Chromium (III)	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 Aluminum	5,985	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	262	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	467	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	112,151	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	N/A	N/A	Discharge Conc < TQL
Total Cadmium	N/A	N/A	Discharge Conc < TQL
Total Chromium (III)	5,337	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	758	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	156	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	14,019	µg/L	Discharge Conc < TQL
Total Iron	70,095	µg/L	Discharge Conc < TQL
Total Lead	230	µg/L	Discharge Conc < TQL
Total Manganese	46,730	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	2.34	µg/L	Discharge Conc < TQL
Total Nickel	3,261	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	233	µg/L	Discharge Conc < TQL
Total Silver	55.6	µg/L	Discharge Conc < TQL
Total Thallium	11.2	µg/L	Discharge Conc < TQL
Total Zinc	1,291	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

TRC_Spreadsheet

TRC_CALC

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

12.84	= Q stream (cfs)	0.5	= CV Daily
0.1815	= 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 = 14.607	1.3.2.iii	WLA cfc = 14.233
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 5.443	5.1d	LTA_cfc = 8.274

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)